

**The Murder House Case Studies:  
An Education in Dental Anxiety**

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## **Attestation of Authorship**

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Susan Cartwright.

25<sup>th</sup> June 2010



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## **Abstract**

Dental anxiety levels have not declined as expected with the advent of relatively pain-free dental treatment, and this anxiety can lead to poor dental health. Investigation of its causes is necessary along with methods to moderate it. The New Zealand context is unique as the school dental service model was pioneered in this country and memories of childhood treatment at these clinics in the mid 20<sup>th</sup> century have impacted on some adults' ability to cope with dental treatment today.

A questionnaire based survey revealed that dental anxiety in a population of university staff members was extreme in 12-16%, and development of this anxiety was often attributed to treatment experiences associated with the school dental clinic, also referred to as the "murder house".

Nine case studies were compiled drawing on background information from the survey and in depth semi-structured interviews. Murder house stories that told of such things as cold, sterile clinics, unsympathetic practitioners, and treadle drills, were defined and the causes of anxiety were discussed with reference to a broad range of literature. A model for dental anxiety was developed based on the case study findings and a further model illustrating the theoretical basis for the development and maintenance of anxiety was constructed after consideration of the data in light of classical conditioning, social learning and attribution theories. Implications of these findings for an oral health programme curriculum and pedagogy were then considered.

Suggestions for interventions which practitioners could use to assist anxious dental patients were made including, educational methods such as modelling behaviour and informative education along with coping strategies, and narrative and cognitive-behavioural therapies. Social marketing was proposed as a way to combat the effects of negativity in society and the media.

Further investigation of the efficacy of the intervention methods presented, and those measures already in place, to reduce dental anxiety is warranted along with the assessment of the potential value of the educational models suggested for use with dental and allied students and practitioners.

## **Chapter 1: Introduction**

A substantial proportion of New Zealanders suffer with dental anxiety which can interfere with their ability to maintain good oral health since those who are dentally anxious are less likely to attend for regular dental care and the dental practitioner's ability to provide optimal treatment is compromised. As a dentist, I am aware that patients experiencing such anxiety often attribute it to their own recalled experiences of school dental clinics; they frequently use the term "murder house" in the course of such recollections. Does this experience or the stories that have arisen as a result have an impact on dental anxiety? In this project, the prevalence and levels of dental anxiety in a sample population of university staff are assessed, explanations that they offer for their respective levels of anxiety are compared and contrasted, and the content and influence of explanations that concern school dental clinic experiences are analysed with a view to the development of intervention strategies that dentists may use to educate patients about anxiety mitigation.

### **Personal Interest and History**

My interest in the area of dental anxiety grew out of observations made over my 25 years as a dental practitioner in New Zealand. Many adult dental patients were anxious or fearful and on questioning frequently referred to their unpleasant experiences as children at the school dental clinic. The stories often told included reference to the treadle drill, so that even those patients, who were too young to have received treatment with this particular drill, talked about it as though they did experience it first hand. Being called up from the classroom to attend the dental clinic seemed to have caused much anxiety, perhaps because of a lack of parental support in such a potentially frightening situation. Another common story told by this group of patients was that unnecessary fillings were placed so that the dental nurse could practise upon them. Whether these memories had been directly acquired from personal experience or were a result of stories that had been heard, or a combination of both, was hard to assess. Nevertheless, it appeared that a large proportion of adult patients harboured unpleasant memories of school dental service treatment. My concern was that this previous experience may influence these patients' ability to cope with treatment currently and that they have the capacity to influence further generations into believing that they

should be afraid of dental treatment. Given this concern I wished to investigate the relationship between participants' attitudes to dental care, their previous dental experience and their views on the influence of various factors, including the beliefs of others, on their own anxiety levels. When considering this relationship, I took into account Bandura's (1977) social learning theory which emphasizes the impact of the behaviour, emotions and attitudes of others in the development of an individual's own mind-set.

Background can influence viewpoints and so I believe it is best to reveal mine at the outset. My perspective is that of a dental practitioner and an oral health educator but it is also a result of my early experiences.

I grew up in New Zealand and visited the school dental nurse as a child. However, my experience was somewhat different from a lot of people my age since I had a very low decay rate and did not have any fillings placed until I was an adolescent and had started visiting the dentist. Unlike most other children I was always accompanied on my visits to the dental nurse by my mother, as the school I attended did not have its own clinic. Dental anxiety was a relative unknown to me until I started visiting the dentist, and resulted from quite minor filling work required which was done without local anaesthetic. I espoused to "hate the dentist" but mostly because I felt it was the "norm" to do so. Once I started to study dentistry and as I grew into adulthood these reasonably mild fears disappeared. As a result of this the contrasting views and experiences of other adult New Zealanders interest me.

As an oral health educator I was prompted to undertake an investigation into the way in which the media deals with the reporting of dental issues by an experience with television journalism in 2008. A visit to a Northland community by a group of AUT University oral health professionals was reported on the current affairs programme *Close Up* on 5 March 2008. This was a story about a community in dire need of dental treatment. Members of this community were suffering severe pain from abscessed teeth and, because of a lack of service provision, some had resorted to pulling out their own teeth. The treatment provided by AUT staff was greatly appreciated. Despite this the television report contained some sensational special effects including red and black flashing lights and scary music as well as comments about the practitioners arriving "armed with weapons" to establish "a makeshift murder house" (TVNZ, 2008).

The relevance of these “special effects” and emotive comments was unfathomable except as pure sensationalism, and I was dismayed to learn from a colleague that her 6-year-old son, who had been an enthusiastic visitor to the school dental clinic, was curious to know what a murder house is (Turner, S., personal communication, March 7, 2008). If he and others are subjected to a continued portrayal of dentistry in this light will it affect their attitude to dental care?

Since media reports reach a large proportion of the population and are highly influential I felt it was important to investigate the media portrayal of dentistry in New Zealand. The dental profession believed that pain-free dentistry would bring about a change in attitude to dental care but still part of the population avoids dental treatment due to their anxiety:

It appears that the perpetuation of the “murder house” mentality by the media is detrimental to the improvement of oral health in New Zealand. The relationship between anxiety and the “murder house” image is worthy of further investigation (Cartwright, 2010, p. 11).

## **General Background and Significance of the Research**

The New Zealand school dental service educates children about dental health, treats and attempts to prevent dental disease and has done so since the 1920s so that most native adult New Zealanders will have had experience of this service.

In the early days of the service there was a huge burden of disease to address and very poor equipment and materials with which to deliver care. Pain was an inevitable consequence. It is true that dental equipment, materials and procedures have improved markedly in recent years. However, many of today’s adults received treatment as children at a time when pain-free dental work was not the norm. Additionally expectations of children’s behaviour and the ethics associated with treatment have undergone major changes. The philosophy relating to dental treatment for children in the early to mid 20<sup>th</sup> century can be illustrated in this quote from the New Zealand Dental Journal in 1927: “children should be made to realize that a small amount of necessary physical pain must be borne without complaint, and children who make unnecessary fuss must be firmly checked, otherwise the work will be unduly delayed” (Parker, 1927, p. 87). Medical ethics went through a major change in the 1960s and 70s building upon liberalism and procedural justice to incorporate values such as autonomy which demands informed consent for patients (Leino-Kilpi, et al., 2000). However, it

has taken many decades for these principles to be included in common practice and children of the 60s and 70s still relate tales of distress at the expectations of behaviour placed upon them and the lack of communication with their parents about their treatment.

Dental anxiety can be acquired through conditioning experiences such as painful or traumatic dental treatment or through vicarious learning i.e. dental anxiety can be experienced through imaginative or sympathetic participation in the experience of another. Additionally some individuals may have a constitutional vulnerability and so suffer from multiple anxieties or phobias (Locker, Thomson, & Poulton, 2001a; Ragnarsson, Arnlaugsson, & Karlsson, 2003; Yuan, Freeman, Lahti, Lloyd-Williams, & Humphris, 2008).

Parental attitudes and those of peers can add to an individual's conception and expectations of dental treatment. So it is conceivable that a bad experience as a child, which contributes to a learned response of anxiety associated with dentistry, may linger as an embedded thought accompanied by certain emotions in an adult patient. This thought can be reinforced by messages from exogenous sources such as media reports and societal attitudes.

Dental anxiety has a detrimental effect on oral health. An anxious patient finds dental treatment extremely uncomfortable but also compromises the care they receive since treatment is more difficult to deliver. Anxious patients are more likely to avoid dental visits, therefore they often suffer with poor dental health which can lower self esteem and general well-being due to an unpleasant appearance and ongoing dental pain (Berggren & Meynert, 1984; Armfield, Spencer, & Stewart, 2006 ).

Studies of populations around the world have found varying levels of dental anxiety. In the USA and Japan 80% of the population have been found to harbour some anxiety while between 5 and 14% suffer with extreme anxiety (Scott & Hirschman, 1982; Domoto et al., 1988). A study of Australian adults found that 14.9% are highly dentally anxious (Thomson, Stewart, Carter, & Spencer, 1996). These findings confirm that dental anxiety is a significant problem.

The term "murder house" has been used in New Zealanders' references to school dental clinics since the mid-1900s, notwithstanding the significant changes in dental technology and practice since that time, which have significantly reduced the discomfort

associated with most dental treatment. Nettleton (1992, p.71) writes that “A presumption was made by the dental profession that once treatment became pain free the fear would disappear. However, the dental profession continues to see only half of the population since fear and anxieties, as well as pain, are major deterrents to attendance in the dental clinic”.

Bandura’s social learning theory (1977) offers insight into the way in which use of the term murder house may have been perpetuated and continued to impact on dental anxiety, despite changes to dental treatment. The theory highlights the importance of modelling behaviours, attitudes and the emotional reaction of others in human development.

Social learning theory has been drawn on in previous investigations of dental anxiety (Do, 2004; Ost & Hughdahl, 1985; Townsend, Dimigen, & Fung, 2000) and will provide a theoretical foundation in this study for the analysis and interpretation of explanations for dental anxiety that include references to the murder house.

Although there have been many studies of dental anxiety, none have addressed the role of the memories and stories that have grown out of the school dental service in New Zealand in the development and maintenance of dental anxiety. This study seeks to enrich the largely positivist research into the antecedents of dental anxiety, which is limited and which relies heavily on the results of surveys. This current study uses in-depth case studies in conjunction with a questionnaire to expand this understanding. Literature that focuses on the nature and influence of stories will be taken into account since story-telling can be used as a modelling tool (Haigh, 2005). This influence may be an unfortunate side effect to the perpetuation of the “murder house stories”.

This study has several inter-related aims: to define the murder house phenomenon, its content and possible impact on dental anxiety in a group of New Zealanders, and also to assess the impact of school dental treatment experience generally and other potential explanations for differing levels of anxiety. Additionally, possibilities for dental anxiety interventions may be identified.

The research questions I am seeking to answer include:

- What is the prevalence and level of dental anxiety within a sample population of staff of a New Zealand university?

- What does this sample of university staff attribute their personal level of dental anxiety to?
- What is the incidence of attributions that include reference to school dental clinic experiences that are either direct or vicarious?
- What is the incidence of references to school dental experiences that include mention of the murder house?
- What are the defining and contrastive features of the murder house phenomenon?
- What is the effect of this phenomenon on dental anxiety amongst the staff of the university?
- For staff who include references to the murder house in their attributions for dental anxiety, what negative responses to dental treatment do they report?

It is hoped that the research findings may help those who seek to relieve dental anxiety by providing them with insights into the complex array of factors that influence it, suitable approaches for this group of patients with reference to social learning theory, and a model which will help to identify factors of concern for individuals. This research can also help to remind us as New Zealanders about our dental history and to see how far we have come. Hopefully, dental treatment in the future will be more palatable and acceptable to all.

## **Research Paradigm, Methodology, Data and Methods**

Stemming from relativist ontology and epistemology, this research was situated in the interpretive paradigm as the general aim was to know more of, or to try to understand the experience of, a phenomenon (Bryman, 2004). In this instance the phenomenon was stories told about school dental service experience and their effect on dental anxiety.

### **Methodology**

The methodology combined multiple in-depth case studies and a survey in a mixed methods approach.



## **Data**

The data associated with the questions were quantitative and qualitative and included:

- Background information concerning age, gender, ethnicity, dental treatment history, standard of oral health and attitudes to dental treatment
- Questionnaire responses concerning anxiety in relation to dental treatment
- Explanations for the level of anxiety experienced with dental treatment
- Meanings associated with, and effects on anxiety of, narrative accounts of school dental clinic treatment.

This study comprised a descriptive survey which incorporated interpretive components along with co-relational investigations followed by semi-structured interviews. There were two phases. The first was a survey of a sample of AUT University staff in relation to their level of dental anxiety and their views about factors that account for their level of anxiety. Data were analysed to determine possible relationships between level of anxiety and 'background' factors and explanations. On the basis of the analysis of this data, a further sample of staff who included references to school clinic experiences (personal and vicarious) was constituted to take part in phase two. Further data was gathered from them about those experiences and the way they influence responses to dental treatment.

## **Methods**

For phase one, the method of data gathering was a questionnaire, and semi-structured interviews were conducted in phase two.

Interviews with the selected participants, who spontaneously identified school dental clinic experiences in their questionnaire explanations for anxiety, included questions that requested elaboration of these references, that elicited their familiarity with the murder house stories and that were concerned with the meanings associated with references to the murder house. Any connection between these references, associated meanings and response to dental treatment was investigated.

The qualitative data collected from the interviews were subject to ongoing inductive analysis so that themes could be identified and tentative analytical statements could be

reviewed by further investigation. Through this iterative process a deeper, more meaningful and trustworthy analysis of the data was made (Bryman, 2004).

The results were summarised and discussed with consideration of relevant literature so that pertinent findings could be presented and utilized within the community.

## **Boundaries and Limitations**

Time constraints associated with a Masters Degree project have meant that the population I chose to study was selected for the sake of convenience and accessibility rather than an innate suitability. While this group is representative of a segment of New Zealand's adult population, it comprised employed and well-educated individuals and a significant proportion were from overseas. The results may have been different if a more representative population was studied. Ideally this study would have also included the views of children today about dental treatment and the murder house. Unfortunately time and resources would not allow this and so the only report about children's views came from the parents involved in the interview process.

## **Structure of Report**

This report is presented in six chapters.

### **Chapter 1: Introduction**

The scene is set with background information provided about the author, the school dental service, dental anxiety and its impact on dental health. A theory concerned with the development of dental anxiety is presented. The significance of the research is stated. A summary of the research process and the key questions are given along with boundaries and limitations and the structure of the thesis report.

### **Chapter 2: Literature Review**

The history of the school dental service and New Zealanders' attitudes to dental care are explored. Important studies in the area of dental anxiety and relevant theories are synthesized and summarised thus providing a context for the present study.

### **Chapter 3: Research Design and Implementation**

The approach to research and the methods used for data collection and processing are described fully in this chapter.

#### **Chapter 4: Findings**

The results of the research are presented and the case study data are summarised in diagrammatic form.

#### **Chapter 5: Discussion**

The results are discussed in relation to other significant research findings, a model for the development of anxiety is constructed and intervention strategies presented.

#### **Chapter 6: Conclusions and future study**

The research is summarised and pertinent important findings are emphasized. Directions for future study are suggested.

## **Chapter 2: Literature Review**

### **History of School Dental Service and Attitudes to Dentistry**

In the early 1900s New Zealanders' oral health was extremely poor. A survey of children's teeth by dentists in 1908 found that 90% of school-age children had decayed teeth. Additionally a large proportion (between a quarter and a third) of the country's young men was initially prevented from joining the armed forces in the First World War because of poor oral health. In response to this the school dental service was created in 1921 in an effort to improve the oral health of the nation's children. A training school was established in Wellington and 35 "suitable" young women were enrolled for a two year certificate course, who upon graduation worked in makeshift surgeries at 25 primary schools around the country (Brooking, 1980).

This service provision has grown over the decades so that in 1930 about half the country's eligible children were being treated (McLintoch, 1966) and today approximately 95% of primary and intermediate children are enrolled with the service (Treasure & Whyman, 1995; Coates, Kardos, Moffat, & Kardos, 2009).

New Zealand was the first country in the world to introduce such a service and it has since been reproduced in many other countries. To begin with the workforce was entirely female, and only child patients were treated; work was carried out within the public sector and was performed under the supervision and direction of a public health dentist.

Children in the early days of the service were subjected to large amounts of treatment carried out with very poor equipment. A dental nurse from the 1920s is recorded as saying (Tane, 2009):

The experience children went through was quite horrific with the equipment they had used upon them. Such a hopeless feeling for us that only 10% at the very most would go on and have dental treatment as teenagers and adults. This was one of the terrible weights we had to bear as the dental nurses of these times; so exhausting, such hard work and knowing that the teeth would eventually be lost (p. 84).

The term murder house has been used in New Zealanders' references to school dental clinics since the mid 1900s, notwithstanding the significant changes in dental

technology and practice since that time that have significantly reduced the discomfort associated with most dental treatment. Tane (2009) states that:

During the war years, dental equipment became difficult to order in sufficient quantities to replace used stock, so needles and burs were boiled and used over and over, even when quite blunt. It is no wonder the children introduced the title 'murder house' (p. 84).

Children's attitudes to treatment can be surmised from the following quote recorded by Tane about transport to the harder to access areas of the country where it was necessary to travel by horseback. The horses were "carefully chosen by the local children, and would be quite frisky and dangerous to ride, more than once did I get thrown off, but much to the disappointment of the children, I still turned up to treat them" (2009, p. 84).

Saunders, a former Director of the Division of Dental Health, describes the development of school dental clinics with an atmosphere based on hospital environments. He talks of the terrifying image of dentistry in the 1920s where dentists were referred to as butchers and torturers. Hence, a "pleasing environment" as well as one that was safe and clean was extremely important:

In the mind of the general public, dental treatment was regarded with extreme apprehension, and was pictured as being associated with ruthless extraction, a barbarous drill, and excruciating pain. This attitude of mind was general, and was well exemplified by an experience at one of the main hospitals, where the establishing of a dental department had to be deferred because it was objected that the "continuous screams from the dental department" would seriously disturb the staff and patients in the vicinity (1964, p.15).

The intention of the school service was clear from the start and embraced the improvement of the oral health of children and so eventually of adults. In so doing, it wished to engender an improvement in the image of dentistry as a whole. The following quote illustrates this point well and is taken from a paper written in 1905 by F.W. Thompson, reproduced in Saunders (1964):

Give me the children of this country, and I will annihilate the dental extracting parlour, rob quackery of its victims, win the eternal gratitude of the dental faculty, and place the dental profession on the highest pinnacle of public favour.

It was hoped that children's attitudes to dental care would be improved by their treatment at the school dental clinic. Saunders (1964) goes on to state "ministrations of the dental nurse would smooth the way for the dentist to treat children when they were older" (p. 4). Did the establishment of the school dental service achieve these aims? It

was certainly hoped that treating very young children for decay would minimise the need for future treatment, make any necessary treatment easier to bear and that the creation of a pleasant atmosphere in the clinics would go some way towards improving the negativity associated with dental treatment.



The service was initially subject to some skepticism and caution on the part of general dentists and the public, so it was important that high standards were maintained so that the service would be accepted. Young, healthy, single girls with an appropriate level of education and social class were admitted to the training course and subjected to military style regulation and strict protocols around appearance and conduct. The work and the clinics were also highly regulated and standardized, and patients' behaviour was controlled so that results of treatment across the country were similar (Dewson, 2007).

**Figure 1** Dental Nurse Miss Shirley Gardner standing in uniform in the doorway of the clinic at Shannon School, 1949 (Horowhenua Historical Society Inc., 2007).

The government message in the mid 20<sup>th</sup> century concerned eating good food to promote good health and thereby build good character and moral virtue. Foucault (1973) saw the development of the “clinic” as a space where the clinician could exercise power and control over patients' health and their moral character:

In the ordering of human existence [medicine] assumes a normative posture, which authorises it not simply to distribute advice as to healthy life, but also to dictate the standards for physical and moral relations of the individual and of the society in which he lives (p. 34).

After the Second World War many new clinics were built in schools making the government concern about good dental health and the new scientifically efficient approach to dental health prominent in the eyes of the nation. At this stage equipment was upgraded also. The treadle drills were replaced by drills with electric motors, and operating lights were introduced (Dewson, 2007).



**Figure 2** The Royal Oak School Dental Clinic pictured above still operates today and is used partly as a training clinic for the AUT University, Bachelor of Health Science in Oral Health programme.

A National Film Unit programme titled *New Zealand's school dental service: A film of the work of the school dental nurse* records the desired image of the school dental service in the late 1940s and gives insight into its very early days.

A very positive view of the service is portrayed in the film with reports of praise for dental nurses' work, parents showing gratitude and the training school in Wellington being an overwhelmingly friendly place with children coming well before their appointments so that they could play with the toys provided (Cartwright, 2010). Nurses are shown giving anxious children reassurance, reading books to them and if necessary taking them to a separate room so their fears could be calmed with lots of attention. The narrator claims that children looked forward to their appointments and especially to the cotton wool dolls that were a reward for good behaviour.

The film shows the early days of the service when nurses had to establish their own clinics in the backrooms of shops or on verandahs depending on what was available. A dental nursing tutor describes with humour the conditions she faced in the 1920s with inadequate equipment such as a bunsen burner to sterilize instruments. The conditions

of the 1940s are contrasted with these early days and the newly built school dental clinics situated on school grounds look pristine and almost inviting. School dental nurses are shown surrounded by flocks of children as they move around the school, and classroom dental education sessions and school productions with a dental theme are featured. Although the film portrays the realization of the ideal that was hoped for when the service was established, the reality appears to have been somewhat different for many dental nurses who found their workloads to be extremely heavy, and the resulting dental treatment experienced by numerous children in these times was not as pleasant as the film would suggest. Education of therapists at AUT University today incorporates communication techniques, psychological aspects of dental anxiety, societal health and pain management, all of which are designed to alleviate the fear children have felt in the past regarding school dental treatment (Bachelor of Oral Health undergraduate curriculum. Documentation is available from the author).

Today many changes have taken place in the education and practice of dental nurses, who are now called dental therapists. In the 1990s there were severe workforce shortages due to the reduction in the number of graduates joining the existing workforce of aging therapists. This was partly due to the closure of training facilities in response to a marked improvement in the oral health of New Zealand children from the 1970s onwards and partly because of the unappealing nature of the profession. Pay rates were poor, working conditions substandard and the work difficult. In the early 21<sup>st</sup> century education moved from certificate or diploma courses at technical institutes to 3 year university degree courses which now incorporate both dental hygiene and dental therapy. The Health Practitioners Competency Assurance Act 2004 included a requirement for registration and an increased professionalism and autonomy. The Act allowed therapists to work in both private and public settings. These changes have re-invigorated the profession and improvements are also occurring in clinical facilities since a government grant has allowed new facilities to be built. A resultant restructuring of the service means that clinics will not be located at every school but instead there will be more centrally located community clinics connected to the schools via mobile dental vans (Coates et al., 2009). Tane (2009) found in her survey of therapists that concern was expressed about “accessibility to care with the imminent closure of dental clinics situated in schools” (p.85). This was particularly so for Maori children. The Maori Dental Association stated “schools are the best place for Maori school children to



receive dental care” (p.85) and so it remains to be seen how these changes will impact on communities.

Looking back to 1935, Roper-Hall expressed the following sentiment, at a time when in New Zealand pain relief was given only for extractions in the school dental service and the regimented control of treatment and the patient were paramount so that the required work could be achieved:

The old idea of the manipulation in the mouth almost regardless of the feelings of the patient has gone, and rightly so, for ever and we are at the dawn of a new era of sympathetic dentistry (p.178).

Unfortunately even in 1976 it was still apparent that dentistry was on the cusp of a “new era” of dentistry, and Conway had the following advice:

The need to destroy the existent image of the dental visits is fundamental,... if we wish to move into the twenty-first century with a better public relationship to that currently enjoyed by our profession, as one of a “butcher or torturer”, then we have to show that we do not still treat patients as in an era of the dark ages (p. 7).

Now in 2010 the ability to provide painless dental treatment exists but some of the negativity that resulted from previous treatment regimes still remains. This can be illustrated through recent media releases involving dentistry in New Zealand. Headlines range from “Grit your teeth. The old days of the murder house are long gone, but dentists are having trouble convincing everyone of it” (Boniface, 2009, p. 54) to “School ‘murder houses’ killed off - officially. Dental clinics will be extracted in a radical revamp” (Rooney, 2008, p. 2). The harm associated with these phrases and images is discussed by Cartwright (2010): the “media’s powerful influence on health beliefs and behaviours calls for responsible portrayals of oral health care to promote prevention and the use of dental services” (p. 7).

Dental professionals have to work very hard to allay fear since treatment is so much more difficult and often less successful for those who are anxious. Painless treatment is relatively easy to achieve in most instances today but many patients are amazed that this is possible. Has the public been so badly wounded by the dental practices of days gone by that they cannot move forward and dispel their anxiety? What mechanisms promote the perpetuation of anxiety in the face of pain-free treatment?

This project focuses on the enduring relationship between school dental treatment experiences and dental anxiety in adults.

## **Dental Anxiety**

Fear of dentists and dentistry is a common and potentially distressing problem both for the public and for dental practitioners (Newton & Buck, 2000, p. 1449).

Anxiety is defined as distress or uneasiness of mind caused by fear of danger or misfortune while fear is defined as a distressing emotion aroused by impending danger, evil or pain (Concise Oxford Dictionary, 1964). In the context of this study fear and anxiety have similar meanings and are used interchangeably here as they are commonly in the literature (Armfield et al., 2006).

A large body of research about dental anxiety has developed since the 1960s (Smith & Heaton, 2003). The broad categories of investigation include prevalence, development, and maintenance of, and explanations for anxiety along with interventions. The focus of this project is primarily on the prevalence and development of, and explanations for, dental anxiety in a specific population. Secondly it is hoped that this study may provide insight into the ways dental practitioners might ameliorate anxiety in their patients.

Prevalence of dental anxiety has been studied both internationally and to a lesser extent within New Zealand and levels seem to be within similar limits in most countries.

A large proportion of society feels some anxiety towards dental care. It is one of the most common fears (Locker, Shapiro & Liddell, 1996; Fiset, Milgrom, Weinstein, & Melnick, 1989). Studies estimate that dental anxiety occurs to some extent in around 50-80% of people generally, however there is a proportion of this group for which dental anxiety is severe and debilitating. This high anxiety group makes up approximately 5-20% of the population (Scott & Hirschman, 1982; Domoto et al., 1988; de Jongh, Muris, ter Horst & Duyx, 1995; Ragnarsson et al., 2003; Armfield et al., 2006).

Dental anxiety on the West Coast of New Zealand's South Island was found to be present in 20.8 % of participants and the last two national dental health surveys in 1976 and 1988 found dental anxiety was a barrier to care for 12-18% of the population (Thomson, Dixon, & Kruger, 1999).

Smith and Heaton (2003) reviewed the literature on self-reports of dental anxiety over the last 50 years and asked if the dental profession is making any progress in allaying the public's fear. Unfortunately no significant differences were found in dental anxiety levels over that period.

Levels of anxiety can differ over an individual's lifespan, and studies show that the most anxious age group is generally the child or young adult group (Maggirias & Locker, 2002; ter Horst & de Wit, 1993) although Thomson et al., found dental anxiety was greatest in the 35-44 year age group in Australia in 1996, and Armfield et al., found it greatest in those aged 40-64 years in Australia in 2006. This age group had twice the level of extreme anxiety of the other age groups combined. In a birth cohort study in Dunedin, Locker et al., (2001) found that the prevalence of dental anxiety increased between 15 and 26 years but it was unstable with some individuals experiencing remission or exacerbation of anxiety dependant upon "dental disease and treatment factors or changing psychological states during significant life transitions" (p. 99).

The development of dental anxiety has been investigated by numerous researchers and the components that appear to be common to its development and maintenance are behavioural, cognitive and physiological. The cognitive aspect can be influenced by conditioned responses stemming from an exogenous source such as a social or environmental factor, or a learned response to a painful or noxious stimulus, or by an endogenous source, that is, a constitutional vulnerability (Litt, 1995; Kent & Croucher, 1998; Maggirias & Locker, 2002; Yuan et al., 2008).

Antecedents to dental anxiety can include verbal information, modelling or a direct negative experience. Studies have shown that dental anxiety can be acquired from family or friends and that the families of dental phobics have higher levels of dental anxiety than control families (Ragnarsson et al., 2003). Bernstein, Kleinknecht and Alexander (1979) investigated the antecedents of dental fear by asking 225 students to record their descriptions of their early dental experiences in essay form as well as using anxiety scales to assess their levels of anxiety. The most potent antecedents were "painful early dental experiences in the operatories of personally unattractive and professionally threatening dentists" (p.121). Eli, Uziel, Baht and Kleinhaus (1997) found the best predictors of present dental anxiety were the memories of past dental anxiety and the qualities of the present dentist.

Pain endured while receiving dental treatment can lead to prolonged apprehension about these procedures and avoidance is common in the dentally anxious. It can be compared to aversive conditioning which is a well documented psychotherapeutic technique where a noxious stimulus is applied to the subject to discourage certain behaviours. Pain and anxiety are closely linked so that pain is more likely to be experienced if the patient has had a previous painful experience, if they are anxious, if they have expectations of pain and if they feel they have limited control over events (Maggirias & Locker, 2002). These authors found that pain was less likely to be reported by those patients who were not prepared to endure it and concluded that pain is a cognitive and emotional construct as well as being physiological. Skaret and Soevdsnes comment:

Previous experiences of pain have clearly been shown to be a major factor related to dental anxiety. A Norwegian study has shown that adolescents reporting more than one painful or unpleasant experience during childhood had a ten times higher probability of being included in a high dental anxiety group at 18 years of age, compared with subjects having experienced pain only once or never (2005, p 3-4).

De Jongh et al., 1995, reported that most dentally anxious patients relate their anxiety to a direct experience, with far fewer relating it to vicarious learning or information. Those with higher levels of anxiety generally recalled more painful dental treatment experiences than those with lower levels.

Other studies have found vicarious learning through observing others' behavior and learning about anxiety through channels of information can act synergistically with direct negative experiences to increase the likelihood of developing anxiety and to increase its intensity (Ollendick & King, 1991). Still others claim that vicarious or information pathways have the most effect on the development of anxiety (Kleinknecht, Klepac, & Alexander, 1973; Moore, Brodsgaard, & Birn, 1991).

Negative thoughts can affect levels of dental anxiety. The Dental Cognitions Questionnaire was developed from a study of the content of thoughts commonly expressed by those with high anxiety levels, to assess the occurrence of these thoughts. Those with higher levels of anxiety are much more likely to think catastrophic thoughts which often include a sense of a loss of control (de Jongh & ter Horst, 1993). Negative thought schemata are developed because of past learning experiences which the individual has difficulty suppressing, and these thoughts arise in response to stimuli associated with dental treatment so that pain is an expected result. Thoughts such as

“my teeth might break” or “this will hurt” help to reinforce anxiety and can lead to patterns of behaviour such as avoidance (de Jongh et al., 1995, p 206).

Anxiety can cause an individual to be hypersensitive to pain so that their pain threshold is lowered and may even cause stimuli that would normally not be painful to be perceived as such. Conversely pain increases anxiety and so a vicious cycle is established (Litt, 1995). Therefore, pain does not necessarily relate to pathology alone because it is influenced by “attention, cognitions and affect as well as by nociceptive inputs” (Litt, 1995, p. 461). Highly anxious patients are more likely to overestimate the amount of pain they expect from a certain dental procedure and to remember it later as being more painful than they felt it was at the time (Kent, 1984; 1985). This is frustrating for the dentist who knows that things would be much better for the patient if anxiety could be dispelled. Litt (1995) postulates that many dental procedures today are not painful but there is a perception that they are and this could be the reason that levels of dental anxiety have not changed even though treatment regimes have improved.

Theories about the development and maintenance of anxiety include the “fear acquisition theory” and the “social learning theory” discussed below.

### **Fear Acquisition Theory**

Rachman in 1991 presented a revised theory of fear acquisition. He concludes that there are three pathways involved in the generation of fear. They are conditioning, transmissions of a vicarious nature and transmissions of verbal information. He reported that dental phobics were amongst the most likely subjects to ascribe direct experience as a reason for their fear and that an exaggerated expectation of harm increased the likelihood that this anxiety would be maintained. However, it has been shown that fears can be passed on through the “absorption of verbal information especially if that information conveys a threat” (p. 164).

Rachman’s theory of fear acquisition was applied to dental fear in a study of American primary school children. The results showed that both direct conditioning and parent modelling were highly predictive of fear level (Milgrom, Mancl, King, & Weinstein, 1995). A further study applying this theory to a large sample of Australian and American children and adolescents found that vicarious and instructional factors were often associated with the onset of fears (Ollendick & King, 1991). A study of the

influence of a mother's oral health knowledge and attitudes on their child's dental health showed that 9-year-olds with a sound dentition and good oral hygiene habits were most often associated with mothers who had positive oral health related attitudes (Saied-Moallemi, Virtanen, Ghofranipour, & Murtomaa, 2008).

### **Social Learning Theory**

Bandura (1977) presented a theory arguing that "most learning occurs by modeling rather than trial and error... personal behaviour can be learned and unlearned through influences in the family, community, work and media" (p. 456). He observes that "many intractable fears arise not from personally injurious experiences, but from seeing others respond fearfully toward or be hurt by threatening objects" (p. 61). Those modelled attitudes may be conveyed by the use of such terms as murder house and by the associated stories. The undeniable influence of family and friends on dental anxiety is well documented (Bernstein et al., 1979; Ragnarsson et al., 2003), and Bandura's theory proposes that people are more likely to adopt modelled behaviour if the model is similar to or admired by the observer.

Some studies found that direct negative experience through traumatic treatment was the most influential factor in the development of dental anxiety (Moore et al., 1991) while others found participants mentioned the negative expectations of others having more effect on raising their anxiety levels than anything else (Kleinknecht et al., 1973; Ollendick & King, 1991).

It appears that fears and the emotional response to fears can be acquired as the result of modelling or via a vicarious pathway. If these stimuli are linked to frightening experiences then they are even more likely to generate fear in the individual.

There are stories told about dental treatment in the school dental service which appear to be common to many of the dentally anxious, and these stories are passed down the generations. Stories are a powerful teaching tool and give insight into the attitudes of individuals and groups:

A narrative, and the particular form of narrative we call a story, deals not just in facts or ideas, or theories, or even dreams, fears and hopes but in facts, theories and dreams from the perspective of someone's life and in the context of someone's emotion (McEwan & Egan, 1995, p. viii).

Story-telling can be used as a “means for sharing norms and values” (Haigh, 2005, p.12) and for passing on information from which others can learn about situations. Stories about dental experiences are shared by friends and families, with the media also conveying information about dentistry to the wider public.

In discussing social marketing and its place in public health, Ling, Franklin, Lindsteadt, and Gearon (1992) state that:

Multiple channels of mass communication and new methods of knowledge diffusion have touched all but the remote and isolated communities. Messages aimed at influencing personal choices and decisions come from several sources at any given time, and often at cross purposes....the same channels of information have also conveyed words and images harmful to health (p. 341).

The media record and perpetuate social norms and attitudes, and these appear largely to be negative in relation to dental treatment in New Zealand (Cartwright, 2010). Stereotypes of dental professionals as sadistic continue and can be illustrated by the following quote from a former New Zealand Prime Minister, David Lange. He is recorded in a Dominion Post article titled “Escape from the murder house” as saying “it was mandatory for dental nurses to hurt children whether they needed to or not” (Prestwood, 2001). It is probable that the perpetuation of the murder house phrase and portrayal of dentist professionals as sadistic harms the promotion of oral health.

Dental anxiety often leads to avoidance of dental care and to poor oral health which in turn can affect self esteem and social functioning (Ragnarsson et al., 2003; Pohjola, Lahti, Tolvanen, & Hausen, 2008). Thomson (2001) in a study of 26 year old New Zealanders found less than 50% of the population saw the dentist regularly and that episodic users had more extractions, increased caries experience and rated their own oral health as poorer than that of their counterparts. Ragnarsson et al., (2003) also found that those with higher levels of anxiety had fewer remaining teeth, and in England 43% of people avoided going to the dentist unless it was absolutely necessary; of these 58% stated fear as the major reason they did not attend (Todd, Walker, & Dodd, 1982).

A competent practitioner who is warm and caring can go a long way to prevent the establishment of dental anxiety even in the face of painful experiences (Bernstein et al., 1979), and those patients who have received a number of good treatments before they experience a painful one are less likely to develop anxiety. This is a phenomenon

labelled “latent inhibition” which may help to “inoculate” patients against anxiety (de Jongh et al., 1995).

Researchers have suggested various other methods to address dental anxiety. Ragnarsson et al., (2003) proposed that the reduction of negative thought patterns could reduce psychological distress and the level of anxiety, and so the introduction of coping strategies for patients such as distraction, relaxation or hypnosis could be helpful. Maggiras and Locker suggest that dental professionals should encourage patients to express their concerns about treatment even if they feel embarrassed to do so and that dental professionals should, as much as possible, respond to those concerns to reduce anxiety and pain experienced (2002). This self efficacy in coping with treatment can be enhanced through appropriate modelling and feedback (Bandura, 1982; Litt, 1995).

Skaret and Soevdnes (2005) suggested that perceived patient control was extremely important in the mitigation of anxiety and could include: informational control through explanation about instruments and procedures; behavioural control through stop/start signals; cognitive control through the reconstruction of negative/ catastrophic thoughts; and retrospective control through discussion of events that occurred during treatment. It is hoped in the current study that further useful insight into intervention methods can be gained from the information gathered from participants.

### **Other studies**

Most of the studies into dental anxiety use surveys incorporating questionnaires and scales to assess anxiety (Ragnarsson et al., 2003; de Jongh et al., 1995; Locker et al., 1996; Armfield et al., 2006 ). Locker et al., 1996, suggest that a questionnaire is the best way to carry out an investigation of dental anxiety because participants are more likely to respond accurately to this approach than to personal contact because of the sensitive nature of the material.

Very few investigations utilise case studies. In 1993 de Jongh and ter Horst conducted an investigation where dentists carried out semi-structured interviews using “some open-ended questions” with 32 anxious patients who were seated in the dental operatory about to receive treatment, in an attempt to clarify the types of thoughts anxious patients have about dentistry. One of the problems with this study was that there was a maximum of 15 minutes available to ask the questions and record the answers. Case



studies, in contrast, allow in-depth exploration of people's thoughts and feelings and so allow the researcher to capture a more complete picture.

New Zealand is unique in the dental world having been the first country to introduce a school dental service. This service has been functioning for the last 90 years. Stories have arisen about treatment within this service which often include reference to the murder house. This reference is used by the media frequently and helps to create a social environment of fear and pain expectation with respect to dental treatment.

Levels of extreme dental anxiety are experienced by 5-20% of the population throughout the world, levels that appear to be stable despite improvements in dental treatment over the last 50 years, perhaps because of people's established perceptions of dental treatment. Measures of the New Zealand population's dental anxiety usually fall at the higher end of this range.

What factors influence dental anxiety for New Zealand adults? What are the murder house stories and is there any effect felt from these? Most studies of dental anxiety have used questionnaires and anxiety scales which fail to reveal the in-depth thought processes of individuals and fail to elicit their stories. There is a need for investigation into the New Zealand context of anxiety using case study methodology to record people's stories and from these to develop a picture of New Zealanders' dental anxiety with a view to creating contextually appropriate intervention strategies.

## **Chapter 3: Research Design and Implementation**

This study aims to gain an understanding of the phenomenon of dental anxiety and its possible relationship to experience of treatment at school dental clinics, and to the associated concept of the murder house in New Zealand. Participants' stories about dental treatment in general and with specific reference to school dental clinics were heard, recorded and interpreted against a background of descriptive and comparative findings about dental anxiety so that insight into dental anxiety could be improved and methods to combat it suggested. This research sits in the interpretive paradigm and stems from the researcher's relativist epistemology and ontology.

There were two phases to the research. The first was a questionnaire-based survey of a sample of university staff in relation to their level of dental anxiety and their views about factors that account for their level of anxiety. Co-relational analyses were undertaken to determine possible relationships between level of anxiety and 'background' factors and explanations. On the basis of the analysis of these data, a further sample of staff who included references to school clinic experiences (personal and vicarious) when accounting for their level of anxiety was constituted. Additional data were gathered about those experiences and the way they influence responses to dental treatment. These data, gathered via interviews, were combined with selected survey data to compile in-depth case studies from which themes and insights emerged on analysis.

### **Population and Sampling**

The population chosen for this study was the academic and allied staff of a faculty of AUT University. This convenience sample constitutes a sector of the adult population of New Zealand. The faculty was chosen deliberately in an attempt to avoid undue influence from the researcher affecting participant responses since the researcher is employed at AUT but does not work within this faculty.

The population of the Faculty of Applied Humanities is similar to that found commonly in university settings in New Zealand, that is, predominantly older, female and European. AUT University statistics show that European staff make up 58% of the total with Maori staff at 5% and Asians at 13%. The sample is appropriate since the focus of

this study is on the effects of school dental treatment on the dental anxiety of adults; at the time when these participants were visiting the school dental service in the 1940s to 70s the population of New Zealand was largely European. New Zealand population statistics for 1962 show Maori then made up 7% of the population and other ethnic groups were extremely small (Statistics New Zealand, 1971).

Forty per cent of respondents did not attend the school dental service, reflecting the large number of university employees who did not grow up in New Zealand and perhaps a few respondents who chose not to attend the school service but to go to a dentist privately instead. A study of the school dental service completed for the World Health Organisation in 1951 showed that 84% of primary school children attended for treatment at that time (Fulton, 1951). While this allowed some comparison of anxiety levels between those who did and did not attend the school dental service, it also limited the number of respondents with experience of the service which was the main focus of the study. However, sufficient data were gathered to ensure reasonable conclusions were attainable.

To be certain that the effect of school dental clinic experiences and murder house stories on adults could be investigated adequately those aged less than 20 years were excluded from the study. From the group of questionnaire respondents 10 were purposively selected who identified early experiences at the New Zealand school dental service as the reason for their different levels of anxiety. They were asked to take part in semi-structured interviewing about their experiences. Nine of these interviews took place as by this stage the data had reached saturation, that is, no significant or pertinent new information was forthcoming from the participants.

## **Methodology and Methods**

This study comprises both a descriptive survey which incorporates interpretive components along with co-relational investigations and nine individual case studies. Two of these case studies are presented in depth in the following chapter for the purpose of illustration. The results of the survey and of the case studies were combined to give a more complete view of the phenomenon.

The survey focused on prevalence and levels of dental anxiety and attributions for anxiety. Related data were gathered using a questionnaire that comprised various types of items including scales, multi-choice and short answer questions.

The case studies present the relevant survey data combined with participants' perspectives on their experiences and the meanings inherent in these. A case study can be defined as a "systematic enquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest" (Bromley, 1990). The phenomenon of interest in this study is dental anxiety and the aim in conducting the case studies was to gain a deep understanding of the unique features of each individual's anxiety and the influential factors involved in its development so that a more complete picture of dental anxiety could be built. Case studies are bounded ethical enquiries (Coleman & Briggs, 2002). In this instance there are boundaries of time, and of age and experience of participants. Stake (1995) recognises that there are many types of case study and the most relevant to this investigation are the intrinsic and collective types. Intrinsic studies are intended to provide understanding of a case, and collective studies incorporate a number of cases to broaden the outlook. It is acknowledged that generalisability from case study research is problematic as each individual and their context is unique. However, therein lies the value of case studies since it is this depth of information that allows the researcher to grasp the complexity and variability of phenomena. Flyvbjerg (2006) claims that a "discipline without a large number of thoroughly executed case studies is a discipline without systematic production of exemplars, and a discipline without exemplars is an ineffective one" (p. 219). There are few other studies of dental anxiety that have used case studies as a method of enquiry except in anecdotal fashion and so the current study is quite unusual and is one of very few studies undertaken in the New Zealand context. Case studies are an essential part of learning since they are close to real-life situations and present the complexity of these in specific contexts. Eysenck (1976) said "sometimes we simply have to keep our eyes open and look carefully at individual cases - not in the hope of proving anything, but rather in the hope of learning something!" (p.9)

Each case study is of interest in its own right due to its authenticity, and the descriptive, narrative nature of the cases makes the content easy for readers to relate to. Multiple case studies assist the building of a cumulative and more generalisable outcome (Opie,

2004; Schram, 2006). In this study, consistencies and trends across the case studies were identified.

## **Data Gathering and Analysis Methods**

There were two phases to the research process. For phase one, the method of data gathering was a questionnaire, and semi-structured interviews were conducted in phase two.

### **Questionnaire**

The questionnaire sent to staff of the AUT Applied Humanities Faculty was designed to build a picture of the population being studied and the features of dental anxiety in this population but also to assist in the identification of suitable interview participants. The questionnaire (see Appendix A) included four sections:

- a) Background information concerning age, gender, ethnicity, dental treatment history, standard of oral health and attitudes to dental treatment.
- b) The modified-Corah Dental Anxiety Scale (modified-DAS) questionnaire. This scale is used to assess the prevalence and level of dental anxiety in different contexts. The scale, developed in 1969 (Corah, 1969), is the most widely utilised measure of dental anxiety, so there is a wealth of comparative data available (Newton & Buck, 2000). The most recent, modified version of the scale was used in this project (Humphris, Morrison, & Lindsay, 1995). The modified DAS has been shown to have high levels of internal consistency, validity and test-retest reliability (Newton & Buck, 2000; Haugejorden & Klock, 2000; Humphris, Freeman, Campbell, Tuutti, & D'Souza, 2000). This scale consists of five questions about dental visits, and participants are asked to rank their anxiety levels associated with each of these using a five point Likert scale.
- c) An item was included that asked respondents to identify their overall level of dental anxiety. The self assessment of anxiety scale asked participants to place themselves on a measure which had high anxiety at one end and low anxiety at the other with a division placed half way along the scale. The measure was 70 mm long and was interpreted as having four zones. Those who placed

themselves below 17.5mm were said to have low anxiety, those between 17.5mm and 35mm to have moderate anxiety, those between 35mm and 52.5mm to have moderately high anxiety, and those between 52.5mm and 70mm to have high anxiety.

- d) Respondents were asked to identify and briefly note explanations for their overall level of dental anxiety.

Members of staff of the Applied Humanities Faculty at AUT University were invited to take part in the dental anxiety survey. A flyer was sent to all staff one week before the questionnaire was sent via the internal mail. The questionnaire consisted of 12 multi-choice questions, one scale measure and three short answer questions, and staff aged over 20 years were asked to respond. Of the 282 questionnaires sent out to eligible participants (i.e. those over 20 years of age) 101 were returned giving a response rate of 36%. The questionnaire was sent to both the academic and allied staff of the Faculty via the internal mail in two waves two weeks apart. Seventy-two were returned after the first wave, a further 28 were returned after the second wave and one was returned late and was not included in the data processing.

The response rate to this questionnaire was disappointing despite sending a flyer a week beforehand to advertise the fact a questionnaire would be circulated. Admittedly the flyer was in black and white, and studies have shown that coloured ink provokes a better response rate. The number of questions and the method of response were carefully thought out so that the most information could be gained while keeping the questionnaire relatively short in order that participants would not be daunted by the task. Studies show that response rates to postal surveys commonly vary between 20 and 50% often depending on the wording and length of the survey and whether incentives are included, which they were not in this particular case (Harrison & Cock, 2004; Edwards et al., 2002; Charnwood, 2010). Postal surveys are attractive because they are low cost and easy to administer.

Bryman (2004) states that samples that are not subject to the probability sampling method of random selection, that is, where a convenience sample is used as in this research, the response rate is not such an important issue because the population would not be representative even if the whole of the selected population responded.

The data obtained from the questionnaire were primarily quantitative. These quantitative data were analysed using descriptive statistical and co-relational methods, undertaken to determine possible relationships between the level of anxiety and 'background' factors and explanations. Non-parametric tests were the most appropriate for the correlational analysis of the quantitative questionnaire data since the data were not normally distributed. Mann-Whitney tests were used to compare two data sets and Kruskal-Wallis to compare more than two. Data were processed via the computer programme SPSS.

Analysis of the data showed indicative trends mainly although some statistically significant results have been found. Since the sample was relatively small and not representative of the population at large, care must be taken with the extrapolation of results. Despite the limitations of the population studied, many of the findings are supported by the literature. A broader base line survey would be beneficial to investigate further some of the trends identified. It will be possible to compare results with the latest New Zealand Oral Health Survey which included dental anxiety as one of the parameters studied. The results of this survey will be available in December 2010 from the Ministry of Health.

Several open-ended questions were also incorporated in the questionnaire to provide qualitative data that could be compared with results from the interviews to achieve triangulation of the data. The questions were:

|  |
|--|
| What aspect of dental treatment makes you most anxious?<br>What negative responses do you have to dental treatment?<br>What explanations come to mind for your typical level of anxiety in relation to dental treatment? |
|--|

The answers to the open-ended questions were interpreted by classifying responses into broad categories, initially specifically looking for themes involving anxiety but also considering all other matters raised by respondents. Further grouping and quantification of responses followed.

### **Semi-structured Interviews**

Semi-structured interviewing uses a set of key questions or themes which are followed in an open-ended manner allowing the researcher to probe deeply and gain insight.

Mutch defines a semi-structured interview as one where “a set of guiding questions are used but where the interview is open to changes along the way” (2005, p. 225). The participants selected for interviewing were those who had spontaneously identified school dental clinic or childhood experiences in their questionnaire as explanations for their level of anxiety and who attended the school dental service in New Zealand. A question guide was used which included questions that requested elaboration of participants’ references to early experiences, that elicited their familiarity with the murder house stories, and that were concerned with the meanings associated with references to the murder house. Any connection between these references, associated meanings and response to dental treatment was investigated. The researcher was able to establish instant rapport with the participants since the university is a shared work environment giving some ability to relate to the other’s circumstances. However, since the researcher and the participants work in different faculties the relationship was not as close as to be threatening in any way. The question guide was used to start conversations and once these were flowing the participants were allowed to express their views freely with encouragement but minimal input from the interviewer. Once the participant had finished a line of thought the interviewer attempted to re-iterate a summary of the participant’s dialogue for verification of understanding. The question guide was then consulted to ensure that by the end of the allotted interview time all questions had been considered. The natural flow of the interview was interfered with as little as possible but from time to time the interviewer shared personal views or background information so that a mutual understanding could be built. It was made clear to participants that there were no “right answers” and what was required was for them to tell their stories or to “paint a verbal picture”. The researcher acknowledged that having treated many anxious patients in the dental setting and having an interest in and some aptitude for this made her aware of many of the pertinent issues and that no offence would be taken if the participant felt they had derogatory remarks to make about dental professionals.



Indicative questions for interview:

1. How do you anticipate dental treatment-what goes through your mind?
2. How dentally anxious are you now- improved or got worse over time? Reasons for instability?
3. What do you believe is behind your anxiety?
4. Tell me about your experience of the school dental service.
5. Tell me about stories you have heard about other people's experiences? Who did you first hear these from?
6. How accurate do you think these stories are?
7. How familiar are you with the murder house term? What is behind it?
8. Do you ever use the term?
9. Does continued reference to the murder house affect you? How?

Each of the nine participants was interviewed for up to 45 minutes. This number of participants was decided upon because sufficient data must be collected so that interpretations that are trustworthy can be made but not so much that the amount of data cannot be analysed adequately in the time available for the project. The researcher decided to stop interviewing participants once saturation of data was achieved and so nine rather than 10 interviews were conducted. The qualitative data thus collected were subject to ongoing inductive analysis so that themes could be identified and tentative analytical statements could be reviewed by further investigation. Through this iterative process a deeper, more meaningful and trustworthy analysis of the data was made (Bryman, 2004). Interviews were audio-taped and the material was transcribed before coding and analysis were carried out. The transcribed data were sent to the participants for verification and then it was coded, combined and analysed thematically.

Thematic analysis allows the researcher to identify, analyse and report on patterns that arise from the data. Data were minimally organised, described richly and various important aspects of the research topic reported. The approach taken to analysis of this data set was inductive, where themes were allowed to emerge from the data as it was processed, that is, there was no preconceived coding frame used. The data were organised into various broad topic areas and interpretation followed in an attempt to identify underlying meanings and significance.

Thematic analysis is “a method that works both to reflect reality and to unpick or unravel the surface of ‘reality’” (Braun & Clarke, 2006, p. 81). Strategies used to

generate meanings were based on those outlined by Zucker (2001) in her case study research within the nursing field and included: noting patterns; clustering; making comparisons; noting relationships; creating a coherent chain of evidence; and building logical theory and concepts. Further strategies employed here included summarising transcripts and inserting comments to mark important concepts, the highlighting of relevant text, and the construction of mind maps and diagrams. Once a master diagram was formed individual cases were again consulted and their data highlighted within the diagram to ensure that no data had been overlooked so that a complete and accurate diagram resulted. The diagram that acted as a summary of the interview data was supplemented by another diagram illustrating the superimposition of patterns derived from theories. These diagrams were sent to participants for their opinions about accuracy and usefulness from their perspectives, and their feedback was used to finalise the diagrams.

The two methods of investigation used and the resulting qualitative and quantitative data sets have built on each other to give a more complete picture of these cases than would have been possible using only one of these approaches. The questionnaire was also useful for the identification of possible interview participants. It has allowed the recognition of trends and the association of influential factors in the population as well as giving some idea of reasons for anxiety, while the interviews have allowed in-depth stories to be heard and meanings to be found.

Results from the questionnaire and the case studies were combined to create a diagrammatic framework which was then discussed in relation to theories and relevant literature and which will contribute to the education of anxious individuals and practitioners in the future.

The study protocol took the following form (based on Zucker, 2001):

Purpose and rationale for study:

- Review of literature
- Significance of dental anxiety- how is it learned?
- Research questions defined

Design of study based on purpose of research:

- Survey and case study methodology

Data collection and management:

- Questionnaire designed and implemented
- Data processed via SPSS and thematic analysis followed by quantification of responses to open ended questions
- Case study participants selected using questionnaire responses as a guide
- Case study interviews (45 minutes each) carried out with nine participants using outline of interview questions as a guide
- Transcription of interview data
- Participant checking of transcripts
- Writing up of cases with questionnaire data added
- Identification of themes and influences within the case studies.
- Diagrams constructed for each study
- Comparison and summary of case studies with grouping of data and highlighting of themes
- Mind-mapping and final diagram creation
- Participant checking of final diagrams
- Feedback used to enhance accuracy of final diagrams

Discussion based on findings from questionnaire, case studies, diagrammatic framework and relevant literature related to research questions and purpose

Conclusions drawn

## **Research Quality Criteria - Trustworthiness**

In order to establish that this research is worthy to be accepted by the research community as a contribution to the body of knowledge, trustworthiness needs to be established.

The building of credibility, which Merriam (1998) defines as the congruence of findings with reality, began with the use of the appropriate and well established research methodologies of survey and case study. By combining these, it was possible to benefit from the breadth of knowledge obtained from the survey and the depth obtained from case studies, giving a thorough understanding of the phenomenon and its context. The establishment of context is achieved through the creation of clear boundaries. In this case the dental anxiety level, previous experience of the New Zealand school dental service, and the number and age of participants was specified, and the time frame for data collection decided.

The triangulation of the questionnaire and interview results helped to further establish trustworthiness and credibility of the data and interpretations. The researcher was able to draw meaningful and accurate conclusions because of the “consequential validity” (Creswell, 2004) established through the combination of these methods and results which created comprehensiveness through compilation and corroboration (Mays & Pope, 2000). Credibility was increased by the length of the interviews, being 45 minutes each, which allowed sufficient engagement with the participants and also through the verification of the transcripts and summary diagrams by the participants.

The researcher was reflexive and continued to consider the design and implementation of the project as well as recognising and providing reasons for confounding findings to maintain credibility (Mays & Pope, 2000). Case studies are often criticised as having the potential to verify a researcher’s preconceived notions about a phenomenon, but it appears that the opposite often occurs and through the close scrutiny that case studies require preconceived notions are disproved (Flyvbjerg, 2006).

Case study research is not generalisable in the positivist/quantitative research sense because of its lack of statistical significance which is linked to the population size and purposive sampling method. However, the results may be transferable to another similar setting and so the researcher must ensure that a full explanation of the context and

research process is given so that the reader can decide whether the research is relevant to their own situation and is rigorous enough to allow transferability. Yin (1984) suggests the use of a negative case to act as a “control” and to set the limits of the enquiry. In the current research Case Study 5 (CS5) has low anxiety and so is a contrast to the other individuals who have moderate to high anxiety levels. A range of participants is useful to build a rich picture of the phenomenon, and in this study participants had different levels of anxiety and differences in their backgrounds and experience of anxiety across their lifespan. This is one of the advantages of a collective case study where there are “multiple voices exhibiting characteristics of similarity, dissimilarity, redundancy and variety” (Shenton, 2004, p. 65).

In contrast to the above efforts to establish transferability, Flyvbjerg (2006) proposes that it is not necessary: “that knowledge cannot be formally generalised does not mean that it cannot enter into the collective process of knowledge accumulation in a given field or society...formal generalisation is overvalued as a source of scientific development, whereas “the force of the example” is underestimated” (p. 227-8). By eliciting these case studies an important contribution can be made to the body of knowledge about dental anxiety through their explicit and complete nature.

Transferability and credibility are increased through “sufficient thick description” being included in the writing up of the project (Shenton, 2004, p. 70). The reader can assess authenticity and the process of this research through the inclusion of the questionnaire and an example of a transcript in Appendices A and B respectively; the examples of written case studies in the Findings chapter along with the comparison of the case studies and the diagrams that resulted from this. All of this is then related to the existing literature in the Discussion chapter.

An account of the research process, data collection and analysis has been given in this chapter in a systematic approach to ensuring credibility and confirmability. However, it may not be possible to repeat this study and find exactly the same results as it appears that people’s dental anxiety is variable and changes to their circumstances may affect the results. Personal biases were disclosed in the Introduction chapter and were recognised and reflected upon by the researcher throughout the research process. To aid in this reflection regular meetings were held with the research supervisor so that

discussions which encouraged a wider vision and allowed the testing of ideas and interpretations could take place.

It could be said that the research should have presented the views of practitioners as well to ensure “fair-dealing”. This would require far more time than was available but could be considered for a more extensive study.

## **Ethics Considerations**

This research project required ethical approval from the AUT Ethics Committee. Approval of research proposals by such committees is necessary since researchers find themselves in a position of power and must show respect, consideration and fairness to research participants (Wellington, 2000). There were privacy and confidentiality considerations, time considerations and also the possibility of participants experiencing discomfort from thinking and talking about personal anxieties.

All participants were fully informed of the reasons for undertaking this project and of the research process, both verbally and through a participant information sheet. Participation was voluntary and precautions were taken to ensure anonymity including the use of changed names and no use of identifiable features in any presentations or publications about the project. The questionnaire included a tick box that the participant used to indicate their willingness to take part in an interview should they be invited. Those willing participants who were chosen were then contacted by email about the possibility of taking part in an interview. If they accepted they were then telephoned to make a suitable appointment. At the outset of the interview the participant information sheet was reiterated verbally and the participant was asked to sign the consent form if they were happy to progress. They were informed that they could withdraw at any time during the research process if they wished. This ability to withdraw and to be able to check transcripts encouraged the participants to answer questions honestly and openly.

The participants had access to the transcriptions of their interviews to check that data were correct before analysis. If the participants indicated that they would like to see a copy of the final report this was made available to them.

Participants’ privacy was protected and no questions beyond the scope of the research project were asked. Data collected from the participants remain confidential to the researcher, stored securely in a locked cabinet.

The questionnaire was short with only 16 multi-choice or short answer questions and interviews were limited to 45 minutes in recognition of the fact that AUT University staff have heavy work commitments.

All attempts were made by the researcher to be sensitive to the feelings of the participants and they were informed that free counselling services are available at AUT University if required. Only one of the participants was clearly upset. She found that talking about her experiences provoked a tearful response but she did not require any assistance other than understanding and compassion.

The current study is relevant considering the consistently high levels of dental anxiety observed in communities in New Zealand and around the world and in light of the constant negative media exposure dentistry receives (Cartwright, 2010). There is sufficient detail of method and findings for the reader to judge the trustworthiness of the conclusions and whether this research makes a useful contribution.

## **Chapter 4: Findings**

The following chapter presents the findings of this research project which was carried out in an attempt to answer the research questions:

- What is the prevalence and level of dental anxiety within the target population and to what do people attribute their anxiety?
- What are the murder house stories, how often do they arise and what effect do they have?

Firstly, the results of the questionnaire are presented, followed by two examples of the nine case studies carried out. These case studies are a preliminary analysis of the transcriptions of the semi-structured interviews combined with the relevant questionnaire data. Finally, a thematic analysis of the combined case study data with summary diagrams is presented.

### **Questionnaire Results**

A questionnaire consisting of 12 multi-choice questions, one scale measure and three short answer questions was sent to the staff of the Applied Humanities Faculty at AUT University and staff aged over 20 years were asked to respond. Of the 282 questionnaires sent out 101 were returned giving a response rate of 36%. One of these questionnaires was returned late and so was not included in the processing of all of the results.

Data associated with the questions were collected under the following headings:

- Background information on age, gender, ethnicity, and current dental status
- Level, prevalence and effects of anxiety
- Anxiety attributions and explanations for the level of anxiety experienced with dental treatment.



## Background Information

Table 1 shows the characteristics of the population studied. The participants in this survey were over-representative of females, Europeans and older people and were fairly typical of a university faculty in New Zealand.

**Table 1** Population characteristics

|                  | Study subjects (n = 100) |
|------------------|--------------------------|
| <b>Age</b>       |                          |
| 20-35 years      | 13%                      |
| 36-50 years      | 36%                      |
| 51 years or over | 51%                      |
| <b>Gender</b>    |                          |
| Male             | 33%                      |
| Female           | 67%                      |
| <b>Ethnicity</b> |                          |
| European         | 78%                      |
| Maori            | 3%                       |
| Asian            | 13%                      |
| Other            | 6%                       |

## Current Dental Status

Table 2 summarises the data related to participants' self reported dental status. Over half of the respondents visited the dentist because they had a specific problem they wished to address and only 44% felt that they had good dental health. 38% had not visited the dentist in the last year.

**Table 2** Dental status

|  | Study subjects (n = 100) |
|--|--------------------------|
| <b>Last visit to the dentist</b>       |                          |
| Less than 1 year                       | 62                       |
| Between 1 and 5 years                  | 31                       |
| Over 6 years ago                       | 7                        |
| <b>Reason for last visit</b>           |                          |
| General check                          | 49                       |
| Specific problem                       | 51                       |
| <b>How good is your dental health?</b> |                          |
| Good                                   | 44                       |
| Moderate                               | 46                       |
| Poor                                   | 6                        |
| Unsure                                 | 4                        |

### Anxiety Levels and Prevalence

The modified DAS suggests a cut-off score of 19 (possible scores range from 5-25) or above for those who are extremely dentally anxious or possibly phobic. In the current study 12% of participants were at this level while 89% showed some anxiety.

The self assessment of anxiety scale showed 36% of participants fell at or above the midpoint into the moderate to high anxiety zone with 16% in the high anxiety zone (above 52.5mm).

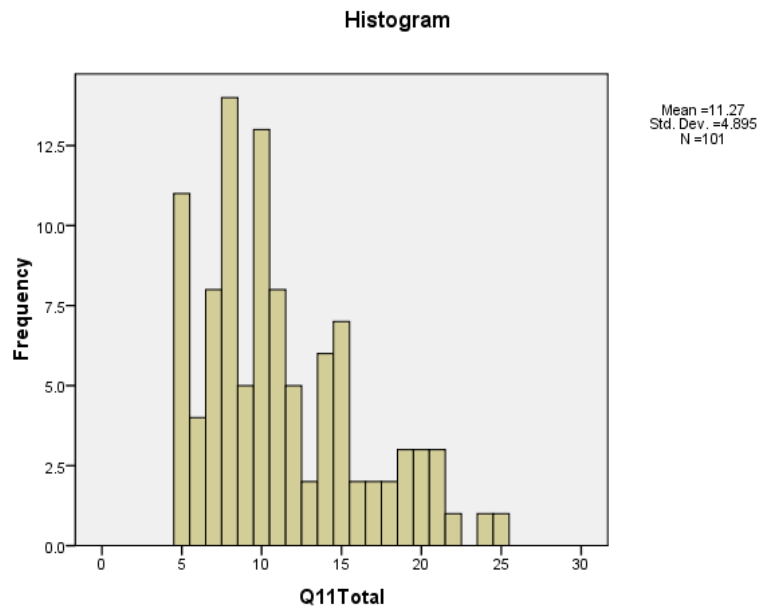
In this study there was a strong correlation (Pearson's  $r = 0.903$ ) between the results of the modified DAS scale and the self assessment of anxiety question.

Figure 3 below shows the modified DAS scale score denoted as Q11Total on the horizontal axis and the frequency of response on the vertical axis. The mean anxiety score was 11.25 (standard deviation= 4.895)<sup>1</sup>.

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<sup>1</sup> All 101 questionnaires were included in the data for the processing of this result.

**Figure 3** Distribution of anxiety levels in the study population.



### Anxiety Effects

Participants were asked to write down what negative responses they had to dental treatment. Fifty expressed feelings of anxiety and fear with comments about their reluctance to go to the dentist including avoidance, feelings of discomfort, exhaustion, being trapped or manhandled. They mentioned signs of stress such as an increased pulse rate, heart palpitations, fainting, dizziness, nausea, sweating, crying and tension; feelings of terror, tension or frustration; the stirring of bad memories and having a bad rapport with the dentist. Twenty-five had no negative responses to treatment and 10 mentioned cost as a negative response and, although this is a misinterpretation of the question, it highlights people's overwhelming concern with this issue. Fifteen participants did not answer this question and of these one wrote that they did not understand the question indicating the need for re-wording if this questionnaire was to be used again.

## Anxiety Attributions

When asked to identify the most deterrent factors with respect to dental visits the results show that most are deterred by cost (62%) followed by fear (11%) and accessibility (2%).

Some participants specified other deterrents including some combinations of factors so that 8% combined fear or pain with another factor such as cost, 9% were not deterred, and 7% cited time, organisation or motivation as deterring factors meaning that overall 19% stated fear as a deterrent factor whether in combination with another factor or by itself. One participant did not respond to this question.

Participants were asked to write down the aspects of dental treatment that make them most anxious. The responses are summarised in Table 3.

**Table 3** Anxiety attributions

| <b>Anxiety promoting factor</b>                     | <b>Number of participants<br/>n=100</b> |
|---|---|
| Cost  | 22.5                                    |
| Pain/fear   | 19.5                                    |
| Drill (including noise)/fillings                    | 16.5                                    |
| None  | 11                                      |
| Injections  | 11                                      |
| Lack of control/vulnerability/lack of trust         | 7.5                                     |
| Long procedures, extensive (more serious) treatment | 4                                       |
| Tooth loss  | 4                                       |
| Scale/polish  | 2                                       |
| Everything  | 2                                       |

Using the responses from the modified DAS scale events associated with dental visits can be ranked according to the amount of anxiety provoked for numbers of participants. To simplify the results the “not anxious” and “slightly anxious” results have been added together as have the “fairly anxious”, “very anxious” and “extremely anxious” results.

Table 4 shows the ranking of anxiety provoking events. Drilling was the most anxiety provoking event but somewhat surprisingly scaling and polishing was less confronting than waiting for or anticipating treatment.

**Table 4** Anxiety provoking events

| <b>Event/ Anxiety about:</b> | Number of participants with low anxiety | Number of participants with moderate to high anxiety |
|------------------------------|---|--|
| scaling and polishing        | 79                                      | 21   |
| treatment tomorrow           | 74                                      | 26   |
| waiting room                 | 73                                      | 27   |
| injection                    | 55                                      | 45   |
| tooth drilling               | 50                                      | 50   |

### **Experience of School Dental Service**

It can be seen in Table 5 that many more respondents had negative (34%) as compared to positive (24%) experiences with the school dental service, and the largest proportion of respondents in this study (40%) did not attend the service. This reflects the large number of university employees who did not grow up in New Zealand and perhaps a few respondents who chose not to attend but to go to a dentist privately instead. Table 5 shows respondents rating of their experience of school dental service treatment.

**Table 5** School dental service experience

| <b>Experience of school dental service</b> | Study subjects (n=100) |
|--|------------------------|
| Always positive                            | 10                     |
| More positive than negative                | 14                     |
| More negative than positive                | 17                     |
| Always negative                            | 17                     |
| Did not attend                             | 40                     |
| No response                                | 2                      |

## **Explanations for Anxiety Levels**

Participants were asked to write a short explanation for their level of anxiety. If they mentioned more than one factor they were placed in more than one category.

Twenty- nine participants cited past (22 identifying childhood/dental nurse) experience as a reason for their anxiety today and three mentioned the murder house phrase specifically.

Forty-nine participants mentioned pain or the fear of pain as a reason for their anxiety and of these 12 combined both pain and past experience as their explanation.

Other issues that emerged from these written explanations were:

- Cost as a reason for anxiety: 9 (three also mention pain)
- Lack of trust in the dentist - their expertise, the “hard sell approach”, not enough explanation of the treatment plan, not listening to what the patient says: 4 (one also mentions pain)
- Intrusion/invasion of space (equipment in the mouth): 4
- Loss of teeth: 2
- No explanation (either not anxious or not sure why they are): 12
- Good/competent dentist (alleviates anxiety): 6

## **Correlations**

When correlational analysis was carried out to ascertain relationships between data sets the following findings emerged:

A Mann-Whitney test showed females were more anxious than males ( $p=0.007$ ).

Those with good dental health were significantly less anxious than those with moderate or poor dental health ( $p=0.02$ ).

It appears that those who had positive experiences with the school dental service (i.e. always positive or more positive than negative) were more likely to assess themselves as having good oral health, whereas those who had negative experiences (i.e. always negative or more negative than positive) were more likely to assess themselves as

having moderate or poor dental health. However, although this appeared to be a trend it was not a statistically significant result and so must be treated with caution.

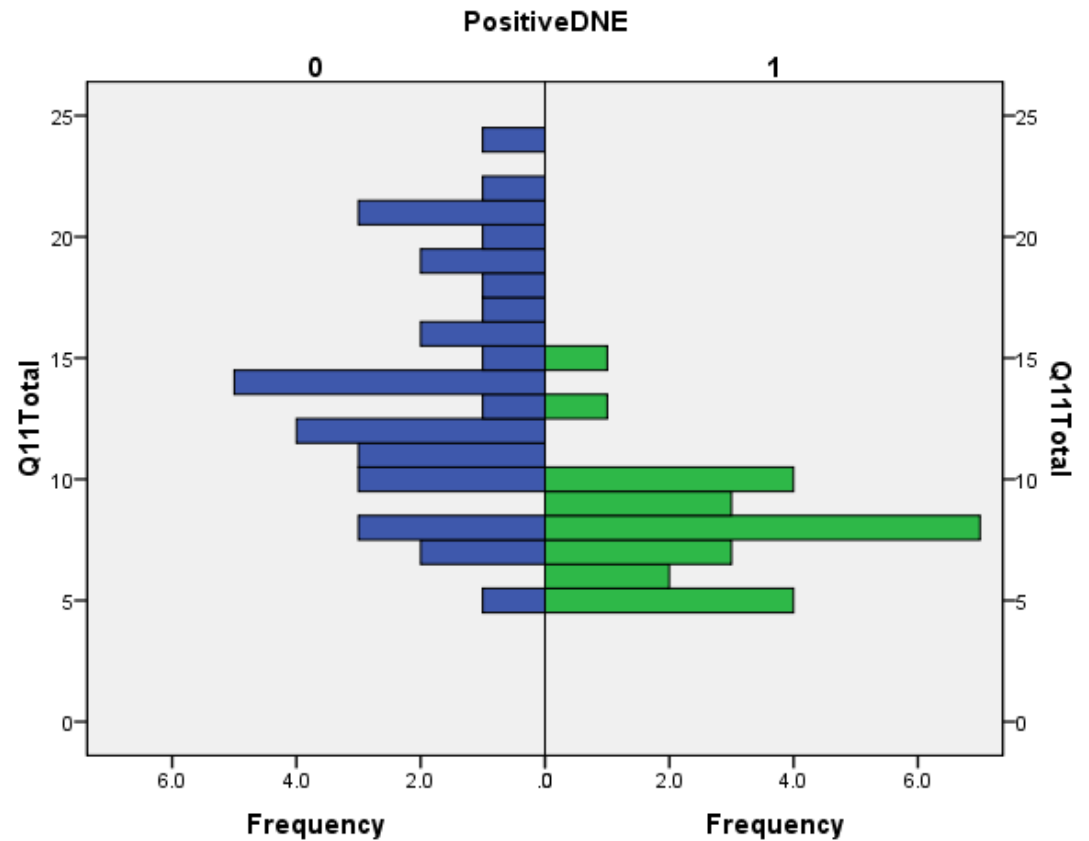
The association between age groups and anxiety was examined but there were no significant differences found. Application of the Kruskal-Wallis test found an indicative trend where the most anxious age group was the 36-50 year olds with the older age group less anxious than the youngest ( $p = 0.124$ ).

Ethnicity was not related significantly to anxiety but the number of European participants was very high while other ethnicities were poorly represented, so no conclusions can be drawn from this result.

There was no significant difference in the overall anxiety levels between those who attended the school dental service and those who did not, but the indicative trend showed that respondents who attended the school dental service were more anxious than those who did not.

Although the date of the last dental visit and the reason for the visit did not show any significant relationship to anxiety levels there was a significant relationship between dental nurse experience and levels of anxiety so that those who had negative experience were much more likely to be highly anxious ( $p < 0.001$ ).

Figure 4 shows positive dental nurse experience in green and negative in blue. The modified DAS score is denoted as Q11Total. It appears from the data that participants with positive experience of the school dental service are very unlikely to be anxious as adults whereas, of those with negative experience, the majority harbour some anxiety.



**Figure 4** Anxiety related to positive and negative experience.

## Murder House Stories and Their Effects

In order to answer this research question, nine semi-structured interviews of up to 45 minutes were conducted with participants who had experience of the school dental clinic as children. An original transcript (with names removed) can be found in Appendix B.

The following two case studies illustrate the initial summary of the data obtained from transcription of the interviews combined with the questionnaire data pertinent to each case. These case studies have highlighted sections of interpretative commentary and data to which particular emerging themes were assigned.



## **Case Study 1 (CS1)**

CS1 is a female in her mid-forties who had experience of the school dental service in the 1970s. She grew up in rural New Zealand, is of Maori ethnicity and lived with her grandparents as a child.

CS1 suffers with extremely high levels of anxiety scoring 24 out of the maximum 25 points on the modified DAS scale and 68 out of a possible 70 on the self assessment of anxiety. CS1 last visited the dentist more than one year but less than 5 years ago for a specific problem and rates herself as having poor oral health. CS1 had school dental clinic experiences that were always negative and is deterred from visiting the dentist today by fear associated with everything to do with the dentist. CS1 attributes her anxiety to her early experiences with the school dental service.

### **Anxiety Now/Reactions to Dental Treatment Today**

CS1 experiences difficulty to this day with making dental appointments. She suffers from nervous anticipation. It takes an inordinate amount of courage and some prompting (for example a painful tooth) for her to make an appointment.

She is an irregular attendee at the dental surgery but feels that it is important to keep her teeth. As a result of this she feels a burden of guilt for not attending more regularly. It is a conundrum. She says “ I did think to myself, go regularly because then it won’t be so bad when you go but even going regularly, and knowing that you may not need any treatment still makes me anxious”.

CS1 sees her anxiety as a serious problem and she has gone to some lengths to combat it. She has tried different dentists (men and women), sedation and even hypnosis. She has not found a solution so far.

CS1 feels physically sick/awful when she takes her own children to the school dental clinic. She has only been able to do it a couple of times and then has asked her husband to go instead. The smell of the clinic is a trigger that can set off feelings of anxiety.

### **Development of/Changes in Anxiety over Time**

CS1 feels her anxiety stemmed from her early childhood experiences from about 5 years of age. One of the major factors that impacted on CS1 was the fact that she lived in a small rural community and had to travel a seemingly long distance to receive dental

treatment. She refers to going to town as a “trek”, an “epic”, “we hardly ever went into town”, “we basically stayed in our little community”. So travelling to town (although it was only 20 minutes drive away - “it could have been 20 hours for us”) took them out of their comfort zone. CS1 is sure that going to the school dental clinic was a fearful experience for all the children from this small community (60-70 children at the school). There was a fear of the unknown, a fear of something new, and a fear of pain.

The destination on arrival in town was not welcoming. It was a foreign sterile environment after a long journey. CS1 has “vivid memories of the dental nurses”. She describes them as impatient, uncaring, showing no understanding of anxieties and cold. CS1 remembers the visits as being painful and she remembers crying a lot [Murder house theme (a)].<sup>2</sup>

CS1 recalls that these visits were “traumatic for my grandparents too...to see me going through all that” and eventually “my grandfather refused to take me anymore because it was so upsetting for me” [Influence (c)]<sup>3</sup>. He would say “if you don’t want to go, you don’t have to go”. She believes it was common practice in this small rural community to withdraw from an activity that caused distress to the child. Other factors also had some effect such as a lack of knowledge about dental care, lack of knowledge about dietary recommendations and meagre financial resources which meant a long car journey was an expensive burden. “We were all poor. We didn’t have a lot of money for stuff” [Influence theme (d)].

CS1 believes it was the same for other children at the school she attended. “Nobody liked the dentist”. A lot of the children were brought up by their grandparents who “all wore dentures” and who placed little value on teeth. The pervading attitude was “you don’t need a dentist – just get dentures”. They were “oblivious to the importance of it” [Influence theme (c)].

CS1 believes her anxiety reached a peak at high school. She remembers her grandparents using all sorts of tactics to get her to attend the dental clinic when she was

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<sup>2</sup> This section of text relates to one of the emerging themes relating to murder house stories

<sup>3</sup> This section of text relates to one of the emerging themes relating to influences on dental anxiety

a child and as a child doing what she was told. As an adolescent CS1 recalls the ability to “manipulate things so that you don’t really have to do what you should do”; the really worrying thing was being aware that treatment was needed and still being afraid. CS1 also remembers being concerned about cost (although the treatment was free she remembers going to an “expensive” dentist) and feeling that they really couldn’t afford it.

There were some things about the dentist she visited as an adolescent that CS1 particularly appreciated. The dentist used an office for the initial consultation. This was infinitely more acceptable than going straight to the surgery area:

I remember thinking this is great. You don’t have to sit in the chair getting more and more anxious as you’re talking to the dental nurse and him outlining a treatment plan but it was all very civilised... I noticed my grandmother felt comfortable as well so that scenario for me felt much better [Influence theme (c)].

CS1 feels her anxiety has improved a little as an adult:

I am still anxious. If there was anything else I could do I would do it. I’ve got to go through that whole mental ring up and go and talk and sit in that God forsaken chair. Why can’t they just sit you in a normal chair?

## **Murder House Stories**

See highlighted comment:

Murder house theme (a) Sterile, cold clinic/nurse

CS1 doesn’t think her children are familiar with the phrase but she knows it well. She would be pleased if the phrase was not used any more because it conjures up a bad image, one that should not be maintained for coming generations as it can deter people from seeking treatment. CS1 says “...and once we realised our kids weren’t aware of it we stopped saying it, of course, because you don’t want them to think, why is it the murder house? Oh my God and get all anxious about it...”

CS1 remembers her peers, her parents, her aunties and uncles talking about the murder house and telling the same stories about their experiences [Influence theme (e)]. Dental nurses were always described as large women (maybe because patients were small children), European and older. The dental nurse was “like a strict matron”. Power differentials and sadism are referred to: “if you were a bit of an unhappy patient they

would do horrible things to you like drill longer than they needed to...they [CS1's peers/relatives] felt they were picked on".

CS1 remembers a cousin of hers who bit the dental nurse. She thought this happened often. The nurse gave him a growling and his grandparents said "Right, you're not coming back here anymore".

CS1 and her husband have discussed the "old drill" between them. CS1's husband talks of the nurse having to wind it or pump it and that sometimes it would not keep going and so the nurse would have to pump it while the drill was stuck in the tooth. CS1 recognises that technology has come a long way since then.

### **Changes/Contrasts Today**

CS1 has taken her own children to the dental clinic. She sees the need for them to receive dental care. She lives in the city with her husband and children. She finds it hard to go to the clinic and has only managed it a couple of times but recognises the differences in the environment and the attitude of the therapist [new name for nurse] in contrast to her own memories of the dental clinic/nurse. CS1 says she has worked really hard to ensure her children are not afraid of dental treatment:

I knew my own anxiety would be a part of that which is why I thought I can't be the one to keep taking them. I was constantly like a cat on a hot tin roof. I couldn't sit down, I couldn't look [Influence theme (a)].

She comments that the clinics are now fun and bright; child friendly and that the therapist's approach was "child focused" indicating a difference in the expectations of patients and the standards of care from the school service perspective. Both the treatment and the attitude of the clinician have changed.

CS1 also says that her and her husband's attitude to teeth is very different to that of the adults in the community in which she grew up. They understand the importance of dental care and wanted to make their children's visits to the school clinic as normal and regular as possible [Influence theme (a)]. CS1 finds the system of having the clinics on the school grounds works very well for her children because there is no debate about whether you are going to go or not. Children are not reliant on reluctant caregivers to get to the clinic, and avoidance is difficult to achieve. Because the clinic is on the school grounds it is part of the environment the children are already familiar with. It is part of

the school. This is a big advantage. The dental therapist takes part in school activities, meaning that she also is seen as part of the familiar school community. CS1 believes her children are still a little anxious but they go and they have good dental health [Influence theme (a)]

CS1 comments that her sisters still live in the small rural town which she grew up in. They tell her that although the “dental nurses [therapists] are nicer the kids are still fearful”. Cost is another problem if you are from a rural setting and have a low socio-economic status because although the treatment is free there is a cost attached to going into town and having to take time off work especially when you have 3 or 4 children. If the children are anxious as well the deterrent is greater still. “I just think for Maori kids it’s hard...it’s hard”. It can be especially hard if the parents are anxious also “quite possibly they’ve got parents who’ve had those [bad] experiences”.

CS1 comments “I wonder if that is part of the issue for Maori kids too, you know, they’ve got parents or grandparents who think, oh well, if you don’t want to go, you don’t have to go” [Influence theme (b)].

## **Influences**

See highlighted comments:

### **Influence**

- a) CS1 and her husband’s influence on their children
- b) CS1’s sisters’ children’s attitude - influenced by locality and/or community
- c) Grandparents’ influence on CS1
- d) Other factors - cost, socio-economic status, ethnicity, access, knowledge
- e) Influence of peers and other family members

## **Case study 2 (CS2)**

CS2 is a European female over 51 years of age who grew up in an urban area of New Zealand. She attended the school dental clinic in the 1950s and 60s. As an adult today she suffers with moderately high dental anxiety. CS2 scored 18 on the modified DAS scale and 50 on the self-assessment scale. She is a regular attendee at the dental surgery and she rates her oral health as moderate. She always had negative experiences at the

school dental clinic and today the most deterrent factors are cost and fear. She thinks pain, having lots of fillings, the local anaesthetic not working and the dentist not believing her are the reasons behind her dental anxiety.

### **Anxiety Now/Reactions to Dental Treatment Today**

CS2 has a dentist she trusts because this dentist knows what works for her. If there is a locum dentist for any reason CS2 experiences high levels of anxiety. She feels disheartened because she knows she will have to go through the process of explaining her problem again and hoping the new person will heed her caution.

CS2 visits the dentist and the hygienist regularly now (approx 6 monthly).

### **Development of/Changes in Anxiety over Time**

CS2 had problems in the past with **dental anaesthetic not working** [Influence theme (a)]. When a particular dentist discovered why this was the case and addressed the problem this really helped CS2 cope with treatment. Before that she felt frustrated and helpless because practitioners didn't believe her when she said it was painful. CS2 felt that they saw her as hysterical as she would jump and react to the drilling.

CS2 has experienced dental anxiety which she finds diminishing with each treatment as her trust in her practitioner grows. CS2 found this dentist about 15 years ago

Her high levels of anxiety began from about 8-10 years of age. A change of city meant that she was left off the treatment list and so when she was finally seen there was **a lot of work to do** [Influence theme (b)]. "I had to have pretty well every tooth filled" including **"black fillings along the front which I have still got"** [Influence theme (c)].

Experience of hospital dental care has also added to CS2's anxiety because she felt embarrassed and humiliated at having to accept government funded treatment as an adult when this was not the norm:

I went through the hospital too when I was on the DPB [Domestic Purposes Benefit] for 15 years and that's always.... [sigh, intake of breath] I know that I was anxious about the pain but I was also anxious about the **humiliation that I felt went along with being a charity patient on the hospital** [Influence theme (d)].

CS2 had a lot of treatment as an adolescent. She remembers being cold and shivery and having to dress up specially in thick woolly stockings and an extra cardigan to try and minimise her shaking in the dental chair.

Stories told by peers about the murder house [Murder house theme (a)], the bus and the smell are common in CS2's experience but not until later on as CS2 kept to herself as a child. Her anxiety developed as a result of personal bad experiences

CS2's own parents had dentures [Influence theme (g)] and that was one of the reasons she tried to keep going for regular care. She remembers her mother aging overnight when she had all her teeth out (CS2 was 12 and her mother 32 at the time). Her mother continues to have lots of "dramas" about her false teeth - "they never seem quite right". CS2 feels that her mother wants to help her keep her teeth. She tried to make the school dental treatment work as well as possible and she paid for some dental work when CS2 was on the DPB. CS2 thinks her parents believed in the importance of keeping your teeth.

### **Murder House Stories**

See highlighted comment:

Murder House theme (a) common stories

CS2's memories as a very young child, about 4-5 years old, are a little blurry but she does remember the little butterflies and bumble bees the dental nurses made out of cotton rolls to give to patients.

CS2 also remembered having her name called in class and having to go on the bus to the clinic, which was one of the training clinics for dental nurses. Her name was called week after week in Standard 4 making her feel physically sick. Children had no power or control. There was no choice - "you had to go". She remembers the absolute relief when her name wasn't called.

Her memories of the school dental clinic include pain and "that horrible feeling of all those people with hands in your mouth" and "there's that smell, always that smell that made you feel very anxious". At each visit the operators were different so there was no relationship formed [Influence theme (e)]. This was a hindrance to relationship building.

The clinic was a whole room of chairs and the nurses wore red cardigans. There was one who did the work and one who checked it. There was no local anaesthetic used and CS2 remembers the treadle drill being used.

CS2 had to have a tooth removed and so attempts were made to contact her mother. However “they couldn’t get hold of her so they did it anyway”.

CS2 thinks the term murder house was used because of the screaming. She believes that people did scream but she was too frightened to do so herself even though she felt like it. You did as you were told since the dental nurse’s attitude was “make as little fuss as possible and don’t mess me about”. She believes there were consequences for bad behaviour such as a “slap around the leg”.

CS2 would use the phrase or expect to hear it used today if with a group of friends the topic of dentistry came up for discussion, although it doesn’t come up very often.

### **Changes/Contrasts Today**

Today informed consent is mandatory before treatment commences and so CS2 would not have had a tooth removed without her mother’s consent if that had happened in recent times.

CS2 found it hard to get her own children to attend the dentist as adolescents and as adults. However, they were annoyed when they realised that they had missed the free treatment opportunity for under 18 year olds. CS2 feels that her children do not suffer with anxiety to the same extent as she does but they don’t find the visits pleasant and the **cost is a problem** [Influence theme (f)]. Two of her children have very few problems with their teeth and go relatively regularly for check ups. **The other had lots of fillings by the time he was 5 and now only goes for relief of pain** [Influence theme (b)]. CS2’s ex- husband has false upper teeth and her son’s grandmother would warn her son to be careful about his teeth so that he didn’t end up like his father who has problems eating, but her son is sure it won’t happen to him.

### **Influences**

See highlighted comments:

Influence

(a) pain due to anaesthetic failure



- (b) large burden of disease
- (c) appearance issues
- (d) humiliation of hospital “charity” dentistry
- (e) different operators at training clinic - little opportunity to build a relationship
- (f) cost
- (g) fear of dentures

## **Comparison of Case Studies and Emergence of Themes**

Each of the nine case studies was summarised in this fashion and pertinent features were highlighted. The cases were then combined and contrasted. Specific themes that emerged from the data are now identified, illustrated and discussed in relation to the following topics:

### **Participant characteristics**

#### **Anxiety and Associated Reactions to Dental Treatment Today**

- Nervous anticipation
- Trust in practitioner
- Anxiety provoking factors
- Measures to combat anxiety

#### **Development of/Changes in Anxiety over Time**

- Development of anxiety in childhood
- Changes in anxiety in adolescence
- Anxiety levels as adults

#### **Influences on the Development of Anxiety**

- Pain
- Large burden of disease
- Family members and peers
- Cost

- Fear of tooth loss
- Stories/ Murder house phrase
- Admonishment causing humiliation
- Other factors

#### Murder House Stories

- The school dental clinic
- The school dental nurse
- Power differentials and control
- Clinic visits
- The dental drill
- The murder house
- Positive stories

#### Changes/Contrasts today

#### **Participant characteristics**

Table 6 summarises demographic data, level of anxiety, oral health attitudes and behaviour and school dental service experience for the interview participants.

| Participant characteristic        |                                     | Number of participants              |
|-----------------------------------|-------------------------------------|-------------------------------------|
| Gender                            | Male                                | CS3 CS5 CS8                         |
|                                   | Female                              | CS1 CS2 CS4 CS6 CS7 CS9             |
| Childhood locality                | Urban                               | CS3 CS2 CS6 CS7 CS8 CS9             |
|                                   | Rural                               | CS1 CS4 CS5                         |
| Dental anxiety level              | High                                | CS1 CS4 CS6 CS7                     |
|                                   | Mod                                 | CS3 CS2 CS8 CS9                     |
|                                   | Low                                 | CS5                                 |
| Decade visited SDS predominantly  | 1940s                               | CS3                                 |
|                                   | 1950s                               | CS2 CS5 CS8 CS9                     |
|                                   | 1960s                               | CS4                                 |
|                                   | 1970s                               | CS1 CS6 CS7                         |
| Ethnicity                         | Maori                               | CS1                                 |
|                                   | European                            | CS3 CS5 CS2 CS6 CS7 CS8 CS9 CS4     |
| Last dental visit                 | Less than 1 year                    | CS6 CS5 CS3 CS2                     |
|                                   | 1-5 years                           | CS9 CS7 CS5 CS3 CS4 CS1             |
|                                   | 6 years or more                     |                                     |
| Last visit for?                   | General check                       | CS8 CS6 CS2                         |
|                                   | Specific problem                    | CS9 CS7 CS5 CS3 CS4 CS1             |
| Oral Health                       | Good                                | CS7 CS6 CS5                         |
|                                   | Moderate                            | CS9 CS3 CS4 CS2                     |
|                                   | Poor                                | CS8 CS1                             |
| School dental service experience  | Positive                            |                                     |
|                                   | Negative                            | CS9 CS8 CS7 CS6 CS5 CS3 CS4 CS1 CS2 |
| Modified Dental Anxiety Scale     | Scale runs 5-25 (5=low and 25=high) | 12 11 21 20 5 12 21 24 18           |
| Self-assessment of anxiety scores | Scale runs 0-70 (0=low and 70=high) | 31 35 64 61 3 43 58 68 50           |

**Table 6** Participant characteristics

## Anxiety and Associated Reactions to Dental Treatment Today

While one member of the case study sample (CS5) reported low anxiety levels today the remaining members who had moderate to high anxiety reported varying anticipatory and actual reactions to treatment, identified a range of circumstances that could either precipitate or reduce their anxiety and mentioned measures that they or dental practitioners could take that would reduce their anxiety.

### *Nervous anticipation*

Four respondents referred to the ‘nervous anticipation’ of treatment which could deter them from making an appointment or result in the postponing of appointments unless there was extreme prompting such as toothache (CS1, CS4, CS6, and CS7). This is despite understanding the issues surrounding dental neglect and having a desire to keep their teeth. This combination of knowledge and inactivity leads to feelings of guilt for not attending more regularly (CS1, CS7). For example:

CS4 talks of making an appointment as the “ultimate procrastination”, the “hurdle”. She professed to prefer childbirth to visiting the dentist and said that “life gets in the way of making dental appointments”. CS9 said there was a “certain amount of dread” that went along with making a dental appointment. CS6 commented:

I try and block it from my mind but every time I think about the fact that I have to go to the dentist I get anxious and when I'm driving to the dentist I'm anxious and sitting in the chair I'm very anxious. But I try to relax because I know that the anxiety makes things ten times worse.

CS7 doesn't go to the dentist now because of her anxiety. If she had to go she would like the treatment to be done at the same appointment because she knows she wouldn't go back. She had difficulty remembering when she last went to the dentist but thinks it was at least 5 years ago.

Other participants postponed treatment for reasons of cost (CS5, CS8).

Once an appointment has been made and the participant has arrived at the dental surgery nervous anticipation can continue and is related to the environment and the staff or the practitioner at that surgery. Five participants commented that having the practitioner recognise you as an anxious patient was extremely important (CS1, CS6, CS9, CS4 and CS7). One participant found the distractions provided in the surgery, such as videos and appropriate music, helpful for establishing a positive mood (CS5) while another found a television in the waiting room advertising dental products was disconcerting (CS9). CS1 becomes especially anxious when sitting in the dentist's chair and CS4 finds anticipating treatment in the waiting room to be anxiety provoking.

In contrast three participants visit the dentist regularly and are not especially anxious today (CS3, CS5, CS8) and two are resigned to attending (CS2, CS9). Although CS3, who claimed to have moderately low levels of anxiety, does not have local anaesthetic

because of needle phobia, he has an exaggerated gag reflex and also considers the cost of treatment excessive.

CS8 would always postpone dental treatment if possible but mainly because of the cost. He has few teeth left now and does worry about losing those. He has found that changes in technology and the use of local anaesthetic have diminished his anxiety about pain.

CS9 is now resigned to the fact that she has to go for treatment and visits the hygienist regularly although she finds the hygienist frightening in the way that the dental nurse used to be since the hygienist is critical and can cause pain.

### ***Trust in practitioner***

Several respondents emphasized that their level of trust in their dental practitioner was an influential factor. CS2 observed that anxiety can be experienced if there is a change in practitioner because it takes time for the new practitioner to understand the problems associated with an individual's treatment. CS9 is concerned that her trusted dentist of 25 years has retired and she hasn't been able to settle on a replacement. In her search for a new dentist CS9 considered the following:

Some of it's manner some of it's actually, not agility [but] skill, physical skill in performing dental functions and I think some people are rough and some people aren't and [it doesn't] matter how well trained you are. [You can] know what you are doing but there are certain dentists you come out of feeling that this person doesn't really have the agility or the delicacy or whatever is required to do a nice job.

CS6's anxiety now "depends on whether she is near a dentist she can trust" and CS7 with the same agenda in mind has changed practitioners a lot. She says "It's like knowing that you're not getting what you want from them so I've shifted around and I did find one...one guy who I liked who just seemed to manage things well."

### ***Reactions to attending dental appointments***

Several participants reported experiencing reactions to attending the dental clinic. These included: nausea or feeling physically sick (CS1); needle phobia (CS3); exaggerated gag reflex (CS3); clutching or gripping the arms of the chair and crying (CS6, CS7) and shaking and shivering (CS2). CS1 and CS6 also reported feeling sick and anxious when attending the clinic for a family member's treatment.

### ***Anxiety provoking factors***

Several factors were identified as likely to 'set off' anxiety and one participant felt embarrassed mentioning this. She felt she was "pathetic" in this regard (CS4). These factors included the smell of the clinic (CS1, CS9); noises, specifically the "buzzer going" and "all the tools and utensils" clanging; the vibration of the slow speed drill (CS9); having to sit in the waiting room (CS4) or the dental chair (CS1); having a different dentist (CS6, CS2, CS9) and having to share the clinical space so that you could hear someone else's treatment (CS9). This brought back bad memories ("baggage") of the school dental clinic and made CS9 anxious. "Too many times when I'd sat in the second chair waiting for the dental nurse and I'd had to sit through someone else being treated and now it makes me nervous about going back to that dentist".

### ***Measures to combat anxiety***

A variety of measures for reducing anxiety were identified. Some were initiated by the respondents themselves. Three participants (CS1, CS9 and CS7) referred to trying different practitioners and CS6 also stated that she made a conscious effort to address fears. Steps that practitioners took that were appreciated included, for two participants (CS1 and CS7), the provision of hypnosis sessions or sedation. CS7 recommends sedation to her friends and family for particularly invasive treatment such as extractions, despite the extra cost and bother, but perhaps not for fillings.

CS4 and CS9 appreciated the questionnaire some dentists asked them to fill in about their level of anxiety, which was then taken into account during appointments. CS7 commented on the value of dentists recognising that a patient is anxious and said that even "just talking" is helpful:

I don't think anyone has ever said 'Can we try and work out what's going on here? I would rather that you came and had a good experience'. I don't think anyone has ever taken the time and you know that people are on a limited time scale.

### ***Development of/Changes in Anxiety over Time***

Levels of anxiety have changed for participants over their lifetime and often depended on their circumstances and their burden of dental disease. Apart from childhood where all participants had high levels of anxiety, despite not being generally anxious people, different levels were experienced in adolescence and in adulthood.

### ***Development of anxiety in childhood***

Development of anxiety was often attributable to direct experience mixed with the influence of others as can be seen in the following examples:

CS1 feels her anxiety stemmed from early childhood experiences of travelling to the dental clinic which was situated at a distance from her rural home. There was a fear of the unknown, a fear of something new, and a fear of pain. This fear was common amongst her peers. The destination on arrival in town was not welcoming. It was a foreign sterile environment after a long journey.

Similarly CS2 was highly anxious as a child from about 8-10 years of age onwards. A change of city meant that she was left off the treatment list and so when she was finally seen there was a lot of work to do. She remembers being cold and shivery. CS2 feels her anxiety developed as a result of personal bad experiences.

CS8 was also very anxious at school. He experienced the “communal anxiety” he claims was common to school children who were collected from the classroom to go to the school dental clinic.

### ***Changes in anxiety in adolescence***

Some participants experienced their highest levels of anxiety as adolescents or young adults perhaps because of the freedom they had to choose whether they attended the dental clinic or not. Neglect led to high levels of disease in some cases and a correlated increase in anxiety. For example:

For CS1 anxiety reached a peak at high school. She remembers her grandparents using all sorts of tactics to get her to attend the dental clinic when she was a child and as a child doing what she was told. As an adolescent CS1 recalls having the ability to “manipulate things so that you don’t really have to do what you should do” and the really worrying thing was being aware that treatment was needed and still being afraid.

In contrast, CS4 found the school dental service treatment created huge anxiety but felt things improved when she started to visit the dentist as a teenager. She found the dentist more professional, there was less pain and the environment was better.

Even for CS1 there were some things about the dentist that she particularly appreciated. For instance, the dentist used an office for the initial consultation. This was infinitely more acceptable than going straight to the surgery area:

I remember thinking this is great. You don't have to sit in the chair getting more and more anxious as you're talking to the dental nurse and him [the dentist] outlining a treatment plan but it was all very civilised... I noticed my grandmother felt comfortable as well so that scenario for me felt much better.

### *Anxiety levels as adults*

Some participants felt their anxiety had lessened as adults (CS2, CS3, CS5 and CS8) due to trust in their practitioner and/or improved technology and the use of anaesthetic. Some had experienced little or no improvement (CS1 and CS7) while others experienced fluctuations (CS4 and CS6). These contrastive views about changes in anxiety were attributed to a range of factors.

CS1 and CS7 are representative of those showing minimal, if any, improvement in anxiety levels. CS1 said:

I am still anxious. If there was anything else I could do I would do it. I've got to go through that whole mental ring up and go and talk and sit in that God forsaken chair. Why can't they just sit you in a normal chair?

CS7 has always been dentally anxious. She doesn't think this has changed over her lifetime but she has been through stages when she has felt that she should go to the dentist. She has thought "No, I need to be mature about this; I need to go" as she is aware that things could be worse in the long term if they are not dealt with in a timely fashion. She doesn't feel that she has got to a point yet where she can change her attitude to dental care but did go to one dentist that she felt may be able to change her attitude over time:

I would say if I found someone that I thought was nice, which I did and I did say to the reception afterwards 'I have to tell you this is the first time I've not cried in almost my whole life so you should tell him that'. I couldn't tell him because I knew if I started to tell him I'd start to cry. So if you find the right... to me that's quite a personal thing... he made me feel OK but I couldn't guarantee that everybody was going to do that.

In contrast CS2, CS3, CS5 and CS8 have experienced a significant reduction in anxiety and now visit the dentist regularly. CS2 has experienced dental anxiety which she finds



diminishing with each treatment as her trust in her current practitioner, who she has been visiting for the past 15 years, grows. It was interesting to note that CS3 believes that what he went through as a child has set him up to cope with treatment today without local anaesthetic. CS5 however, used to avoid dentists as a result of his treatment through the school dental service. He had negative thoughts about dentistry and said “My childhood dental experiences instilled in me almost a fear I suppose or certainly a great anxiety about visiting dentists”. In his early 20s he had some tooth trouble and went to a dentist who was shocked he hadn’t been for so long. At that point that there was quite a lot of work to do and so he still felt anxiety for some time but as technology has improved and the treatment has become almost pain free CS5 has lost his fear (CS8 also). Part of his change in attitude can be attributed to his realisation that if he wanted to keep his teeth he would have to put some effort into dental care.

Some participants still experience a fluctuation in anxiety levels. While CS4 tried to keep up good dental health as a young adult and went 6 monthly for appointments her care lapsed while away in Germany and when she came back to New Zealand with a young family and as a single mother, her priorities were child focussed and dental care was of relatively less importance. CS4 stopped going preventively and makes visits on the basis of perceived need. Her anxiety levels are high again now. She finds she is quite intolerant of others’ anxieties and finds it hard to reconcile her own anxiety about the dentist.

CS6 suffered extreme anxiety as a child visiting the school dental nurse. This is relieved somewhat by visiting a trusted dentist but becomes extreme again if the dentist is different. CS6 has made a conscious effort to desensitise herself to her fear of dental treatment. She feels it is best to confront anxieties. “I’ll go to the dentist knowing I’m scared but I’ll make sure I go. I’ll make a concerted effort because I think if you actually stay away you’re not doing yourself any favours”. She makes sure she actively faces fears and that her children do not see the anxious side of her.

### **Influences on the Development of Anxiety**

Common influences on the development of anxiety were the experience of pain, a large burden of disease, family members’ and peers’ attitudes and stories about the murder house, the cost of treatment, and a fear of tooth loss.

## ***Pain***

All participants experienced painful treatment at the school dental clinic as children. All believe that this has affected their view of dental treatment today.

CS4 says “It was hideous in the 60s as a child going to the school dental nurse, it was absolutely cruel”. No local anaesthetic was used and the equipment was old. “It was incredibly painful”. CS3 believes his school dental service treatment carries a legacy for him of seeing the dentist’s surgery as a painful place. He believes that if his early treatment had been better he would not hold this view.

Likewise, CS5’s early memories are not positive because of the pain:

You live through it... it's not life threatening but for a, I suppose a 5, 6 or 7 year old boy it's... no one likes being subjected to that kind of pain and... it wasn't intentional, I think it was just the technology of the time.

He attempted to rationalise the pain he endured and said “there's worse things in life, you know, it’s not like having a limb amputated without anaesthetic” and he remembered it was over quite quickly.

CS8 recalled using a distraction technique as a child so that he could get through the painful experience of receiving dental treatment:

I used to squeeze my finger when I was a child at school. I used to squeeze my finger because that really hurt and then I didn't feel the hurt that I was feeling in my mouth and that was sort of a strange way to do it really but I used to go home with a bruised finger.

He went on to say:

But it’s more than the pain; it’s the sound effects in your mouth as this machine goes whir-, whir-, whirring ahead. You can’t avoid that. And it’s the intrusiveness - someone’s hands in your mouth. The operator is very close to you as well. This is an invasion of your space which is quite confronting. You need to trust the operator which is quite hard to do. You can’t see what’s happening in your mouth.

Unfortunately, CS8’s trust was broken by a “dental disaster” which ended with him losing teeth.

Two participants continue to experience painful treatment today because of anaesthetic failure and they both commented on the reaction of the dental staff who were treating

them. CS2 felt frustrated and helpless because practitioners didn't believe her when she said it was painful. CS2 felt that she was viewed as "hysterical" because she would "jump and react to the drilling".

CS7 has always found the drilling painful. Local anaesthetic was used sometimes but it didn't work. CS7 has only had two pain-free dental experiences. She realises this is not "normal". She was able to sense the frustration that a dental practitioner felt when she could still feel pain despite being given local anaesthetic. She remembers being part way through treatment and being asked "What do you want us to do? We can't stop now. We have to complete this". The time constraints that practitioners work under, CS7 not wanting painful treatment to carry on and the resulting combined frustration of the practitioner and the patient made for a fraught experience.

### ***Large burden of disease***

Self-reports about dental health indicate that all participants suffered with high levels of disease as children. Some went through periods of neglect that increased their burden of disease and their anxiety levels.

Several participants (CS3, CS5 and CS6) attributed their high treatment need as children to having poor teeth. They mentioned several factors which could have been contributory in this regard:

Our teeth weren't that robust in that we had bad diets, there was no fluoride in the water...most of our parents had false teeth. (CS3)

CS6 also claimed to have very soft teeth which broke easily. CS5 thinks he did not have good teeth because of a combination of genetics, poor oral hygiene, and the fact that he grew up in a rural area with no fluoride in the water.

As an adult, CS7 experienced tooth extractions which were extremely traumatic. The dentist insisted on taking the teeth out even though CS7 protested that she wanted a general anaesthetic. She found those experiences very disempowering and insisted on sedation for future extractions.

### ***Family members and peers***

Seven of the nine respondents spontaneously referred to the attitudes, views and behaviours of family members and peers when accounting for their dental anxiety. The

family members who were influential varied as did the content, timing, form and impact of their ‘messages’ about dental treatment. Longer term impacts included their own actions in relation to their children’s dental treatment. Messages were both negative and positive.

*(a) Negative messages or lack of encouragement:*

Negative messages were attributed to the influence of the family (CS1, CS6, and CS7) and peers (CS1, CS3, and CS6). CS1 remembers her peers, parents, aunties and uncles talking about the murder house and telling the same stories about their experiences. She also recalls that her early dental clinic visits were “traumatic for my grandparents too...to see me going through all that” and eventually “my grandfather refused to take me anymore because it was so upsetting for me”. He would say “if you don’t want to go, you don’t have to go”. She believes it was common practice in this small rural community to withdraw from an activity that caused distress to the child. She believes it was the same for other children at the school she attended. “Nobody liked the dentist”. A lot of the children were brought up by their grandparents who “all wore dentures” and who placed little value on teeth. The pervading attitude was “you don’t need a dentist – just get dentures”. They were “oblivious to the importance of it”.

CS1 also talked about the anxiety of other children and her sisters. Her sisters still live in the small rural town which she grew up in and that they tell her that although the “dental nurses [therapists] are nicer the kids are still fearful”. It can be especially hard if the parents are anxious also “quite possibly they’ve got parents who’ve had those [bad] experiences”.

CS7 also reported familial influence. She had older siblings and assumes that she had anxiety about going to the dental nurse even before her first visit because she had heard stories about how unpleasant it was. CS7 has talked with friends and family about the advantages of sedation as she knows many of them are fearful. She thinks dental anxiety is very common and says “I don’t know anyone who likes to go to the dentist...a lot of people probably just don’t do it and then there is the guilt associated with not doing it”.

CS6 was influenced by one family member especially. Her mother lost all her teeth when she was 15 and CS6 feels that this made her more anxious to keep her own teeth. It appears that her mother was jealous that her daughters had teeth when she didn’t:

My mother is not a very pleasant person and she... there was competition with her daughters and she used to give us things like condensed milk sandwiches and sugar sandwiches and I think I had the same toothbrush for about 5 years. There was nothing left of it. So it's miraculous that I still have any teeth at all.

CS6 feels part of the motivation for taking good care of her teeth was her wish to annoy her mother. She says "some parents aren't as eager for their children to have health and all that stuff..... It's weird". She is careful about her portrayal of her attitude to the dentist with her own children. She says "any fears I have I always keep them away from my children [be]cause I'm really aware of fears and how you can pass them on to your children". CS6 thinks her mother consciously tried to add to her dental anxiety when she was a small child by telling graphic stories about having her teeth taken out. "She would talk about the blood and everything and so I think the anxiety might have been a combination of the dental nurse who was brutal and my mother who used to tell us brutal stories about her experiences".

CS6 also commented on the influence of peers and said that she thought all the children at her school had the same sort of fear of the dental nurse. They felt it was the norm to have a negative attitude. Likewise, CS3 states "We went along with the general peer group experiences" and so clinic visits were built into "nasty experiences". The dental nurse would collect the children from the classroom and there would be general dread around the classroom. "The whole class would go, 'Ooooh you're going to get murdered!' "

Although, some of these recollections are not pleasant CS7 said about people's negative memories "If that is how people remember it, that's the reality isn't it? ...I can see that it's detrimental to the next generation but it is how people perceive it."

*(b) Positive messages:*

Some participants' parents encouraged their children to attend the school dental clinic because they wanted their children to keep their teeth. In most cases this has translated into participants encouraging their own children with respect to dental care. For example:

CS3's parents encouraged tooth brushing and getting teeth repaired at the dental clinic. His parents didn't want him to lose his teeth but did not have much knowledge about correct diet. CS3 believes that people of his parents' generation, pre-Second World War,

wanted a better life for their children in all things, that is, in education, general health, and dental health. Their message was “don’t do what we did, you have a better chance...so the children went because they were told to but it was hard to believe that anything that hurt this much could actually be good for you”.

Likewise, CS9’s parents encouraged her and her siblings to look after their teeth. “So I think my parents must have decided that it was a good thing to look after your teeth rather than just let them go and pull them all out” (CS2 , CS3 and CS4 also).

It was interesting to note that several participants talked explicitly about the ‘message’ they wished to convey to their own children (CS1, CS3, CS4). CS1 has taken her children to the dental clinic because she sees the need for them to receive dental care. She lives in the city with her husband and children. She finds it hard to go to the clinic herself and has only managed it a couple of times but recognises the differences in the environment and the attitude of the therapist in contrast to her own memories of the dental clinic/nurse. CS1 said she and her husband have worked really hard to ensure their children are not afraid of dental treatment:

I knew my own anxiety would be a part of that which is why I thought I can’t be the one to keep taking them. I was constantly like a cat on a hot tin roof. I couldn’t sit down, I couldn’t look.

CS1 also said that her and her husband’s attitude to teeth is very different to that of the adults in the community in which she grew up because they understand the importance of dental care and want to make their children’s visits to the school clinic as normal and regular as possible.

Similarly, CS3 has three daughters and makes sure that they go to appointments. He wants them to keep their teeth, CS4’s father was a dental technician while her godfather was a dentist and so dental care was important within her family. The need for regular visits was “drilled” into CS4 from a young age, and whether it was unpleasant or not, it was something she had to do. CS4 has not allowed her children to attend the school dental clinic and has paid for their treatment privately. Her children are at an age now when they need to start paying for their own treatment and although they have low anxiety levels CS4 can’t see them putting any of their own money into dental care. They have very good dental health and CS4 is dismayed that they don’t see the need for dental care.

In contrast, one of CS2's children had a lot of fillings by the time he was 5 years old and he now only attends the dentist for relief of pain as compared to her other two children who have very few fillings and who attend the dentist relatively regularly.

The examples given above clearly show that the attitudes of family and peers can have an effect on the behaviour and anxiety levels of individuals with respect to dental care through the generations. However, they are not the only important influence, and further influences are discussed below.

### *Cost*

The cost of dental treatment was an important issue for most of the interview participants. It was not fully explored in this study because of time constraints but needs to be acknowledged because of its magnitude and its effect on anxiety. Most participants felt their anxiety levels were increased because of the high cost of dental treatment and their inability to afford necessary treatment.

Cost is a problem for those from a rural setting who have a low socio-economic status because although treatment is free for children there is a cost attached to going into town and having to take time off work especially when you have several children. If the children are anxious as well the deterrent is greater still. "I just think for Maori kids its hard...it's hard" (CS1).

Cost is the biggest influence today for CS3 as to whether he will make an appointment. He feels apprehensive especially if he has a broken filling/tooth because he knows the dentist will want to "cap" it and he will have to "argue against it, blah, blah, blah". He feels that the cost of dentistry is "philosophically" unfair in terms of healthcare in New Zealand. "It's out of whack...it feels like they [the government] place less importance on teeth, I guess". CS3 understands why dentists' charges are high. He sees the highly technical equipment and feels that dentists are not "fleecing us".

However, CS8 said "I think I see dentists as the rich...I see it as very lucrative". He believes this increases people's desire to avoid the dentist. He said government funding should be spread across the lifespan:

I think that it should come into the sort of health, you know, orbit really because it's essential. I mean it's a bit like eyes. Eyes also should be included in the public health

system in some way -eyes, teeth and general health. They are not options but it was seen as optional really wasn't it? It didn't really matter if all your teeth fell out.

CS4 said when you are a single parent on one income the kids' appointments will always come first. She feels she suffers from the "martyr syndrome" so that even the cat's visits to the vet come before her needs. CS4 recognises it is possible to get some insurance and that "it's about raising it in our own financial priority".

### ***Fear of tooth loss***

Most of the participants' parents' generation had dentures and so tooth loss was something they hoped to avoid. For some of the participants tooth loss was a tremendous concern.

CS2's own parents had dentures and that was one of the reasons she tried to keep going for regular care. Likewise, both CS9's parents had all their teeth out before they were married at around 20 years of age. CS9 feels there was a distinct difference between her parents' generation and her own perhaps because dental treatment was made available to her generation. However, it was not until CS5 was in his 20s that he realised, after some neglect and tooth trouble, that he wanted to keep his teeth and that he would have to put some effort into that. For one participant this realisation came too late for him to avoid tooth loss and he suffers regret for that, saying "it's horrible having dentures". CS8 would love to get implants if he won Lotto. He felt in his parents' generation it was fairly normal to have dentures. "People used to say 'I would rather have dentures than have to put up with toothache once a year for the next ten years. Take the bloody things out' " (CS8). Similarly, a lot of the children in CS1's town were brought up by their grandparents who "all wore dentures" and who placed little value on teeth. The pervading attitude was "you don't need a dentist – just get dentures". They were "oblivious to the importance of it" (CS1). CS8 illustrated the change in view of the participants' generation saying:

It's crazy... I would give anything to have... not to have plates, you know, partial plates well, really full plates now in my mouth cause they are uncomfortable, they are annoying, it's just something else you have to deal with each day.



### ***Stories/ murder house phrase***

There was some awareness amongst the participants of the harm that could be caused through the use of the murder house phrase and the telling of murder house stories. Most participants stated that they would be happy if the phrase was never used again because it can affect views about dental treatment as it conjures up a bad image, one that should not be maintained for coming generations as it can deter people from seeking treatment. CS1 said “...and once we realised our kids weren’t aware of it we stopped saying it, of course, because you don’t want them to think, why is it the murder house? Oh my God and get all anxious about it...”

Bringing up the stories again invokes feelings and memories that are upsetting (CS3, CS6, CS7 and CS8). CS5 said when the phrase is used it reinforces the negative connotations “There is almost like this myth that’s been perpetuated”. CS4’s older siblings passed the phrase and related anxiety on to her but she has left these memories in the past now and prefers not to talk about it. She feels the murder house image has been “buried” and that dental care in New Zealand is moving in the right direction.

However, CS2 would use the phrase or expect to hear it used today if with a group of friends the topic of dentistry came up for discussion. Stories told by peers about the murder house, the collection from class and the smell are common in CS2’s experience. Similar murder house stories were told by participants:

- Peers (CS1, CS2, CS4, CS3, CS7, CS8, CS9)
- Siblings (CS4, CS7)
- Grandparents, parents, aunties, uncles (CS1).

### ***Admonishment causing humiliation***

Many of the participants commented on feeling embarrassment about the way they were addressed by their dental practitioner, who would tell them off for lack of dental home care or for their behaviour in the clinic as children. This added to their feelings of anxiety. CS4 said treatment always came with a “You didn’t brush properly or you didn’t do this...or you naughty person ...” and CS5 remembers being told off for not holding his mouth open for a long enough time.

Likewise, CS7 remembers the dental nurse growling and telling her that her anxiety was silly. The nurse was very strict and would say “there's nothing wrong with you...there's no need to get upset....there's no need to worry... its not painful”. CS7 remembers being told that it wasn't painful when it was. She also remembers going to the clinic in pairs and the girl she went with one day being “really, really told off” for not cleaning her teeth properly. CS7 felt it was unfair as the girl had food in her braces from lunch. She remembers feeling really sorry for her and really embarrassed.

Another participant commented on the impact admonishment has on her today. CS9 finds the hygienist to be critical. This is off-putting:

They're the ones that tell you off, you see. It's the 'you don't floss your teeth enough, you don't look after your teeth properly, your gums don't look good' and generally speaking you go there to be told off and...the less they feel you've looked after your teeth the longer it is they take to do the treatment and therefore...I feel more guilty. If I'm there for half an hour not only do I pay more but I also have the feeling that I haven't looked after my teeth properly.

She says she feels like she has been put on the “naughty list”. She has also been made to feel guilty by a dentist talking to her about her daughter's dental health. She said:

One of the dentists that my daughter went to after my dentist retired really took me to task for her teeth which I thought was totally unwarranted and she was in tears when we left the dental surgery because he said 'What did you do when you were pregnant? Weren't you living in New Zealand? Weren't you drinking the local water? Weren't you doing this? Weren't you doing that? Didn't you take your child to dental treatment?' ... I'm afraid there is no reason for the state of her teeth except genetics is the only thing I can think of but he laid it very firmly on me and on her... if we had been responsible it was far too late anyway, she was 22, why go over this now?

### ***Other factors***

The following factors were less commonly talked about by participants but were still significant issues.

**Appearance issues:** “I had to have pretty well every tooth filled” including “black fillings along the front which I have still got”. These are a concern and an embarrassment (CS2).

**Humiliation of hospital “charity” dentistry:** “I know that I was anxious about the pain but I was also anxious about the humiliation that I felt went along with being a charity patient on the hospital...” (CS2).

**Different operators at training clinic:** This gave little opportunity to build a relationship (CS2).

Other factors also had some effect such as **a lack of knowledge about dental care, lack of knowledge about dietary recommendations and meagre financial resources** which meant a long car journey was an expensive burden. “We were all poor. We didn’t have a lot of money for stuff” (CS1).

**Noise, vibration, smell:** The smell, noise and vibration upset CS9. It “sets her nerves on edge terribly” even today when the slow speed is used for polishing. She is sure this is because of her early experiences.

### **Murder House Stories**

All respondents described features of school dental treatment and their responses to those features, often in colourful and compelling terms, which incorporated the term murder house. The stories included references to the physical features of the clinic; the appearance, attitudes and actions of dental nurses; a sense of power differentials and processes associated with going to and returning from the clinic.

#### ***School dental clinic***

The clinic was described as cold, sterile and having a particular smell that made you feel anxious (CS1, CS2). Participants recalled:

“I can see the little building which was a separate building from all the other classrooms on this little patch of grass” (CS3) and you walked past it quite quickly (CS7). It was something to be avoided. CS5 remembers having the clinic on the school premises was a constant reminder of discomfort resulting from “behaviourist conditioning”. CS6 described the feeling as being like the pressure you get from bad dreams “and you have a fear of that and there’s that sort of apprehension attached to going to bed. It was like that with the dental clinic. That pressure”. CS3 also remembers the basin that was used to spit into, the “tray with the implements” on it and the “mirror on the stick”.

The reason for the clinics’ isolation was speculated upon and CS7 said:

Why did they stick it there - perhaps so that you couldn't hear the screaming? It was not at all child friendly. It had that awful detergent-like smell, and noises like the clanging of instruments in the old tin boxes where they would put their nasty equipment and boil it up.

CS9 remembers it was a single room:

Like a hut which was laid out with a room where you were treated...What they might do to is have two chairs and one person waited while the other was having their teeth treated- which is not a very nice experience.

This was to save time but the waiting child had to "sit and listen to the other child going through the process of having their teeth drilled" and the other child would be "upset, yeah, crying -whatever. It was painful. There were no injections".

### ***The school dental nurse***

The dental nurse was described as impatient, uncaring, showing no understanding of anxieties, cold, European, older, large (perhaps because participants were small children), a butcher, a sadist, brutal, rough, with no gentleness, like a strict matron, stressed, frustrated, and scary (CS1, CS6 and CS7). CS4 said "there were different ones, they were just awful". CS2, who attended a training clinic, found that she could not build a relationship with her operator since they were different each time she attended. CS6 thought her nurse did not have the right persona to be dealing with children. You need to be a specific character type because "it's quite invasive...and it hurts". She said:

I had a tooth removed and I'll never forget...she didn't give me anything. She just pulled it out and she was as rough as... just shove the thing... and I remember there was bruising around my mouth and another time she injected and she would just give one injection and it was always rough and you would always have loads of the stuff in your mouth. She didn't take care. You know normally they take it out and you don't get all that liquid. It's quite bitter and horrible.

There was no use of distraction or comforting techniques. "Maybe she had been there about 20 years and was sick of it? She was like a witch" (CS7). The nurse was unable to empathise and had a clinical appearance with a starched uniform that was off-putting. CS9 described dental nurses as older women who were quite tough. "You certainly didn't want to protest too much or you would certainly get into trouble. So, you know, you had to go and behave yourself and even if it wasn't comfortable you had to put up with it".

CS3 said, in contrast:

I can see her in her starched white outfit. She was friendly in the playground. She wasn't a witch...generally she was a woman who was quite motherly...she wasn't a figure of fear. It was more to do with the place. It wasn't her. It was the environment. We didn't associate her. It was like; it was almost like we understood this was her job and that she had to do it. It wasn't her fault somehow. *She wasn't a murderer. It was a murder house...*

However, CS3 made a this further comment about the 1947 National Film Unit's accuracy in its portrayal of school dental service treatment (personal communication, August 28, 2009):

I would not be in the slightest bit surprised if the 'patients' actually role played or maybe were rewarded substantially to not scream, and smile instead. The wholesomeness of the nurse should be a signal of the film's inaccuracy, she was possibly an actor, or at the very least hand picked for her presentation. Certainly not the picture I have of my school dental nurse!!

### ***Power differentials and control***

Most of the participants complained of feeling powerless and vulnerable as children at the hands of an adult who would not refrain from hurting them (even though this was thought of as being in the best interests of the child). The participants talk of "over-drilling" and an authoritarian attitude among dental nurses. In the mid 1900s informed consent was not mandatory and so treatment was carried out without fully informing the patients or their parents.

**Power:** Some participants reported being intimidated. CS1 said, "If you were a bit of an unhappy patient they would do horrible things to you like drill longer than they needed to...they [CS1's peers/relatives] felt they were picked on". CS6 said:

We used to call it the slaughter house for a good reason... she was a butcher. She would rip your teeth out without giving you an injection and if she did... I have quite deep roots, and if she did give you an injection she was so rough and shoved that needle in so fast it was just excruciating. So I think she was a bit of a sadist...

Most participants reported that you did as you were told since the dental nurses' attitude was "make as little fuss as possible and don't mess me about" and there were consequences for bad behaviour such as a "slap around the leg" (CS2).

In the 1960s the philosophy was “we’re doing this *for* you. This is good for you so just be quiet and put up with it” (CS4). It was as though at that time you could do whatever you liked to people:

It was almost like the prison guard phenomena where you had so much power over the people you were looking after that you almost became a sadist. I think abuse of power is something that happened quite a bit - that authoritarian style of teaching, doctoring. It’s changed now people umm... and that’s why I think it’s good. The client comes first. The client’s well-being. The children are clients in a school, you know? The patient is a client. You’re actually meant to be serving the client (CS9).

CS9 went on to say:

...some of them were older women who did seem to have a bit of a power complex perhaps and ...I just felt that probably they over-drilled but perhaps that was what they felt was necessary...I’ve probably had the very early experiences she did [talking about her daughter] with school dental clinics and painful treatments and then the consequences of those treatments have often meant that...as I was an adult I had to have teeth replaced and crowns etc because they drilled away so much of the original tooth... so it’s the consequences...the equipment that was used was fairly rough. I mean, it wasn’t sophisticated so to actually get all the decay I think often teeth were probably drilled beyond what they needed to be. I mean they weren’t refined sophisticated bits of equipment.

**Control:** The child had no power or control and usually no parental support during visits; there was no choice, “you had to go”. CS2 talked of having her name called in class and having to go on the bus to the clinic which was a training clinic for dental nurses. Her name was called week after week in Standard 4 making her feel physically sick. She remembers the absolute relief when her name wasn’t called.

Similarly, CS7 remembers having no input into her own treatment as a child and being unable to disagree or argue. She felt a powerlessness specific to this setting. CS7 can’t remember this feeling in other aspects of her childhood. She was a confident child and not particularly passive. She was brought up to challenge and question things but felt that “being in a chair with your mouth open and somebody hovering over you, you are kind of out of control”.

**Lack of informed consent:** Informed consent was not required for treatment in the mid 20<sup>th</sup> century. CS2 had to have a tooth removed and so attempts were made to contact her mother. However “they couldn’t get hold of her so they did it anyway”.

Likewise, CS4 said:

I can remember once I had an x-ray and the nurse filled a tooth and she went 'Oh, I went the wrong side' so I had to sit there and she went to the other side and she did the same. So she filled a completely healthy tooth and then went and did the same on the other side.

CS4 also remembers pleading with the dental nurse to phone her father about some teeth the nurse wanted to take out as CS4 had had strict instructions from her father to do this. She was concerned about getting into trouble with her father. The dental nurse refused to phone. CS4 feels there was a "power thing" and that "dental nurses were really a law unto themselves, it seemed". She felt this was an era where there was no communication or discussion about what was being done or why. Instead the nurse would say "this is what I am doing, this is it".

### *Clinic Visits*

Visits to the clinic were remembered as painful with a lot of crying from the children who attended (CS1, CS2, CS3, and CS4). CS7 said visits were associated with noise, pain, squirming and being told off. CS2 remembers a room full of chairs (in the training clinic) and the red cardigans the nurses wore. No local anaesthetic was used and there was "that horrible feeling of all those people with hands in your mouth".

Four participants said the dental nurse would collect the children from the classroom and there would be general dread. Some of the children would feel sick (CS6). "The whole class would go, 'Ooooh you're going to get murdered'!"(CS3).

There were some different responses among the children to this method of collection. CS4 was surprised by the reaction of the boys at her school to the clinic visits. She found the girls would get upset but that was expected of girls however, the boys would hide or run away. "They would scarper, you know, they would take off for the day" (CS7 also). The classroom call-up was like "having the grim reaper calling" and "usually the poor person would be kicking up a fuss". CS7 said when a child came to the classroom with a list of names there was a lot of fear about what was going to happen to you. Everyone hated dental appointments. This contrasted markedly with things like hearing tests which you hoped you would be picked for because it was time away from class, which was sought after, and it wasn't painful, so dental anxiety was specific. CS8 recalled trying to crawl under the chair when he was very young:

There was the anxiety of the dental nurse coming past the classroom window and the whole class sort of giving a communal sigh and then the dental nurse coming in and calling your name. That was tremendous... that was a sort of communal anxiety wasn't it? We all felt it.

However, some parents opted out of the school dental service for their children. CS3 is unsure of the reasons for this but speculates that it may be because the parents took the philosophy that the nurses were not professional enough or it could have been that the children complained. CS3 certainly tried this for himself with his own parents but they told him that this was the service the government provided and not to be stupid.

### ***The dental drill***

Most of the participants talk with trepidation about the dental drill and more specifically about the treadle drill which may or may not have been a reality for them at that time as treadle drills were replaced with electric drills after World War 2.

Three participants (CS1, CS3 and CS8) talked of the nurse having to wind the “old drill or pump it” and that sometimes it would not keep going and so the nurse would have to pump it while the drill was stuck in the tooth. CS2 and CS4 also talked of “treadle” drill and CS9 said “they were using foot pedal drills at that stage and they were very slow”. CS5 said that because the drills were not very fast he associates the smell of burning bone with the school dental clinic. The slow drill was “fairly horrendous” and some participants received fillings at each of their visits.

Significantly CS3 commented that most of the instruments used in the clinic were not “implements of torture. It was the drill that somehow had...it was all centred on the drill”.

### ***The murder house***

Most participants claim the school dental clinic was called the murder house because of the screaming from the children who received treatment there.

CS3 stated (personal communication, August 28, 2009):

For those of us who were subjected to the use of the treadle drill machines where the drill slowed, or got stuck, the excruciating pain sure felt like “murder”. Fillings in those days were of mercury composition, so one might postulate that slow death was actually premeditated. On top of this as a reward for good behaviour in the chair, we were given a small sample of liquid mercury (“quicksilver”) in a glass phial. I never recall any



instructions not to ingest this, but if one did so it could be akin to a cyanide tablet...murder? ...The term murder house has emotional currency and as such is fodder for the media.

He suggests that some journalists may be of an age to remember as well and goes on to say that while it was not literally a murder house there was a “connotation that there was someone was trying to harm you when you went to the dental nurse”. It was a childish phrase but it was a reality. As young and vulnerable children, the experience may be recalled as being worse than it really was. Also “we went along with the general peer group experiences” and so it was built into a “nasty experience”. CS5 said the murder house phrase is “a metaphor for the infliction of pain. It should have been called a torture house not a murder house” and CS7 said “you would probably die”. CS7 remembered thinking that perhaps the children who were removed from the class weren’t coming back - had they been murdered?

CS4 remembered that it “felt like somebody was killing you... and we had Berty Germ and Berty Germ was going to attack your teeth. ...many kids had nightmares about Berty Germ - this thing in your mouth”.

### ***Positive stories***

Participants recounted some positive stories about dental nurses attempting to alleviate some of the negativity by using distraction techniques or giving rewards for good behaviour. Little butterflies and bumble bees that the nurses made out of cotton rolls for very young children are remembered (CS2). To the amusement of CS3 after school dental clinic appointments, something sugary was always given - a sweet or a lolly pop or “something counterproductive like that”.

CS5 feels the nurses were aware of the hurt they were inflicting and tried to ameliorate it. He was given mercury to play with as a reward for good behaviour in an attempt to alleviate his anxiety. He remembers girls getting little dollies made out of dental drills as the nurse tried to make the visits more entertaining.

### **Changes/Contrasts Today**

According to most participants there have been some improvements since their childhood experiences of dental treatment. Most participants claim their children are not familiar with the murder house phrase (CS1, CS4, CS3, CS5, and CS6). CS3 said “my

current experience of dentists is only positive. The fear remains from classical conditioning, and I am convinced [it]will fade with generations removed from the House of Pain”.

Some participants carry a legacy from their early treatment. For example, CS5 prefers male dentists today after his experience with female dental nurses. He believes anything that causes discomfort will cause some anxiety but he now has a certain “reverence” for dentists since he has been relieved of toothache on a few occasions with no discomfort during the procedures due to modern equipment and anaesthesia. The focus of dental visits is different today with much more emphasis placed on preventive measures, and CS4 hopes that the rest of her generation sees this.

However, some participants like certain things as they were. CS1 finds having the clinics in the school grounds works very well for her children because there is no debate about whether you are going to go or not. Children are not reliant on reluctant caregivers to get to the clinic, and avoidance is difficult. The clinic becomes part of the school environment the children are already familiar with. The dental therapist takes part in school activities, meaning that she is seen as part of the familiar school community.

CS9 also valued some aspects of the school dental service in her day which provided very good regular care. Children were seen twice a year without fail and everyone “got covered and they got whatever treatment was needed and you went...you kept going back until you had all your fillings filled”. Today the service is irregular and much more difficult to access. CS9 feels that things were missed in her daughter’s mouth because of time pressures. The nurses were friendlier but not as thorough. She feels there are still similarities in treatment to her own experience including the smell, noise and vibration of the slow speed drill. However, children today are not treated in the same way as earlier generations because they are not as accepting and will complain.

**Changes in procedure:** Today informed consent is mandatory before treatment commences and so CS2 would not have had a tooth removed without her mother’s consent if that was the recommended treatment.

CS8 thinks that approaches have changed towards patient care in the medical field in general:

I mean there was a time when you went to the dentist, you sat silently in the chair, and the dentist did what he had to do and ...afterwards someone would say 'So how many fillings did you have?' You'd say well... he was there and I don't know maybe three or four or whatever but you know, was that one or was that two that he just did in that area?

CS8 reported that now the dentist tells you exactly what is happening and you get choices about the treatment. He feels the dentist would be happier if you always chose the expensive treatment options though. Dentists also sell products and CS8 wonders about their real value although he understands the importance of preventing new disease.

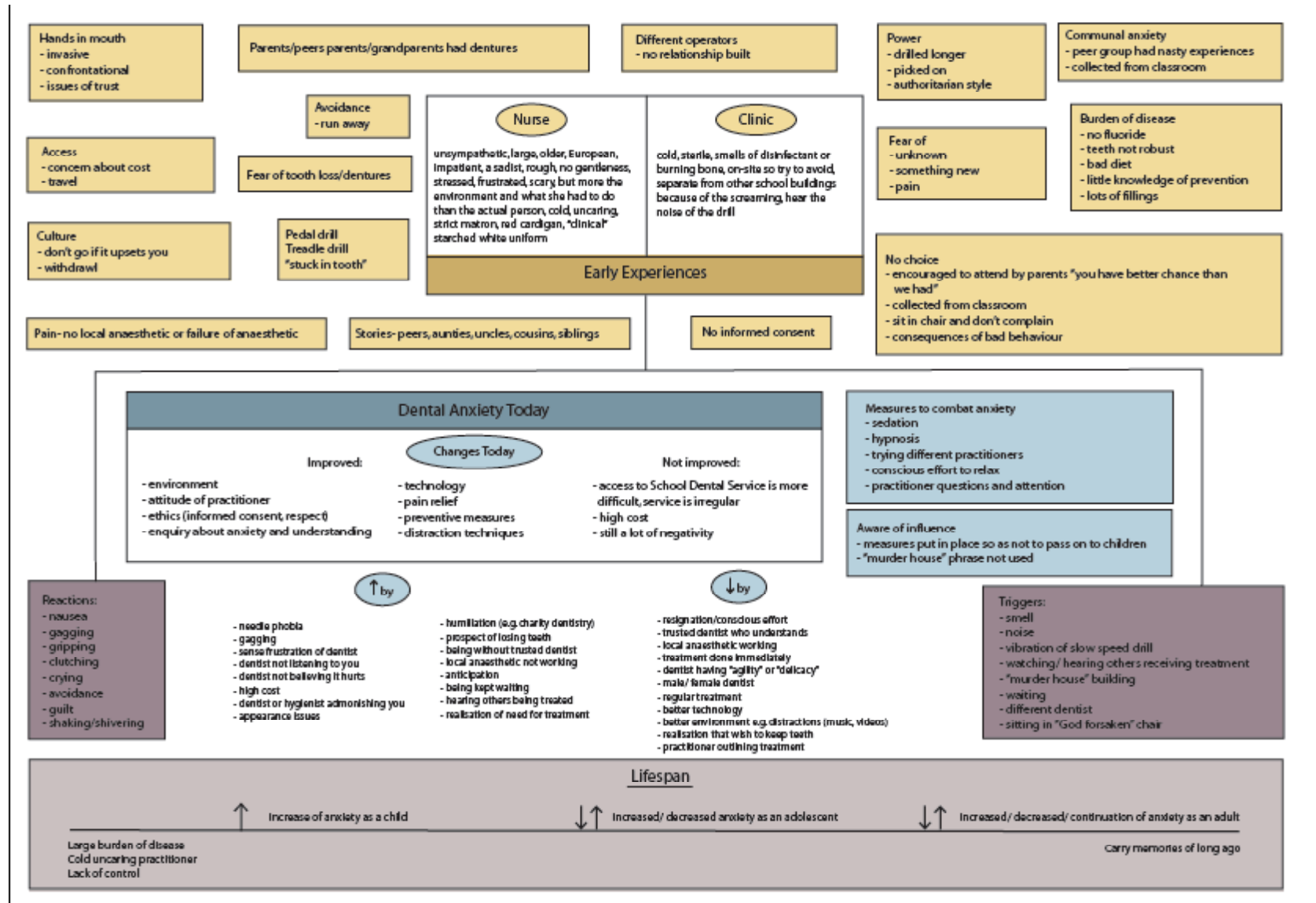
**Changes in attitude:** These changes encompass healthcare professionals' attitudes as well as those of children today so that expectations of treatment have evolved. CS6's own children don't mind seeing the dental nurse. She used to think they were mad. "I said you must be some sort of a masochist to enjoy going to the dental nurse". CS6 remembers feeling ill for her daughter when she had to have a couple of fillings but was surprised to find the dental therapist was friendly and kind to her daughter. The therapist took time to relax the child and make sure she was comfortable. This differs from school dental visits in the 1970s where you lay back, opened your mouth and the nurse went straight in. CS6 commented that children now expect respect, will speak up for themselves and will question things. This is a change from CS6's own childhood where children were expected to do as they were told and not to complain. She said that healthcare professionals' attitudes have altered as well so that you don't get so many of the "bossy matrons" in hospitals who tell you off and treat you like a number or a "piece of meat". Now patients are seen as clients and expect certain standards. Dental visits are more friendly and relaxed with nice music and surroundings in contrast to the stark, cold school dental clinics of participants' childhoods (CS6).

In contrast, CS7 doesn't feel that dental treatment has changed that much. She has still felt belittled as an adult. She suggests there is still a lot of negative attitude towards dental care generally, although technology has improved and pain has decreased because of local anaesthetic making dental visits more bearable, CS8 doesn't think it is possible to change children's views of dentists (and doctors) who are about to give them injections and so impressions of these professions are unlikely to change.

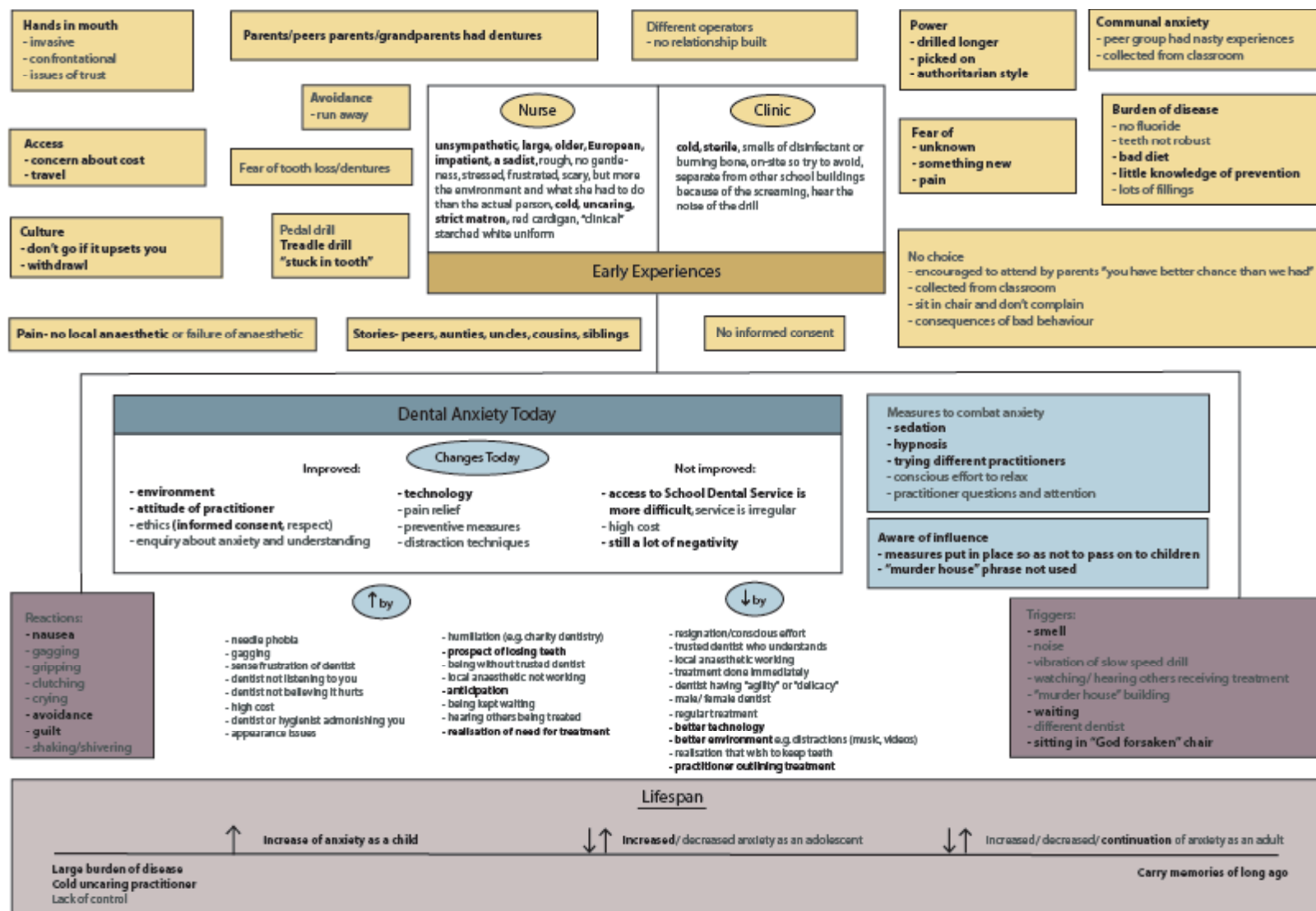
## **Themes**

The themes revealed above have been placed into the following summary diagram. This provides a model for the identification of issues patients may have with dental treatment in order to aid the practitioner to adopt measures to combat anxiety. By highlighting components of the diagram specific to each case it was possible to identify missing elements for incorporation to ensure a full and rich depiction of the phenomenon. The two case studies included in this chapter have been highlighted in this way as examples of the process and to demonstrate their potential usefulness as teaching tools. The model shows the connection between predisposing issues which are linked to precipitating factors (triggers) and reactions, and the perpetuating or maintaining factors balanced by resiliency or protective factors. Changes in dental treatment today are acknowledged and will have an effect on the individual's present level of anxiety along with the other factors already listed and the measures the individual takes to cope with anxiety in the dental setting. Finally, anxiety felt at various stages of the lifespan can be different for individuals depending on the interplay between the elements included in the model. The findings of this study are discussed in the next chapter alongside relevant literature.

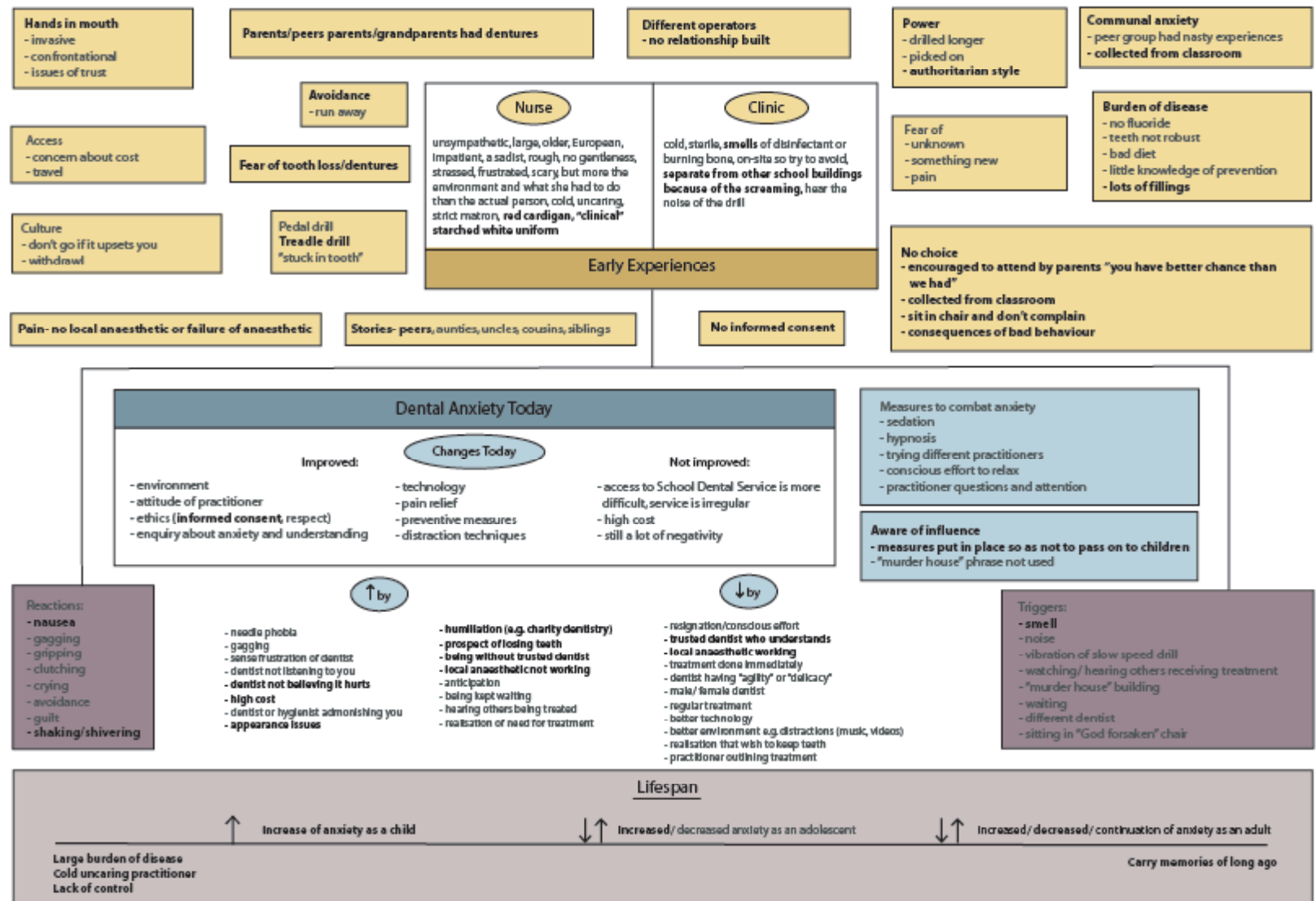
**Figure 5** Anxiety Model of Case Studies



Items relevant to Case Study 1 have been highlighted in the following version of the diagram. This could be a useful tool to use in teaching situations to generate discussion or to illustrate an individual case. Figure 5(a) Anxiety Model of Case Study 1.



Case Study Two is highlighted in the following diagram as a further example. **Figure 5(b)** Anxiety Model of Case Study 2



## **Chapter 5: Discussion**

The relationship between findings, the research questions and relevant literature is discussed in this chapter. Background factors such as anxiety levels, prevalence, and oral health status are considered, followed by discussion of influences and explanations for the development of dental anxiety and its effects. These explanations involve, in part, the murder house stories which provide an opportunity to reflect on the New Zealand context specifically. The explanations are then viewed through a theoretical lens from which a model for dental anxiety development emerges. To conclude this chapter intervention strategies are suggested and discussed.

### **Background**

#### **Anxiety Levels and Prevalence**

Few studies have reported levels of dental anxiety in the New Zealand population but those that have found anxiety levels to be at the high end of the range found internationally; that is, between 12 and 20 % have high levels of anxiety compared to 5 to 15% estimated elsewhere (Cutress, Hunter, Davis, Beck, & Croxson, 1979; Hunter, Kirk, & Liefde, 1992; Thomson et al., 1999; Thomson, Locker, & Poulton, 2000). The present study found similar levels of dental anxiety, with 12% having high anxiety when measured using the modified DAS scale and 16% using the self-reported anxiety scale.

In the current study, anxiety levels of those who grew up in New Zealand and attended the school dental service, and those who did not, were compared. The result was not statistically significant but showed an indicative trend towards those who had received treatment from the New Zealand school dental service being more anxious than those who had not. When the school dental service was initially established it was a novel initiative from an international perspective. Fulton wrote a review paper for the World Health Organisation in 1951 titled “Experiment in dental care. Results of New Zealand’s use of school dental nurses”. He commented on the controversial nature of the programme which was subsequently adopted in various forms by other countries. In this study there was no data to show whether some of the sample population from overseas may have received dental treatment during childhood from a similar service. However, it is possible that there was no significant difference between the groups because children all over the world probably experienced comparable dental treatment



during the 1940s-1970s since dental technology was not well advanced at that time and treatment was often painful. On the other hand it is also possible that the anxiety levels of immigrants has increased since arriving in New Zealand because of the largely negative social environment that surrounds dental care here (Cartwright, 2010). It is a limitation of this study that there was a lack of information about the childhood dental experiences of the participants who did not grow up in New Zealand. This would make an interesting future investigation but is outside the parameters of the current study.

The frequency with which negative experiences occur in dental practice and the strength of the connection between these and the development of dental anxiety was investigated by Locker et al., (1996) who found that 71% of their study population had had a painful experience, 23% a frightening experience and 9% an embarrassing one. Subjects who reported all three experiences were 22.4 times more likely to be dentally anxious than those who reported none. The results suggested that the nature of the experience was far more important than the age at which it occurred. In the current study, negative experiences of the school dental service were suffered by 59 % of those who attended and high levels of dental anxiety (mod DAS score of 19 or more) were present in 12% of those participants. A strong relationship was found between dental anxiety and negative experience of the school dental service. Those who had negative experiences showed a wide range of current anxiety levels, from extreme anxiety to no anxiety, indicating that negative experiences do not always lead to the development of anxiety or that it is possible to recover from it. This would certainly seem to be the case for some of the participants who reported differing levels of anxiety across their lifespan. One participant commented that he felt the early painful treatment he received had “set him up to cope” with treatment today, while another realised he wanted to keep his teeth and would have to put some effort into that. Over time he “lost his fear of the dentist”. None of those who had positive experiences of the service had high current levels of dental anxiety. This is encouraging since a large proportion of today’s children have no dental disease. Fifty one percent of Year 8 children in New Zealand were caries free in 2008 (Ministry of Health, 2009). These children are likely to have positive experiences of dental care and it has been shown that latent inhibition can help to protect a patient from developing anxiety in the future should they be subjected to a traumatic dental experience (de Jongh et al., 1995).

## **Attendance Rates and Oral Health Status**

The New Zealand Health Survey 2006/7 found that the most common reasons for non-attendance at the dentist were cost (52.9%), not being able to get an appointment (18.7%), not being able to spare the time (14.1%) and fear/anxiety (10.5%) (Ministry of Health, 2008). In this study, cost was also the greatest deterrent to treatment, at 62%, followed by fear at 19%. Unfortunately, it has been reported that “removal of financial barriers to care has not been shown to increase demand markedly” (Dixon, Thomson, & Kruger, 1999 p. 38) but there can be no doubt that cost is an issue that needs to be addressed and should be followed up by further investigation.

De Jongh, Adair and Meijerink-Anderson (2005) found that 5 to 7% of participants in their study never or rarely visited the dentist because of their fear of dental treatment. Locker et al., (1996) found that anxious patients are often irregular attendees, delay seeking treatment or avoid it altogether. They also are more likely to have poor oral health or to be dissatisfied with their oral health. Kruger et al., 2007, found that dental anxiety predicts caries risk, and Ragnarsson et al., 2003, found that those with higher levels of anxiety have fewer teeth remaining. These findings support the classical conditioning model since substantially more dentally anxious individuals can recall negative dental experiences and are more likely to report negative responses to treatment. Likewise, participants in this study with self-reported moderate or poor oral health were significantly more anxious than those with good oral health.

Locker et al., 1996, found that close to 70% of participants in their study attended the dentist for regular preventive visits. The current study found that 62% of the population had visited the dentist in the last year and 31% had attended between 1 and 5 years ago. This finding contrasts with results from the 2006/7 New Zealand Health Survey which found that “one in two adults (51%) had visited an oral health care worker in the previous 12 months” and 15% had not visited within the last 5 years (Ministry of Health, 2008, p.285). However, this Health Survey also found that 45 to 74 year olds were more likely to visit the dentist than 18 to 44 year olds; that European/Other adults were more likely to visit the dentist regularly than Maori, Pacific or Asian men and women, and that attendance rates were significantly lower for those in the most economically deprived groups (37%) compared to those who were least deprived (61%). As the university population consists largely of European, older and more socially privileged people the expectation would be for a relatively high attendance rate, which was in fact the case.

Thomson (2001) investigated the use of dental services by 26-year-old New Zealanders and found that “visiting the dentist for routine check-ups was associated with better long-term oral health consequences than only going when there was a problem” (p. 44). A study of people from the West Coast of New Zealand’s South Island found that “dental satisfaction was lower among younger people and those who were dentally anxious, and it was higher among people with tertiary education” (Thomson et al., 1999, p.44). Unfortunately, 51% of the current study population last visited the dentist for a specific problem rather than for a general check and only 44% felt that they had good oral health despite being older and having tertiary education.

## **Influences on and Explanations for the Development of Anxiety**

### **Gender**

Females were found to be significantly more anxious than males in this study. Although it appears that this is a common finding, no conclusive explanations have been offered. (Locker et al., 1996; Ragnarsson et al., 2003; Oosterink & de Jongh, 2008).

### **Age**

In the present study the most anxious age group was 36 to 50 year olds with the oldest age group being less anxious than the youngest. The same trend was found by Locker et al., (1996) who suggested that in older age groups other health issues develop that take precedence over dental care, and that the youngest have received better treatment than the older groups due to an increased awareness of and responsiveness to the harm caused by dental anxiety.

This study comprised adults only and so did not include findings directly derived from children or adolescents, although some of the interview participants reported feeling their highest levels of anxiety in their teenage years. One explanation for heightened anxiety in adolescence concerns brain development. It has been proposed that an adolescent’s brain development is incomplete. The pre-frontal cortex, responsible for complex thinking that involves anticipating consequences, is not fully developed leaving the adolescent reliant on the amygdala which controls instincts and impulses resulting in intense emotions including fear (California Department of Education, n.d.). One participant recalled being aware that she required dental treatment as an adolescent and being extremely fearful. She avoided going because she was able “to manipulate

things so that you don't really have to do what you should do" and this made things even worse.

The following studies illustrate the ongoing debate in the literature concerning the development of dental anxiety. Locker, Liddell, Dempster and Shapiro (1999) found that 72% of people with dental anxiety developed it in childhood or adolescence and there was generally an exogenous cause such as family history coupled with negative experience; when dental anxiety developed in adulthood it was likely to be due to an endogenous component along with negative experience. Thomson et al., (2000) go so far as to say "aversive conditioning experiences appear to be unrelated to the adult onset of dental anxiety, and it may be that particular temperamental or psychological traits are associated with the condition" (p. 289). In contrast, Poulton, Waldie, Thomson and Locker (2001) found in a Dunedin longitudinal study that while the development of both early and late onset anxiety were subject to aversive conditioning experiences, an external locus of control was significant in adults while a "stress reactive personality" type was more significant in children (p. 777). These authors also postulate that there could be a distinction between dental fear and dental anxiety but that further study is required in this area. This distinction has not been made in the current study. This difference of opinion with regard to causation will have some impact on the suggested approaches to intervention, and the current study highlights the complex web of factors that can influence the development of anxiety (see Figures 5 and 7). All of the interview participants' experienced dental anxiety as children. They were subjected to multiple negative experiences and most also reported being influenced by family members or peers. One participant had older siblings and assumes that she had anxiety about going to the dental nurse even before her first visit because she had heard stories about how unpleasant it was. Others commented on the general dread in the classroom when children were collected for dental visits.

### **Ethnicity and Culture**

The number of non-European respondents to the questionnaire was very small and no significant associations were found between dental anxiety and ethnicity. However, one of the interview participants was able to enlighten the researcher with her unique perspective as a Maori child of the 1970s. Dental attitudes in rural Maori were recorded by Verboeket in 1976. The prevailing attitudes were that loss of teeth was inevitable, teeth were unimportant, dental visits were unnecessary unless there was pain, and there was little understanding of disease prevention. This aligns with the comments made by

this study's Maori participant who grew up in a small town and lived with her grandparents who were reluctant to take her to the dental clinic since they could not see the necessity. She was surrounded by family members and peers who all told stories about bad experiences at the murder house. Avoidance of situations that were unfamiliar and where approval may not be gained was common (Verboeket, 1976). Travel was and still is an issue for this participant's extended family who continue to live in the small town she grew up in. The distance and the cost of travel (including time off work) especially when there are several children in the family is a financial burden. The journey from the town to the dental clinic represented to an "epic trek" to this participant. There was fear of the unknown, fear of something new and fear of pain involved associated with these visits. Arriving at the "foreign sterile" clinic, after a long journey, to find a dental nurse who was "cold, uncaring, large and European" was frightening.

This Maori participant is very happy to have her own children attending a city school where the dental clinic is on the school grounds and the dental therapist is part of the school community. The Dental Council of New Zealand (DCNZ) best practice guidelines (2008) state "Maori culture emphasises familial and community ties" and it is recommended that relationships with patients be established outside the dental clinic environment and that whanau are involved in dental visits. Broughton (1993) wrote that "by acknowledging and recognising the importance of the whanau, the family, in the delivery of dental services, the dental profession in this country can go a long way to improve the dental health of the Maori people" (p.15). Tane (2009) reported that the Maori Dental Association believed that clinics situated on the school grounds suited their children best. In the current study, the Maori participant agreed because this means that children are not reliant on reluctant caregivers to get to the clinic and avoiding treatment is more difficult. Unfortunately, the restructuring of the school dental service today may mean that a mobile clinic visits most schools and so the opportunity for the dental therapist to be involved in school activities and the community will be limited.

### **Anxiety Stimuli**

When participants were asked about the factors that caused them the most anxiety in relation to dental care the responses indicated that cost was the most important one with 22.5% citing it as promoting anxiety. This was followed by pain and fear (19.5%), the drill (16.5%) and injections (11%). Other studies also found that invasive stimuli such

as the drill and injections were more highly anxiety provoking than non-invasive stimuli such as having hands in the mouth or a loss of control (Oosternick & de Jongh, 2008; Berggren & Meynert, 1984). It is interesting that almost all of the interview participants mentioned the treadle drill with great trepidation, although it is unlikely that they would all have experienced this as electric drills became available in 1908 (Encyclopedia.com, 1997). Treadle drills were still used to some extent in New Zealand for a period of time after this but were gradually replaced by electric drills operated by a foot control with an external pulley system which could have appeared to be “treadle-like” and so could have created some confusion.

Communal anxiety was mentioned by one participant as the feeling that pervaded the classroom as children were collected to be taken to the clinic for treatment. This practice was mentioned by most of the participants as one of the most feared events. This could be explained through conditioning theory where an anxious response is produced as a result of the conditioned stimulus of someone coming to the classroom with a list, being connected with probable pain (Rachman, 1991).

### **Ethics and Practitioner Relationship**

Healthcare ethics have evolved since the 1970s to include moral values and judgements about care received by the public. Kleinknecht, Klepac and Bernstein (1976) discuss the changes to philosophy of dental treatment that began to develop in the 1970s, saying it was “no longer considered appropriate for a dental practitioner to treat the dental patient merely as a means of transporting an oral cavity and its contents to and from the dentist’s office” and that the “drill ’em, fill ’em, bill ’em” attitude was changing to one of concern about the “impact on dental health of patient’s fears, motives, expectations and uncertainties”(p. 586).

Interview participants who reported being told to sit in the chair, not to complain and to have treatment administered with no explanation or consent, illustrate the approach used during the early to mid 20<sup>th</sup> century where an authoritarian style of communication and patient control was employed. Participants described the dental nurse as being “like a strict matron” and the expectation was that patients would “make as little fuss as possible” and not “mess [the dental nurse] about”. One participant said the consequence for bad behaviour was “a slap around the leg”.

This authoritarian attitude, the amount of work that had to be completed and the power differential between child patient and dental nurse meant that there was potential for

abuse of power. One participant postulates that “it was almost like the prison guard phenomena where you had so much power over the people you were looking after that you almost became a sadist”. Another recalls what happened if you were a patient who did not fully cooperate saying “if you were a bit of an unhappy patient they would do horrible things to you like drill longer than they needed to...they [peers/relatives] felt they were picked on”.

Nettleton writes from a British perspective about “collective prevention”. Schools were seen to be the ideal “observatories for the instigation of routine surveillance” and for the exercise of dental power (1992, p. 31). Gant (1911, p. 615) observed about school dental treatment, “most of the children must be persuaded to accept it, if the system is to be a complete success”. The amount of dental disease faced in the early 20<sup>th</sup> century was so immense that pragmatism and efficiency played a part in achieving an improvement in dental health but, as an unintended side effect, many children received an education in dental anxiety rather than in the prevention of dental disease.

Finn urged practitioners in the 1920s to stay abreast of advances in the science and technology associated with dental treatment so that the public would be impressed with the diagnostic and operative skill of dentists. He believed it was not the public’s place to demand the treatment they wanted but for the dentist to decide what treatment was appropriate based on the current evidence. He felt the profession had to unite to decide what was in the best interests of public health, “for surely we have evidences of the public almost dictating to the profession what surgical treatment they desire. This is an impossible situation” (1927, p. 86). In the present study, informed consent was not required and several participants recalled having treatment carried out and not knowing what it was they had had done when they left the clinic.

There was a fundamental change in approach to treatment in the last decades of the 20<sup>th</sup> century, the dawning of which is illustrated in Epstein’s comment: “the success or failure of the treatment may depend more on the rapport he [the dentist] establishes with the patient, than on the measure of technical proficiency” (1964, p. 71).

Patients are now fully informed of their options and asked to consent to the course of treatment they choose. The child (or adult) is not expected to bear physical pain, with every effort being made to ensure that treatment is pain-free. Most of the participants in this study placed great importance on their relationship with their dental practitioner and found themselves becoming anxious again if their practitioner was away or retired. A relationship of trust was built that they perceived was missing in the dental nurse -

child encounters of their early experience. The latter relationship was reflected in their descriptions of the nurses as impatient, uncaring and unsympathetic. Berggren and Meynert (1984) emphasise their finding that the “most desired dentist attributes were understanding and trying to avoid pain whereas the most undesired were being heavy handed, critical, and remote and distant” (p. 247). Milgrom and Weinstein (1993) found that a caring dentist was less likely to cause anxiety through the infliction of pain than a cold and controlling dentist.

On participant was quite clear that a large part of her dental anxiety was due to the humiliation she felt at receiving “charity” dentistry (hospital based treatment as an adult). Others cited humiliation resulting from admonishment as a cause of anxiety about making dental visits. On the basis of the interview data it appears that a common approach to preventive dental education, both then and now, is to reprimand the patient for things they are not doing well which results in patients feeling embarrassed and guilty. Participants talked about being “put on the naughty list” or being “really, really told off”.

## **Pain**

It is understandable that pain can lead to anxiety (Berggren & Meynert, 1984). Locker et al., (1996) found that those who had “painful and frightening experiences had almost 10 times the risk of being dentally anxious than those with no such experiences” (p. 89). With this finding in mind, it is interesting that Kleinknecht et al., described dentistry in 1976 as being “one of the few socially sanctioned inflictors of noxious stimuli in our culture” (p. 589).

Forty- nine per cent of the questionnaire respondents wrote comments about pain to explain their levels of anxiety. These included the following explanations:

Past child[hood] experiences of the ‘murder house’. Long needles and white knuckle pain.

[I had] horrendous treatment by dental nurses as a child. I endured physical violence at their hands. No pain relief from treatment [was] received.

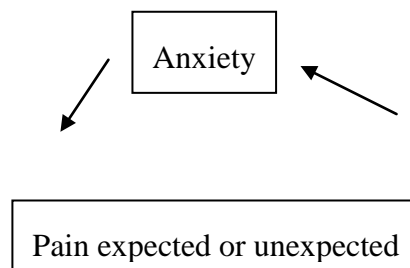
These participants underwent classical conditioning and came to fear dental treatment and the dental environment because of its association with pain.

Pain was seen in the early 1900s as physiological and associated with organic lesions. Pain was, therefore, associated with the mouth and teeth in dentistry. A change took



place in the 1940s when the psychological response to pain was recognised. It became clear that “emotional factors were playing a large role in precipitating or aggravating dental symptoms” (Nettleton, 1992, p. 70). It was recognised that the mouth and the mind needed to be studied concurrently and so an alliance between dentistry and psychology was born in an attempt to analyse and understand this connection. In the 1950s, the socio-psychological space which transcends the individual patient was also acknowledged. Further attempts were made to understand and control pain and fear both at a micro level (the individual) and a macro level (for example, the prevalence of dental anxiety in a large population). Reflecting the emerging interest in the socio-psychological space, Corah developed an anxiety scale in 1969 which took into account different contexts in which anxiety might be expected.<sup>4</sup>

The complexity of relationships between anxiety, pain experience and pain tolerance is also widely appreciated now. For example Kent and Croucher (1998) found that when anxiety is increased both the threshold of pain and pain tolerance are reduced and so a vicious cycle is set up. They found that groups of high-fear patients experienced more pain than low-fear groups.



**Figure 6** Relationship between pain expectation and anxiety (Kent and Croucher, 1998).

This cyclic anxiety-pain relationship was identified by some of the interview participants who, when talking about the “incredible pain” they had to bear as children,

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<sup>4</sup> Data was collected by the Ministry of Health for the New Zealand Oral Health Survey in 2009 and the Corah Dental Anxiety Scale was included as one of the investigative measures. The resulting data will not be available for use until December 2010 but it will be interesting to compare with the outcomes of this study.

believed that this created a legacy for them of seeing the dentist's surgery as a painful place that stimulated anxiety.

Today dentistry is virtually painless however, and this can be attributed to both advances in technology and better understanding of the phenomenon of pain and its relationship with anxiety. Unfortunately, the stereotypical view and negativity from previous times remains (Kleinman, 1982; Cartwright, 2010).

### **Murder House Stories: How Common Are They? What Is Their Effect? What Are They?**

The murder house stories do exist and continue to be told. School dental service experience was mentioned as an explanation for high levels of anxiety today by 22% of questionnaire respondents, and 3% specifically and spontaneously referred to the murder house. Others readily commented on the murder house concept when asked directly about their familiarity with the phrase. All of the interview participants shared their versions of the stories with the researcher.

Flyvbjerg states that "Case studies often contain a substantial element of narrative. Good narratives typically approach the complexities and contradictions of real life. Accordingly, such narratives may be difficult or impossible to summarise into neat scientific formulae, general propositions and theories" (2006, p. 237). Despite the truth of this statement, there are some striking commonalities between participants' versions of the stories. Participants heard these stories from others as well and they perceived that these influenced the development of their anxiety. Three participants had older siblings pass the phrase on to them and could not remember a time when they were not anxious about dental treatment as children.

Participants were aware of the harm the "murder house" phrase could cause, the image it conjured up, the deterrent it could be and as a result most did not use it today. Some participants had worked hard to ensure their own children were not as anxious about treatment as they were themselves. Bringing up the stories again invoked feelings and memories and was upsetting. One participant became tearful during the interview as a result.

Cartwright (2010) found that 17 New Zealand media articles used the phrase "murder house" when reporting dental issues between 2000 and 2008. This may be detrimental to oral health promotion. One of the articles quoted in this paper says:

I'm of the generation that carries bitter memories of dental nurses who gouged out the bits between our teeth with sadistic energy, wiped the blood and gum on the napkin chained around our neck- "See, now look what you've made me do"- and then drilled us into oblivion. They packed us off not only with an aching jaw and a mouthful of amalgam, but also with an overwhelming sense that it was all our fault (White, 2008, p. 94).

Another quotes a film festival item saying:

In the New Zealand of the 1960s, dental dinosaurs walked the Earth. Armed with agonising low-speed rotary drills, poorly trained dental nurses lurked like institutional torturers on the grounds of the nation's schools. The kids back then had a name for the school dental clinic: 'The Murder House' (Auckland Open-air Film Festival, 2007).

The murder house stories invoke memories of cold and isolated clinics staffed by severe and seemingly uncaring dental nurses who were a product of the times when hospital matrons were of similar ilk and "no nonsense" was expected from patients. When coupled with the poor technology of the time and stringencies imposed by government on the public sector, the result was the infrequent use of local anaesthetic and the infliction of pain.

The very real fear of pain was built upon by other factors. Communal anxiety in the classroom, which was evident upon the imminent removal of one of its occupants for a dental visit, were contrasted with removal for other reasons such as ear tests, which were considered favourably since time off class was valued. All participants viewed this method of collection for dental visits with great apprehension. There were reports of children fleeing, hiding, feeling like "throwing up" and being terrified.

The lack of parental support in the clinic; and of informed consent or communication about what was done and why, were very upsetting for the children.

The lack of control over the situation, "no use objecting", and fear of reprimand made the experience even more distressing. Participants felt vulnerable due to hands being in their mouths. The procedures were invasive and intrusive, and the proximity of the practitioner was confrontational and an invasion of space. Additionally there were issues of trust. One participant commented "Some of them [dental nurses] were older women who did seem to have a bit of a power complex and I just felt that they over-drilled. I think often teeth were probably drilled beyond what they needed to be".

Children in the mid 20<sup>th</sup> century were burdened with rampant dental disease. This increased dental anxiety. Fulton's study of New Zealand children's teeth, published in 1951, found that the number of decayed, missing and filled teeth rose exponentially

from two at the age of 7 to 10 at the age of 14 compared to 1.42 teeth in Year 8 school children (12-13 year olds) in 2008 (Ministry of Health, 2009).

It is understandable that stories resulted from these experiences. Stories are used to explain and share experiences:

In an educational and organisational context, story telling can be a means for sharing norms, values, tacit knowledge, developing trust and commitment, facilitating unlearning and generating emotional connection thus having the potential to evoke both dialogue and reflection that can engender learning (Pio & Haigh, 2007, p. 80).

As the stories from the murder house illustrate, they contain beliefs about a phenomenon that can be passed down through generations. Stories are a useful teaching tool although this is a subject, the negative connotations of which it would be better not to learn. Fisher (1984) proposed a theory that story telling is a form of communication framework that decisions and actions can result from. Sole and Wilson (2002) point out that “when a story is recounted, the narrative form offers the listener an opportunity to experience in a surrogate fashion the situation that was experienced by the story teller” (p.5). Therefore, stories have the potential to be an important influence on the perpetuation of anxiety in society.

Parental attitudes to dental care had an effect on participants and as most of their parents had dentures a fear of tooth loss resulted. Participants remembered being encouraged to attend the school dental service by their parents. One said his parents’ message was “don’t do what we did, you have a better chance”. When he wanted to opt out of the school dental service as a child his parents wouldn’t let him. He said “so the children went because they were told to but it was hard to believe anything that hurt this much could actually be good for you”.

The murder house was located at some distance from the classrooms and when participants were questioned about the reason for this and why they thought it was called a murder house their responses included the following:

The murder house was separate from the rest of the school “probably so the other children could not hear the screaming”. It was something to be avoided. It was sterile and stark. There was a smell of “burning bone” or “disinfectant”. The drilling felt like murder and while it was not literally a murder house there was a connotation “that there was someone trying to harm you when you went to the dental nurse”.

This view was qualified by one participant who felt that children knew that the dental nurse was just doing her job and that it was hard for her also with the technology she had to deal with and the poor standard of oral health during the early 20<sup>th</sup> century. He stated that “she was not a murderer. It was a murder house”. However, this view was not held by most of the other participants who felt that dental nurses were brutal and scary.

## **Anxiety Effects**

Anxiety effects include avoidance of care, as discussed under attendance rates and oral health status above, which leads to poorer oral health outcomes and can affect social functioning. Effects that participants experienced on visiting the dentist included such manifestations of stress as increased pulse rate, heart palpitations, fainting, gagging, dizziness and nausea among others. Some mentioned the stirring of bad memories and tension or frustration especially when the dental practitioner wouldn’t listen.

Nervous anticipation can be crippling. Participants referred to making a dental appointment as the “ultimate procrastination” which often didn’t happen unless there was a pressing need such as a painful tooth. This was despite an understanding of the need for preventive dental care and a desire to keep teeth. As a consequence, non-attendance causes feelings of guilt. One participant said:

I try and block it from my mind but every time I think about the fact that I have to go to the dentist I get anxious and when I’m driving to the dentist I’m anxious and sitting in the chair I’m very anxious. But I try to relax because I know that the anxiety makes things ten times worse.

Methods to combat anxiety will be discussed later in this chapter but first the murder house stories and effects are viewed from a theoretical perspective.

## **Theoretical Perspectives on the Data**

### **Classical Conditioning**

This form of learning was originally demonstrated by Pavlov (Davey, 1988) and in the present context involves an aversive experience such as one involving pain becoming linked in the mind of the individual to other more neutral stimuli so that these stimuli then take on a similar negative quality. These are known as conditioned stimuli. Some of the data were readily interpreted through the lens of classical conditioning to the extent that one participant explicitly attributed his fear to “classical conditioning”.

Other participants found that their anxiety could be increased or triggered by certain things in the dental environment including smell, the noise or vibration of the drill, or having to wait for treatment. De Jongh et al., (1993) listed a similar range of stimuli that could provoke distress, and related them to classical conditioning theory: “neutral stimuli acquire painful properties and become conditioned stimuli that naturally evoke anxiety” (p. 205). They found a strong relationship between triggers, negative thinking patterns, and dental anxiety and observed that those patients who had sufficient control over their thinking so that they could suppress or change their negative thought patterns had reduced levels of anxiety.

### **Social Learning Theory**

Social learning theory as proposed by Bandura (1977) emphasises the influence of the attitudes of significant others and the effects of modelling on learning. These effects are clearly demonstrated in the following feedback from interview participants:

One participant remembers waiting in the school dental clinic while her peers had treatment. She found listening to the other child having treatment, and crying because of the pain, to be very distressing. Three participants remember peers, siblings, parents, aunties and uncles, talking about the murder house and telling the same stories about their experiences. They felt it was “the norm” to have a negative attitude. All the children at school had the same sort of fear of the dental nurse. Another thinks her mother consciously tried to add to her dental anxiety when she was a small child by telling graphic stories about having her teeth taken out. “She would talk about the blood and everything and so I think the anxiety might have been a combination of the dental nurse who was brutal and my mother who used to tell us brutal stories about her experiences”. As a result of this she is careful about her portrayal of the dentist to her children. She says “any fears I have I always keep them away from my children because I’m really aware of fears and how you can pass them on to your children”.

### **Attribution Theory**

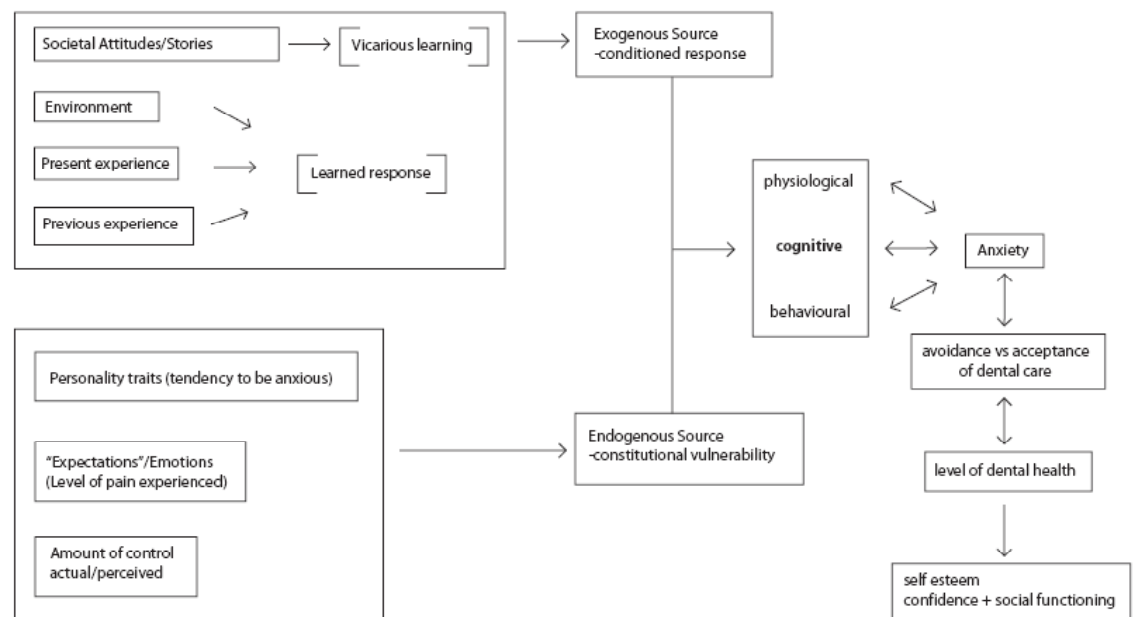
Attribution theory was first developed by Fritz Heider in 1958 to explain causes of behaviour. The theory is concerned with how thinking and behaviour are linked to the individual’s interpretation of events (Weiner, 1974). There are three dimensions to the model, all of which are clearly demonstrated in the current data. They are stability, controllability and locus of control. Stability relates to whether there is a possibility for a change in the cause of behaviour and is connected to expectancy. A stable cause such

as a standard dental visit can result in learned helplessness because the patient has no hope of things ever changing. Controllability relates to the cause being either one that can be controlled or one that cannot. A dental practitioner admonishing a patient is seen as not controllable by the patient, which will lead to feelings of shame. If the patient feels they have some control, for example, over whether they visit the dentist or not, failure to do so will result in feelings of guilt. The third dimension is especially pertinent in the study of dental anxiety and is concerned with the reasoning behind the cause of an action. Some people attribute their actions to other people or to circumstances. These people have an external locus of control and so in this study may have felt their anxious reactions were due to painful experiences and a cold practitioner. This contrasts with those who believe that what happens to them is due to their own characteristics or actions. These people have an internal locus of control and may feel their failure to attend dental appointments is due to their own inability to cope or to a low pain threshold. However, they may not necessarily just accept things but rather try to change them. Internal and external loci of control are two poles situated at either end of a continuum (Woolfolk, 2007; Litt, 1995). It is useful, for example, to compare CS6 who “makes a conscious effort to confront her fears” with CS7 who has “always been dentally anxious” and felt she would not be able to change unless she found a dentist who could “change her attitude”.

Kent and Croucher (1998) found that dental anxiety resulted from classical conditioning associated with negative learning experiences, vulnerability or lack of control felt from being prostrate with sharp objects in the mouth and a fear of the unknown. Relatives or peers can act as models in the development of anxiety and these authors added that traumatic experiences in other settings such as medicine could “generalise” to dentistry.

Consideration of these theories, participant findings and other relevant literature has prompted the construction of the following model which relates various factors in the development of dental anxiety.

**Figure 7** Theoretical model of the development and maintenance of anxiety



In this model two primary sources of influence are identified: exogenous and endogenous. Exogenous sources influence the development of anxiety as a result of vicarious or actual experiences. Vicarious experiences may be stories passed on by peers or family or a societal attitude reflected in media reports about dental care. Direct negative experience may be present or past and results in a learned negativity towards dental care which persists in the patient's cognition. Endogenous sources are those that are subject to the patient's constitution and include personality traits that may increase anxious tendencies, expectations of treatment that are influenced by emotions and the apparent amount of control the patient has over the situation. All of these factors are linked to anxiety through a cognitive- behavioural pathway with the resulting anxiety influencing avoidance, level of dental health and ultimately self esteem and social functioning.

With this framework in mind it is now possible to consider intervention strategies.

## Reducing Dental Anxiety: Intervention Strategies

### Changes Already in Place

The dental professions should be congratulated for the progress made in the development of pain-free dental treatment and the heed paid to advice given in the campaign to reduce dental anxiety. Changes have been made but there is still some way to go since dental anxiety levels have remained fairly stable in the last 50 years



according to Smith and Heaton's 2003 review of the literature. It would be interesting to ascertain the levels of anxiety felt by New Zealand children today since, from parental reports in the current study, it would appear that anxiety levels are lower and the murder house phrase is no longer used. The participants in this study had these things to say about improvements they have noticed in dental treatment today:

My current experience of dentists is only positive. The fear remains from classical conditioning, and I am convinced it will fade with generations removed from the "House of Pain".

Others appreciated the modern equipment, anaesthesia and preventive measures employed by dental practitioners. Some felt the murder house image had been "buried" and that dentistry is moving in the right direction.

Some participants were surprised to find dental therapists were friendly and kind to their children and the treatment was totally different. The therapists took time to relax the children and make sure they were comfortable. One reflected on the major changes that have occurred in healthcare generally and said:

Healthcare professionals' attitudes have changed as well so that you don't get so many of the bossy matrons in hospitals who tell you off and treat you like a number or a piece of meat. Now patients are seen as clients and expect certain standards.

In contrast, however, some participants believed that improvements have been minimal or modest.

Participants complained of belittlement by dental practitioners, a largely negative public attitude and a reduction in the quality of the school service, with therapists being friendlier but less thorough or accessible, due to time constraints. Some felt there were still many similarities to their previous bad experiences including smell, needles, noise and vibration of the slow speed drill.

It appears from the accounts of the interview participants which are summarised in Figure 5 that there are still some areas which require attention in the campaign to diminish dental anxiety. These include the discontinuation of communication of negative attitudes by some members of society and the media along with a further improvement in practitioner approaches to anxious patients.

## **Methods to Combat Anxiety**

Participants in this survey reported having tried various methods in a bid to decrease their anxiety levels including sedation, hypnosis, visiting different practitioners, and

making a conscious effort to relax. The last of these coupled with finding a warm and sympathetic practitioner appeared to have been the most effective as participants who have managed to achieve this were regular dental attendees. Helping patients achieve these outcomes is possible with the use of suitable approaches.

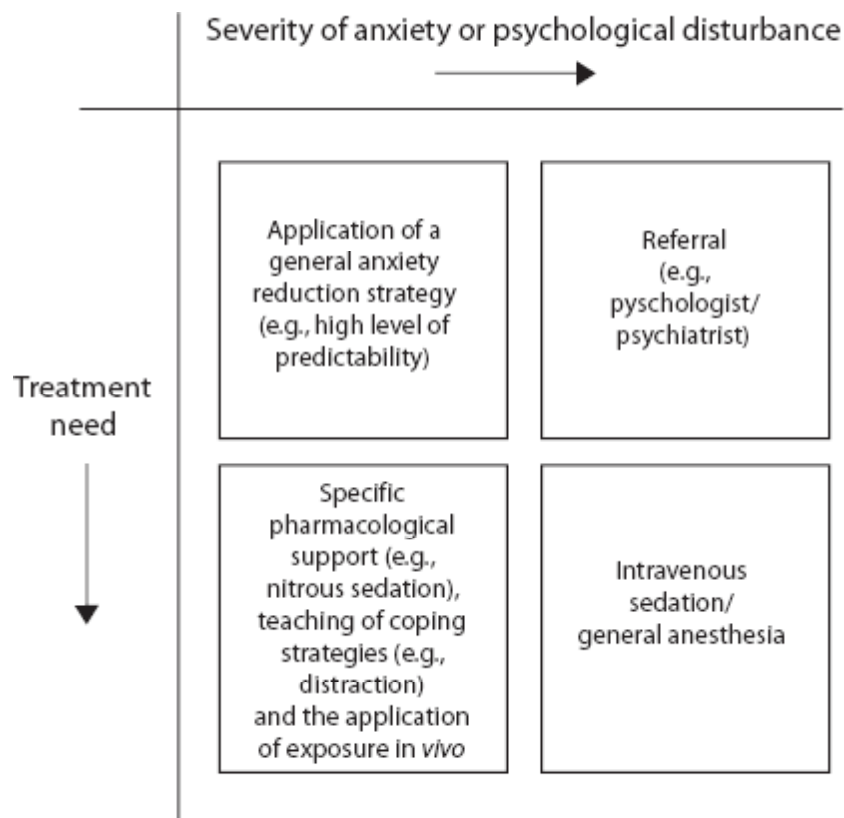
Dentists may not see spending time with patients to combat their anxiety as being cost effective. This may be part of the reason why dental anxiety is not being addressed adequately. However, Nettleton (1989) found that “fear has been observed to contribute to unsatisfactory results, to be a strain on the dentists themselves, to result in loss of time for the dentists and to increase the difficulty of performing dental procedures” (p. 1189). This provides an incentive, along with the benefits for patients, for addressing this problem.

Dentists, in collaboration with psychologists, can take on the educator role and help to reorient patients’ thought processes rather than seeing these patients as dissatisfying to treat. Chambers (2001) believes the latter is likely to happen when dentists take a largely paternalistic approach to the provision of care, believing that “they cause patients to get better”. Anxious patients are often perceived as uncooperative and a threat to their dental practitioner’s need for control (p. 1430). By giving dental professionals tools to use in understanding and addressing anxiety, it is much more likely that these views can be changed and effective intervention achieved.

Interestingly Graham (1991) points out that “anger is the dominant emotional reaction when another’s failure is perceived as caused by controllable factors such as lack of effort” (p. 17-18). This may explain some dentists’ frustration with anxious patients who they think could be trying harder to overcome their anxiety. However, patience and encouragement are required on the part of the practitioner as anger reinforces the patient’s helplessness. Attribution re-training asks the patient to take responsibility for their own reactions and emotions, to change their expectations of treatment and to realise some control over their treatment in conjunction with their practitioner. This could, for example, involve having some input into treatment planning and making use of stop signals during treatment sessions. A number of investigations of ways to reduce dental anxiety draw on attribution theory and associated cognitive-behavioural intervention methods.

Litt (1995) reports an experiment conducted into the preparation of patients for oral surgery. Some patients were taught relaxation techniques and some were administered a sedative. Patients’ appraisals of their ability to cope with the treatment were

compared and it was found that those “who attributed the relaxation to their own efforts, as opposed to the medication, benefited most” (p. 465). Thus, patient locus of control may be an important factor for practitioners to consider. De Jongh et al., (2005) comment that when a patient is given a sedative they can complete the set course of treatment but leave with none of their fears addressed and so their tendency towards avoidance is likely to continue. Therefore, sedation is a useful tool in situations where there is a lot of work to be done or where the treatment is especially difficult but should not be used without the patient’s anxiety being addressed also. De Jongh et al., included a useful diagram in their paper to summarise the suggested interplay between sedation and other therapies depending on the patient’s severity of anxiety and their treatment need. Where anxiety is less severe and treatment needs are relatively small, the application of general anxiety reducing strategies is advised. Some combination of these strategies with sedation or psychiatric referral is suggested as either the anxiety or the treatment needs increases.



**Figure 8** Appropriate approaches for different levels of anxiety and treatment need (de Jongh et al., 2005, p. 77).

Litt, Nye and Shafer (1993) assessed the success of various cognitive-behavioural methods in the treatment of dental anxiety in comparison to sedation and found that those which promoted perceived self-efficacy and/or perceived control had more success than using sedation alone. Those who received cognitive-behavioural interventions were more likely to complete the subsequent series of dental appointments and had decreased anxiety at these appointments. They suggest systematic desensitisation, social support, informative education, modelling, hypnosis and relaxation training can all produce favourable outcomes. However, not all interventions are equally useful for all patients. For example, some respond well to the provision of information about a procedure while others do not want to know what is being done and so each approach must be individualised. They found that “each [appropriate] intervention contributes independently and additively to effectiveness” (p. 1242), suggesting that it would be useful for the dentist to have a variety of strategies to employ depending on the response gained from each method. They concluded that “thoughts related to self-confidence and control can be manipulated, and that these thoughts can in part determine how well a person copes in stressful dental situations” (p. 1237).

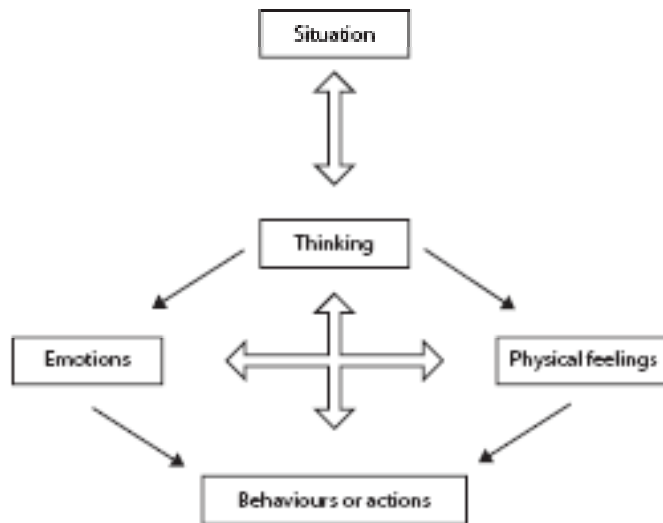
A study of dental patient satisfaction in the United Kingdom found that people want more control over their treatment options and that when they have more input into their treatment planning, compliance and the resulting treatment quality are enhanced. Reasons for patients being unhappy with dentists centred on communication, with not enough consultation about specific problems they may have or how they feel about treatment being key factors. It is important for dentists to have some knowledge of patient expectations both from a dental anxiety reduction and a patient satisfaction standpoint (Newsome & Wright, 1999). This finding links to an observation made by Munster Halvari, Halvari, Bjornebekk, and Deci (2010) who noted that an empathetic social relationship between dentist and patient with a concomitant increase in patient autonomy helped to decrease dental anxiety. A supporting rather than a controlling relationship is the aim where the dentist “offer[s] choice, provide[s] a meaningful rationale, minimal pressure and acknowledge[s] the target individual’s feelings and perspectives” (Williams, Grow, Freedman, Ryan, & Deci, 1996, p. 117). Increased autonomy support (rather than control) leads to increased needs satisfaction, increased perceived control, increased perceived dental competence, increased motivation for care and decreased anxiety (Munster Halvari et al., 2010).

De Jongh et al. (1995a) suggest that appropriate therapy for dental anxiety may include cognitive-behavioural therapy as well as other behavioural therapies, including systematic desensitization. They conducted an experiment which found that one session of behavioural cognitive therapy did reduce dental anxiety more than provision of information alone, certainly in the short term. They concluded that “challenging and altering negative cognitions, such as existing misconceptions about dental treatment, maladaptive beliefs about oneself and the ability to cope with the situation, can have lasting anxiety reducing effects” (p. 952). They also concluded that one hour-long session was too short to expect long term change and that in previous studies 20 sessions had been recommended. This is something that dental practitioners could learn to become proficient at so that at each dental visit the therapy could be reinforced and the reduction in anxiety consolidated. Repeated encounters with the dental treatment situation can increase the confidence of the patient in their ability to master the experience and reduce their negative beliefs, their pain expectations and their helplessness.

Kvale, Breggren and Milgrom (2004) carried out a meta-analysis of behavioural interventions for the dentally anxious. They included interventions that were behaviourally oriented, cognitively oriented and those that used educational interventions such as informative education, group therapy and the “iatrosedative” technique. They concluded that “patients signing up for a behavioural intervention for dental fear can be expected to report a significant reduction in their fear, and this effect generally seems to be lasting” (p. 250). Other factors of importance such as the dentist being sympathetic and supportive cannot be overlooked.

Cognitive-behavioural therapy is based in part on attribution theory which not only provides a framework for analysing and interpreting explanations for dental anxiety, but also provides a theoretical foundation for effective intervention strategies. To assist people in overcoming their helplessness in alleviating their anxiety, cognitive-behavioural therapy can be utilised. It is defined as “an action-oriented” form of psychosocial therapy that works on the basis of poorly adapted thinking patterns causing maladaptive behaviour and “negative emotions”. Maladaptive behaviour is that which is counter-productive or hinders daily living. Cognitive-behavioural therapy attempts to change thought patterns to a more positive framework which will improve emotional status and behaviour (Ford- Martin, 2002).

Parkin and Boyd (2008) describe a cognitive-behavioural model summarised below.



**Figure 9** Cognitive-behavioural model (Parkin & Boyd, 2008, p.66).

This model shows the relationship between a situation the subject finds him or herself in and the way thinking connects emotions, physical feelings and behaviours or actions. All parts affect the others and automatic thoughts or thought patterns are often associated with strong emotions. Thoughts have inherent power and so need to be restrained. Parkin and Boyd suggest that it is best not to rehearse the unpleasant ways in which situations could end but instead to view problems as a challenge.

How is it that some of the participants in this current study went from a position of having had negative experiences and being anxious to being able to cope with dental visits and in some cases completely overcoming their anxiety? Changes to the circumstances of the dental visit may have helped, but some participants also attached substantial importance to their “trusted practitioner”. One participant feels a return of her high anxiety state with the presence of a locum and so still exhibits some element of an external locus of control whereas others say they have “made up their minds” to go and “know that they will be alright” which shows some control over their thought processes. One of these participants consciously used a desensitisation strategy and explained how she had gone about this by using self-control and deciding she needed to “face her fear”. Parkin and Boyd acknowledge that situations beyond our control arise

but that our reactions, thoughts and interpretations of these situations affect our emotions and influence the outcome. They suggest negative thought patterns such as “imagining the worst happening”, “catastrophising” and “underestimating ability to cope”(p. 72) amongst others, occur commonly. They urge people to develop an understanding of their thinking so that they are more flexible and able to nurture balanced alternative thoughts. Important tools for building resilience include “self-belief, facing fears, benefit finding, social support and cultivating positive emotions” (p. 81-82). One participant in the current study who had managed to overcome his anxiety rationalised dental treatment by thinking “there are worse things in life, you know, it’s not like having a limb amputated without anaesthetic”. This same participant used a finger-squeezing distraction technique as a child while having restorations placed. This proved to be effective at the time.

Other measures mentioned by participants in this study as recent improvements to care, including appropriate distraction techniques (music, videos), a better environment (comfortable and aesthetically pleasing), and technology, have gone a long way to positively enhance the dental experience for many. Further measures are still necessary to completely dispel the murder house mentality. Many of the interventions currently being investigated and discussed above are based on attribution theory while others take into account social learning theory.

Dentistry is seen by the public as symbolising power, pain, and routine (Curtis, 1990). This is not a helpful image. The media provides a societal role model influencing attitudes and social norms. Responsible reporting and portrayals are needed from the media and entertainment sectors so that dentistry is no longer seen as either a sadistic occupation or the butt of jokes (as in *The Little Shop of Horrors*, 1986; the horror film *The Dentist*, 1996; *Finding Nemo*, 2003). Social marketing campaigns can be very successful in the promotion of health (Kotler, Roberto, & Lee, 2002) and would help counter the education in dental anxiety that many New Zealand adult patients received while at school.

Social marketing which employs systematic approaches to promoting behavioural goals for the good of society could be utilised to counter the effects of the media. That the media is influential in affecting health outcomes can be seen in the report from Gowda and Thomas (2008) who observed that “media advocacy played an important role in reflecting and engaging community views on fluoridation, and it influenced decision-making ...” (p.134). Attempts by dental practitioners to challenge negative public

views on dental care can be seen in the advertisements, slogans and names of practices such as those in the Yellow Pages Telephone Directory. Approximately 40% of dental practice advertisements use language such as “Gentle Dental” or “sedation for the nervous”. Boniface in her article in the *New Zealand Listener* in 2009 said:

The old days of the murder house are long gone, but dentists are having trouble convincing everyone of it... ‘Our strength is our ability to have fun and put nervous patients at ease’ What? Soothing, touchy-feely comments like these, taken from dentists’ websites, are a far cry from the chilling memories of the murder house that many of us retain from childhood (p. 54).

One participant said about people’s negative memories “If that is how people remember it, that's the reality isn't it? ...I can see that it’s detrimental to the next generation but it is how people perceive it”.

It is true people’s memories should not be denied, but the current study is not concerned with maligning dental nurses, the school dental service or the dental profession generally. Dental professionals were and still are doing their work to the best of their abilities. The expectations of behaviour and the technology available at the time had an effect on how treatment was delivered, and anxiety was an unfortunate side effect of mid 20<sup>th</sup> century circumstances. People’s experiences should not be forgotten but it needs to be emphasised that times have changed, and by ensuring that dental practitioners are educated to cope with dental anxiety, the oral health of the population will be improved along with the quality of life of affected individuals.



## **Chapter 6: Conclusions and future study**

The murder house stories are a part of New Zealand's dental history. They reflect circumstances, events and experiences that were associated with the transition from a situation where a large proportion of the general population expected to be wearing dentures in early adulthood, to one where it is expected that teeth will be kept for a lifetime, often without any need for restorative treatment. This transition has occurred in the space of three to four generations. There was pain and angst along the way, partly due to the treatment philosophies of the early to mid 20<sup>th</sup> century, partly because of the technology of the time and a need to conserve funds in public health settings. As a result the school dental nurse and the school dental clinic took on a horror story façade for over half of the children of that time who visited the clinic, some of whom took part in this study. The enduring presence and impact of murder house stories prompted the researcher to investigate explanations for dental anxiety. In this chapter contributions that the findings make to research about dental anxiety and its treatment are summarised, strengths and limitations are identified, practical implications for education and dental practice are reviewed and suggestions are made for possible directions for future research.

### **Contributions to Research**

Five contributions to the body of research on dental anxiety and dental education have been made from the current study.

The first is the recording of the “murder house” stories. It is important to record historical events so that as a nation New Zealanders are able to remember and learn from their past, including the good and the not so good. Stories are potent teaching tools, and social learning theory has shown how the experiences of one person can be passed on to another vicariously. The murder house stories include references to incredible pain borne due to a large burden of disease. That pain, through the process of classical conditioning, has become one of the explanations for the dental anxiety that a significant proportion of adults continue to experience. These stories were passed on to interview participants by siblings, peers and parents and in some cases initiated anxiety even before the first visit to the dental clinic was made. Other aversive stimuli or barriers to care referred to in the murder house stories included factors such as dental nurses' authoritarian approach to care and a lack of informed consent; the treadle drill;

ethnicity and culture affecting attendance; communal classroom anxiety about dental visits; power differentials and unnecessary drilling; and cold, sterile clinics staffed by unsympathetic dental nurses who would reprimand the unwilling.

While stories about the murder house can account for continuing dental anxiety they also offer an avenue for combating anxiety and fear. Story-telling as narrative therapy can represent an intervention strategy. The proposal that stories may have a place in such strategies is a second contribution and methods to combat anxiety and the negativity resulting from treatment at the murder house are summarised under practical implications.

As a third contribution, the study provides support for previous findings concerning the prevalence of dental anxiety in adults with 12-16% of this study population having high levels of dental anxiety. The findings also indicated that there was a strong correlation between participants' self assessment of anxiety using the simple anxiety measure and their anxiety levels (according to the modified DAS scale). This suggests that if the self assessment measure was to be included in patient questionnaires it could assist practitioners in assessing patients' anxiety levels efficiently and effectively.

A further contribution is the finding that a strong relationship existed between negative experience of school dental service treatment and current high levels of anxiety. None of those with positive experience of the service currently had high levels of anxiety, which strengthens the argument for preventing pain and distress in children since a positive latent effect may inhibit anxiety developing at a later date even if trauma is then experienced.

Findings from this study also lend support to previous research concerning the relationship between poor self-reported oral health status and increased anxiety, and gender and anxiety where females reported being more anxious than males. However, although dental attendance rates were comparable to other studies, considering that this study population was made up of mostly older, European and tertiary educated participants who generally attend more regularly than others, attendance for general routine care was lower than expected and only 44% felt they had good oral health.

As a fifth and final contribution case studies and models were produced. Case studies and a summary model (see Figure 5) were constructed showing factors associated with the development and maintenance of anxiety for New Zealand adults who experienced treatment at the school dental clinic and were still anxious. Data were interpreted

through several lenses including classical conditioning, social learning and attribution theories. Consideration of these theories and the case studies provided the insight necessary for the creation of a second model (see Figure 7) which takes into account the effects of endogenous and exogenous factors on the development of anxiety and provides a connection to the cognitive-behavioural aspect of anxiety development and maintenance. The influence of the murder house stories, as a method of vicarious learning, was apparent in the interview responses in this study. However, negative societal norms or general attitudes to dentistry can also have an effect on anxiety. Media and entertainment items reinforce this attitude which dentists attempt to counter through advertising themselves as gentle and caring.

Possible interventions are summarised under practical implications but whether the interview participants had been able to recover from their high levels of anxiety as children appeared to be a result of their personality traits especially those associated with perceived control and emotional responsiveness. Those who were able to re-frame their experience fared the best.

## **Strengths and Limitations**

The current study utilised a mixture of methods including a questionnaire and interviews to obtain rich data concerning attributions for anxiety and which allowed the construction and analysis of case studies with background information specific to the New Zealand context and the unique population studied. The researcher worked within the interpretive paradigm placing great emphasis on understanding and generating a picture of the phenomenon through case study methodology and relativist ontology. This has allowed a full description of the murder house phenomenon and its effects to emerge so that effective interventions can be considered. It has also ensured that the murder house phenomenon is considered within the broader contexts of school dental clinic experiences, other childhood dental experiences and the lifelong experience of dental treatment.

The main limitations of this study stem from the population studied and from time constraints. The population is representative of only a sector of the New Zealand population since convenience sampling was used. Despite this, most of the background data obtained from the questionnaire confirmed that found in other studies. Additionally, only part of the sample attended the New Zealand school dental service, reducing the amount of pertinent information that could be gained about the service. As

no data were available from overseas participants regarding their childhood experiences, it was not possible to make comparisons between the groups with respect to childhood treatment.

Time constraints did not allow some issues raised by participants in the interviews, such as cost and the effectiveness of some intervention methods that participants had utilised, to be investigated. These topics are included in the suggestions for future research.

## **Practical Implications**

This study highlights potential links between explanations and possible intervention strategies and emphasises that there is a complex web of factors that affect the development and maintenance of dental anxiety so that a blanket approach to intervention may not be appropriate. Each case needs to be treated individually and the factors important to each ascertained and assessed. Specific questions about intensity, origin and practitioner behaviour that may increase anxiety can be asked and the parameters and variations of the problem defined. As one participant commented “It is about taking the demons out of the cupboard for the patient and acknowledging how they feel. This immediately puts me at ease if a dentist sincerely acknowledges that anxiety does exist and that I’m not the only one who feels it. Acknowledgement is the first step to build trust”. Scott, Hirschman and Schroder said “highly dentally anxious subjects are more concerned with and feel more ashamed about telling their dentist that they are dentally anxious. It may be helpful for dentists to provide an open forum about the patient’s concern” (1984, p.42). Riley, Gilbert and Heft (2006) advise practitioners that it is important to be aware of the complexity of the problem, the likely social and cultural issues and communication styles required to minimise the chance of miscommunication and to increase trust. The models (see Figures 5 and 7) developed in this study could be utilised to start a conversation with and to give some insight into an adult patient’s concerns in the New Zealand context. Alternatively a draft patient questionnaire and practitioner guidelines are included in Appendix C as another approach that may produce important information for the practitioner. Using the patient questionnaire may allow identification of causal attributions. “Why” questions and brainstorming are designed to reach the underlying reasons or root causes for anxiety. There will be a variety of explanations given for anxiety, for which there will be a variety of intervention techniques. A strategy can be designed for each individual using

methods suggested in the discussion chapter or the practitioner guidelines (see Appendix C). Intervention methods may have an additive effect so new methods should be introduced as required.

Interventions that could be employed for different patients include those that have been recognised for some time: effective communication; establishing trust and rapport; modelling behaviour; coping strategies such as distraction, relaxation, hypnosis, stress management and emotional control; improved environment and techniques; informative education; along with recent suggestions such as cognitive-behavioural and re-attribution therapy. Cognitive-behavioural therapy asks the patient to reframe maladaptive thought patterns and reinforce those that are helpful. Patients should be made aware that they can acquire skills to overcome their anxiety and that dental treatment is not something that “happens to them” but that they have some control over their reactions, emotions and expectations. They should generate alternative explanations with the practitioner’s guidance and re-attribute causes of behaviour. Additionally, story-telling is another possibility for therapeutic intervention. In the researcher’s own practice it was noticed that many patients told stories about their dental experiences and said that it was beneficial to be able to do so. Although it was not apparent in this study, other researchers have noted the therapeutic benefit of providing narrative accounts of experiences (Freedman & Combs, 1996; Payne, 2006).

Each practitioner should develop a toolkit from which to choose the most appropriate measures for each case. Perceived patient control and autonomy are of paramount importance, so any decisions about treatment must be made by the patient in consultation with the practitioner thus allowing the patient self-efficacy which in turn, produces better results. It may be necessary to work in consultation with a psychologist or a psychiatrist or to use sedation as a supplement depending on the treatment difficulty and the level of anxiety. It is important to acknowledge that there is no absolute recipe with which to ameliorate dental anxiety.

As well as working with individual patients, dental education needs to prepare practitioners, both undergraduate and postgraduate, for the task of ameliorating dental anxiety. The case studies with their inherent murder house stories along with the summary and theoretical models (see Figures 5 and 7) presented in this thesis could be used as illustrations of dental anxiety in a teaching environment, or, as tools to foster learning through reflection. At present the topic of dental anxiety is addressed in the undergraduate dental therapists’ and hygienists’ Bachelor of Health Science in Oral

Health degree course at AUT University, in the form of a lecture on current research in the area. An alternative or complementary approach could be through the use of stories which are commonly employed as a method of both enquiry (through narratives) and pedagogy in education (Coulter, Michael, & Poynor, 2007). The murder house stories give a more complete view of dental anxiety than summarising relevant research can do. They display the complexity of the issue and represent individual variability and contributing factors authentically. Stories are useful for learning because they communicate values, perspectives and experiences to listeners or readers. The stories told by participants in this study could be used in a classroom setting to stimulate exploration of ideas about dental anxiety and discussion between class members in a group learning situation through which ideas can be shared and meaning negotiated. Using stories may prompt students to reflect on their own experiences, to consider others' points of view, to explore various outcomes and to feel a sense of empathy for others. McKillop (2005) emphasises the need for students to learn through reflection, which story-telling encourages, so that they become accustomed to using higher-order cognitive skills and thus eventually become life-long learners. The Dental Faculty of Otago University has recently used in the teaching of anatomy "spontaneous story-telling in problem-based learning" and found that it "nurtures reflective learning" (Kieser, Livingstone, & Meldrum, 2008, p. 84). This contrasts with the traditional science-based teaching usually employed in undergraduate dental education which relies heavily on the transmission of facts to students who then reproduce these in examination settings. Whipp, Ferguson, Wells and Iacopino (2000) comment that "dentistry as a profession has often been considered both art and science... [but] in many places only the science of dentistry is emphasised" (p. 860). Harland, Kieser and Meldrum (2006) found that allied dental students at Otago University were not able to engage as fully as the authors had hoped with a problem-based learning and inquiry experience offered to them because it was "a brief departure from a very traditional science curriculum" (p.159). Therefore, in introducing the proposed story-telling session, it is important to be mindful of students' motivation for learning and to be sure they grasp the importance of the opportunity with which they are being presented. Harland et al. (2006) suggested that it may be necessary to "facilitate a process of helping novice students in their epistemological development" (p. 159) so that they can make the most of alternative learning opportunities. McKillop (2005) comments that there is a "need to introduce tasks to foster reflective thinking and skills to enable students to learn how to learn". Therefore, the use of story-telling as pedagogy to allow the

construction of knowledge through reflection will not only enable understanding of dental anxiety but will foster a further development of learning itself.

On a population level, social marketing could be employed to reduce dental anxiety. The background negativity that surrounds dental treatment because of the past experiences of generations of New Zealanders could be lessened with positive promotion of present day dental care.

This three pronged approach - intervention for the individual patient, education of practitioners and social marketing in the general population - is suggested so that widespread dental anxiety becomes a historical phenomenon.

## **Future Research**

There has been some distance travelled on the path towards positive dental attitudes, as this study found in the discussion of changes already in place. It is hoped that the initiatives suggested in this thesis will help to achieve further remittance of dental anxiety.

The patient questionnaire and practitioner guidelines with suggestions for intervention to combat anxiety need to be tested through future study to evaluate their effectiveness. It would be interesting to study the attitudes of New Zealand children compared to adults today to ascertain with certainty that the direction dental practice is moving in is sound and that children are no longer subjected to an education in dental anxiety through contact with stories, negative social attitudes, or direct traumatic experience. The murder house stories, case studies, and models constructed in this study need to be tested in dental education settings to verify their usefulness and to refine this approach to education about anxiety. Additionally it cannot be denied that cost of dental treatment is an important factor for a large number of people. Participants could not resist mentioning it in relation to dental anxiety. Studies regarding possible solutions to issues of cost would be very helpful for New Zealanders' ongoing dental health.

Dental anxiety is fascinating both from an educational and a psychological viewpoint but is debilitating for individuals and detrimental to the oral health of the population. This thesis has synthesised the available literature, with the background information and case study data gathered in this investigation into an historical account of the development of dental anxiety by New Zealand children of the mid 20<sup>th</sup> century and its implications for those children as adults today. The thesis provides a theoretical model for the development and maintenance of dental anxiety, and tools which can be used in

the education of dental practitioners have been constructed. Additionally possible intervention strategies have been suggested. It is hoped that by passing on this knowledge, anxiety and fear of dental professionals can be avoided in future generations of New Zealanders.



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## **Appendix A**

Dental anxiety survey, information sheet, consent form and questionnaire



# Participant Information Sheet



**Date Information Sheet Produced: 9 July 2009**

## **Project Title**

School dental clinic experiences, the “murder house” myth and dental anxiety.

## **An Invitation**

You are invited to participate in a research project which is being conducted by Master of Education student Susan Cartwright. This project aims to explore dental anxiety and the reasons behind it particularly in relation to past experiences of dental treatment and the thoughts and feelings associated with those experiences. The researcher is a dentist and an AUT University lecturer with an interest in dental anxiety. She is very interested to hear your stories and will be responsible for collecting information and interpreting the results of the study under the guidance of her supervisor.

Your participation in the project is voluntary and if you chose to participate you will be able to withdraw from the project at any time.

## **What is the purpose of this research?**

It is hoped that a better understanding of the reasons behind dental anxiety will lead to improved future dental encounters for all involved.

This research project is being undertaken as part of a Master of Education thesis investigation and academic journal publications may also result.

## **How was I chosen for this invitation?**

All staff of the Faculty of Applied Humanities (aged 20 years or over) are being invited to complete the attached questionnaire.

From the questionnaire respondents 10 participants will be invited to take part in an additional 45 minute interview.

## **What will happen in this research?**

Participants are asked to read this information sheet and to telephone the researcher with any questions relating to the questionnaire. If you agree to take part in the questionnaire please sign the consent form and post with the completed questionnaire to the researcher

in the internal mail (A 17). The questionnaire should take approximately 5 minutes of your time to complete.

10 questionnaire participants will be invited to take part in one 45 minute interview. This is designed to further explore stories about past dental treatment and the thoughts and feelings associated with these. The interviews, which will be undertaken by the researcher, will be digitally recorded, downloaded onto the researcher's H drive and transcribed. Notes may also be taken during the interview. You will be asked to confirm your consent for this part of the project before the interview proceeds.

### **What are the discomforts and risks?**

It is unlikely that discomfort will result from completing the questionnaire but if selected it is possible you may feel uncomfortable recounting your experiences during the interview if you are especially dentally anxious. Then again, it is just as likely that you will benefit from sharing your concerns.

Additionally the number of participants is small and so there is a theoretical chance of identification. However, the researcher will protect your privacy and keep your information and stories confidential.

### **How will these discomforts and risks be alleviated?**

Three free counselling sessions are available through the AUT Health and Counselling service if required. To prevent recognition of participants no identifying details will appear in the final report. If necessary names will be changed and there will be no linking of data to participants.

### **What are the benefits?**

You will have an opportunity to review your experiences of past dental treatment and to gain some understanding of these through this reflection. Your views may benefit others who are anxious about dental treatment. Insight could be gained into ways in which dental practitioners can improve treatment for patients

### **How will my privacy be protected?**

No questions will be asked in the interviews that are outside the scope of this research project. Data collected from the participants will remain confidential to the researcher and will be stored securely in a locked cabinet or on the researcher's H drive. You have the right to access and withdraw your data at any stage of the research process. If a typist is used to transcribe data from the recordings they will need to sign a confidentiality agreement. All data will be destroyed after 6 years.

### **What are the costs of participating in this research?**

Answering the questionnaire will take approximately 5 minutes of your time and if you are invited to participate in an interview this will take up to 45 minutes of your time. The interview will be carried out at a time that is suitable for you.

### **What opportunity do I have to consider this invitation?**

Please complete the questionnaire and return to me within a week (A17). You can indicate if you are unwilling to be involved in an interview at the end of the questionnaire,

### **How do I agree to participate in this research?**

If you agree to participate please sign in the appropriate place on the consent form (questions can be asked by phoning Susan on ext 7171 or emailing to [scartwri@aut.ac.nz](mailto:scartwri@aut.ac.nz)), complete the questionnaire and post **both documents** through the internal mail to Susan Cartwright (A 17).

If you are selected to participate in an interview and you agree to this a meeting time will be arranged to suit you. The content of this information sheet will be explained and you will have the opportunity to ask questions. If you are willing to proceed at that stage then you will be asked to sign an interview consent form which I will supply to you.

### **Will I receive feedback on the results of this research?**

Those who are interviewed will be asked to verify the transcription of the interview before it is analysed and if you would like to see the final report a copy will be made available to you.

### **What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *Neil Haigh*, email address [nhaigh@aut.ac.nz](mailto:nhaigh@aut.ac.nz), phone 921 9999 ext 6833

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTECH, Madeline Banda, [madeline.banda@aut.ac.nz](mailto:madeline.banda@aut.ac.nz), 921 9999 ext 8044.

### **Whom do I contact for further information about this research?**

**Researcher Contact Details:** Susan Cartwright, [scartwri@aut.ac.nz](mailto:scartwri@aut.ac.nz), 921 9999 ext 7171, mail A17

**Project Supervisor Contact Details:** Assoc Prof. Neil Haigh, [nhaigh@aut.ac.nz](mailto:nhaigh@aut.ac.nz), 921 9999 ext 6833

Approved by the Auckland University of Technology Ethics Committee on 21 July 2009, AUTECH Reference number 09/118

## Consent Form



*Project title:* School dental clinic experiences, the “murder house” myth and dental anxiety.  
Questionnaire

*Project Supervisor:* **Assoc Prof. Neil Haigh**

*Researcher:* **Susan Cartwright**

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated 9 July 2009.
- ☐ I have had an opportunity to ask questions (by calling the researcher on 921 9999 ext 7171 or emailing scartwri@aut.ac.nz) and to have them answered.
- ☐ I understand that no data will be linked to me, my name will be changed and no identifying details will appear in the final reports
- ☐ I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- ☐ If I withdraw, I understand that all relevant information including questionnaires or parts thereof, will be destroyed.
- ☐ I agree to take part in this research.
- ☐ I wish to have a copy of the report from the research made available to me (please tick one):

Yes ☐ No ☐

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....

.....

Date:

**Approved by the Auckland University of Technology Ethics Committee on 21 July 2009 AUTEC  
Reference number 09/118**

*Note: The Participant should retain a copy of this form.*



## Dental Anxiety

Please complete this questionnaire if you are aged over 20 years

Please indicate your answer by inserting 'x' in the appropriate box:

1. Age:                      20- 35    ☐  
                                 36- 50    ☐  
                                 51-      ☐
  
2. Gender:                Male    ☐  
                                 Female ☐
  
3. Ethnicity:            European                      ☐  
                                 Maori                            ☐  
                                 Pacifica                        ☐  
                                 Asian                            ☐  
                                 Other                            \_\_\_\_\_
  
4. When did you last visit the dentist?  
                                 Within the last year        ☐  
                                 1-5 yrs ago                   ☐  
                                 Over 6 years or more      ☐
  
5. Did you last visit the dentist for?  
                                 A general check              ☐  
                                 A specific problem          ☐  
                                 Have never been              ☐
  
6. How would you rate your dental health?  
                                 Good                            ☐  
                                 Moderate                      ☐  
                                 Poor                             ☐  
                                 Unsure                         ☐

7. If you attended the NZ school dental clinic (dental nurse) as a child would you summarise your school dental service experience as:

- |                             |                          |
|-----------------------------|--------------------------|
| Always positive             | <input type="checkbox"/> |
| More positive than negative | <input type="checkbox"/> |
| More negative than positive | <input type="checkbox"/> |
| Always negative             | <input type="checkbox"/> |
| Did not attend              | <input type="checkbox"/> |

8. Which factor deters you from visiting the dentist the most?

- |               |                          |
|---------------|--------------------------|
| Cost          | <input type="checkbox"/> |
| Fear          | <input type="checkbox"/> |
| Accessibility | <input type="checkbox"/> |

Other \_\_\_\_\_

9. What aspect of dental treatment makes you most anxious?

\_\_\_\_\_

10. What negative responses do you have to dental treatment?

\_\_\_\_\_

11. CAN YOU TELL US HOW ANXIOUS YOU GET, IF AT ALL, WITH YOUR DENTAL VISIT?

PLEASE INDICATE BY INSERTING 'X' IN THE APPROPRIATE BOX

a) If you went to your Dentist for TREATMENT TOMORROW, how would you feel?

|                                  |                                  |                                  |                                  |                                  |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| <i>Not</i>                       | <i>Slightly</i>                  | <i>Fairly</i>                    | <i>Very</i>                      | <i>Extremely</i>                 |
| Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> |

b) If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?

|                                  |                                  |                                  |                                  |                                  |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| <i>Not</i>                       | <i>Slightly</i>                  | <i>Fairly</i>                    | <i>Very</i>                      | <i>Extremely</i>                 |
| Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> |

c) If you were about to have a TOOTH DRILLED, how would you feel?

|                                  |                                  |                                  |                                  |                                  |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| <i>Not</i>                       | <i>Slightly</i>                  | <i>Fairly</i>                    | <i>Very</i>                      | <i>Extremely</i>                 |
| Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> | Anxious <input type="checkbox"/> |

**d) If you were about to have your TEETH SCALED AND POLISHED, how would you feel?**

|   |   |   |   |   |
|---|---|---|---|---|
| <i>Not</i>                              | <i>Slightly</i>                         | <i>Fairly</i>                           | <i>Very</i>                             | <i>Extremely</i>                        |
| <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> |

**e) If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?**

|   |   |   |   |   |
|---|---|---|---|---|
| <i>Not</i>                              | <i>Slightly</i>                         | <i>Fairly</i>                           | <i>Very</i>                             | <i>Extremely</i>                        |
| <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> | <i>Anxious</i> <input type="checkbox"/> |

12. Locate yourself on this scale relating to your overall level of dental anxiety by placing an 'x' in the appropriate place:

Low anxiety-----/-----High anxiety

13 What explanations come to mind for your typical level of anxiety in relation to dental treatment? Please be specific as possible.

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**10 respondents will be selected to participate in a 45 minute follow-up interview.**  
**Please indicate if you are not willing to participate by ticking the following box:**

**I am not willing to be interviewed ☐**

**Thank you for your participation**

This questionnaire has been approved by the AUT University Ethics Committee (AUTEC)

Reference Number 09/118

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Neil Haigh, [neil.haigh@aut.ac.nz](mailto:neil.haigh@aut.ac.nz), Extn 6833.

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEC, Madeline Banda, [madeline.banda@aut.ac.nz](mailto:madeline.banda@aut.ac.nz), 921 9999 ext 8044.

## **Appendix B**

Interview consent and transcript



## Consent Form



*Project title:* School dental clinic experiences, the “murder house” myth and dental anxiety.

Interview

*Project Supervisor:* **Assoc Prof. Neil Haigh**

*Researcher:* **Susan Cartwright**

- ☐ I have read and understood the information provided about this research project in the Information Sheet dated 09 July 2009.
- ☐ I have had an opportunity to ask questions and to have them answered.
- ☐ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ☐ I understand that no data will be linked to me, my name will be changed and no identifying details will appear in the final reports
- ☐ I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- ☐ If I withdraw, I understand that all relevant information including recordings, questionnaires and transcripts, or parts thereof, will be destroyed.
- ☐ I agree to take part in this research.
- ☐ I wish to have a copy of the report from the research made available to me (please tick one):

Yes ☐ No ☐

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

.....

.....

Date:

**Approved by the Auckland University of Technology Ethics Committee on 21 July 2009 AUTEC  
Reference number 09/118**

*Note: The Participant should retain a copy of this form.*

## Case Study 9.

Preliminaries not recorded. Researcher's speech is in italics. Interview begins with researcher's question:

*So if you are going along for dental treatment now what goes through your mind before you make the appointment or as you get to the surgery? How do you find dental treatment now? 00:00:29-4*

Um, OK a certain amount of dread because of the financial considerations and I have had a lot of expense in the past. At the moment probably the most serious thing that bothers me is that I'm sort of in between dentists. My previous dentist of 25 yrs retired and I haven't really had a dentist since then 00:00:46-2

*Ohh, OK. So is that a trust thing? 00:00:52-6*

Yes I think so cause I've had, um, a lot of **second hand experience** with my daughter who is a very anxious dental patient and I've had to sit through, until she was 20, had to sit through every dental experience that she had and so I've had quite a lot of contact with a variety of different dentists that she's had and at the moment I might end up going to the same woman that she now finally feels confident about 00:01:20-4

Ok 00:01:20-4

Because since mine retired I haven't really actually been to, yeah, been to the dentist 00:01:25-0

*So is it OK if I ask you, you know, how you think your daughter's anxiety developed? Was it um... 00:01:26-6*

She had very early, um, decay starting from when she was 2... 00:01:32-9

Ahh 00:01:39-0

...in her teeth and she's got, um, the most terrible teeth. A very small hole on the outside leading to an enormous cavity underneath and she had her first root filling when she was 4. 00:01:48-1

*Oh right* 00:01:48-1

So it's been, um, a horrific experience for her 00:01:55-7

*So it was the volume of treatment do you think or was it the way....*  
00:01:54-4

The volume and the seriousness, the pain involved for her 00:02:01-0

*The pain of putting up with the teeth that were sore or the treatment itself, do you think?* 00:02:06-2

The treatment itself 00:02:07-6

*The treatment* 00:02:11-1

The treatment itself I think it was and the fact that she had to go so many times when she was so...starting from so young 00:02:14-9

*So has she got to...what sort of point is she at now that she's in her 20's did you say?* 00:02:14-9

Yes, she's, um, she's actually just next door [laughing] 00:02:21-4

*Ohh sorry* 00:02:21-4

That's all right she won't mind but I said to her she should be talking to you. She's 22 now and, um, I think the teeth have sort of stabilised but she's got...she had to have 3 crowns, um, just a few...last year 00:02:42-6

*But does she manage to get there of her own accord now?* 00:02:41-3

Yes, for the very first time she's been to the dentist on her own 00:02:48-3

*Right* 00:02:46-5

*And she will continue, do you think, with regular treatment or...* 00:02:48-

Yes, yes which I pay for 00:02:56-5

*Oh OK. That's the other problem really isn't it* 00:02:55-1

[Both laughing] 00:02:55-1

*Ok so, um, for yourself do you feel some anxiety...so you feel anxiety about the cost. Are there any other factors that affect your....* 00:03:06-2

**I've probably had, um, sort of, very early experiences she did with school dental clinics and painful treatments and then the consequences of those treatments** have often meant that now in my...as I was an adult I had to have, um, teeth replaced and crowns etc because **they drilled away so much of the original tooth..** so it's the consequences... 00:03:27-3

*Mmm can you sort of, I know its not a very nice thing to think about, but can you imagine, you know, the actual treatment going on what, what is it that- there's pain- is there anything else about that environment that really you don't like or maybe as a child the things that were affecting you apart from the...was there anything else besides the pain that was a problem?* 00:03:50-1

The **noise and the vibration**, um, and as I got older of course they used the high speed drills but still they used the slower drill for polishing and cleaning process and that **still sets my nerves on edge terribly** 00:04:12-3

*Right and you think that is **connected to**...* 00:04:10-2

Oh **my early dental treatment**, yes 00:04:16-7

Yeah 00:04:13-7

Because they were using **foot pedal drills** at that stage and they were **very slow** and yeah 00:04:18-0

*So can you tell me about how it was, you know, as a child...? Can I ask you how old you are is that..?* 00:04:27-2

I'm...good question. I am 56 00:04:34-0

*Ok so you would have been in the school dental clinics in the 50's and 60's sort of-around then? 00:04:33-2*

Yes 00:04:40-0

*So, um, can you tell me, can you take me through....because my problem is, well it wasn't...its not such a problem really but I was born in 1960, my mother gave me fluoride tablets, I never had any fillings at the school dental clinic. I didn't have a school dental clinic at my school and so I didn't...wasn't in that kind of environment ...so I am trying to get a picture. I've spent 25 years as a dentist so I've had a lot of patients who have had bad memories and I can feel that they are anxious and so I try and talk to them and try and help them through some of that... so I've got a kind of a picture but would you be able to be able to explain to me ...give me a picture of what it was like to be a child then and....  
00:05:27-1*

Ok, well ,um, at that stage I think every primary school, probably pretty well in New Zealand had their own **separate dental clinic which was usually some distance from the classrooms probably deliberately because of the noise and the distress of the children that went there...**so it was....looking back on it now and the problems that my daughter has had getting regular treatment it was actually a very good service because children were seen twice a year without fail, and everyone got covered and they got whatever treatment was needed and you went...kept on going back until you had all your fillings filled but **because of the equipment I think and the style of, um, treatment at the time it wasn't a wonderful experience and I mean, you probably heard that we called it the murder house** 00:06:11-5

*Mmm mmm [chuckling] So, the reasons what, what....the things behind that? 00:06:17-1*

Its just that it was somewhere where you went and **it was going to be painful and you had to sit still and the nurses were not particularly kind** and they were often quite sort of...they weren't probably all that old but um, you often felt that they were **older women who were quite tough** and you certainly didn't want to, you know, protest too much or you would certainly **get into trouble** 00:06:38-0

[Both chuckling] 00:06:38-0

So, you know, you had to go and behave yourself and even if it wasn't comfortable you **had to put up with it**. So, yes this was the sort of experience and it was the kind of thing that you, because you were a child, you wouldn't know when you were going to be summoned and, you know, someone came and got you from class and you had to go and sit there and have your teeth done and miss half an hour of class etc etc 00:06:59-1

*So what was the clinic itself like what was...? 00:07:04-0*

Um, just usually a single room. Like a hut if you like which was laid out with a room where you were treated and I think in some schools they actually ran to 2 dental nurses. The one I went to was usually just one I think certainly at primary school and you walked in and there was kind of a little waiting room which was like a little corridor where you went in and I think off that there was probably the private office for the dental nurse and then you went into the surgery part which was open. What they might do to is have 2 chairs and **one person waited while the other was having their teeth treated- which is not a very nice experience** 00:07:47-4

*Because? 00:07:47-4*

Because they wanted to get straight onto you when they finished 00:07:49-7

*But why was it not a nice experience? 00:07:49-7*

Oh because **you had to sit and listen to the other child going through the process of having their teeth drilled** 00:07:57-0

*Ahh and would they often be... 00:08:02-3*

**Upset, yeah, crying- whatever. It was painful. There were no injections.** No I don't think we had injections at all. 00:08:13-0

*So over the years I have had a lot of people say to me, although I think when people come into the dental clinic because they are anxious already the stories tend to get, I would think, a bit inflated maybe and people have said "I'm sure they used to drill when they didn't need to", you know, that they used to do fillings...do you think there was ever work done that wasn't necessary? 00:08:30-1*

No but I think probably because, give them the benefit of the doubt, the equipment that was used was fairly, um, rough. I mean, it wasn't sophisticated so to actually get all the decay I think often teeth were probably **drilled beyond what they needed to be**. I mean they weren't refined sophisticated bits of equipment 00:08:51-2

*I think that's it. I mean, that to my mind is what it is but I think there is some misconception out there amongst some people that I have talked to over the years* 00:09:00-7

I think it might have depended on the dental nurse too. I mean as I said some of them were older women who did seem to have a bit of a, bit of a **power complex** perhaps and I mean who knows maybe they did? I don't think it was my experience I just felt that probably they over drilled but perhaps that was what they felt was necessary or that.... 00:09:24-8

*I think it probably was that because there was, you know, the generation before us was a generation who wore dentures basically so, so did your parents?* 00:09:38-9

Oh yes before they got married they both had all their teeth taken out and their dentures- that's it. So 20, 22 that was 00:09:45-9

*Mmm and what was their attitude towards dentistry with you as...as, you and your siblings...as children. Was there that thought that you might have dentures as well or did you...?* 00:10:02-0

No I think there was a **distinct difference between that generation and ours** that perhaps **because the dental treatment was available...** I don't know when the dental nurse system started but it can't have been that much before... 00:10:12-2

*Umm the 1920s was the very beginning* 00:10:14-8

Oh it was as early as that? 00:10:20-8

*But it didn't span the whole country by any means I think it was more around the 1940s when there was a big rise in the number of children* 00:10:25-7

I think that was probably true because my sister trained to be a dental nurse as well 00:10:29-7

Oh OK 00:10:34-3

Um whether that's got something to do with my ....um, no they were **quite positive about it** in the sense that they made sure that we, after we got to high school we had to, you know, we were...you got your free 2 treatments a year from the dentist and I remember we went religiously and I think my sisters, um, they had worse teeth than mine they had some problems with overcrowding and things and they had quite a bit of dental treatment done. **So I think my parents must have decided that it was a good thing to look after your teeth rather than just let them go and pull them all out.** 00:11:07-4

*Was it unusual for, you know, like your sibling, your sister to decide to become a dental nurse?* 00:11:15-2

No that was one of your 3 choices- dental nursing, nursing or teaching 00:11:26-4

Oh 00:11:23-5

...or you went into an office. That was about it so you got about 4 choices at that stage 00:11:28-9

*Right [chuckling]* 00:11:28-9

*Um, because, you know certainly I am involved in the training of the new school dental therapist as they are called now, um and for a while there it was very difficult to attract people to become a school dental therapist and I felt there was still, along with other issues, there was still this stigma attached to it- that it wasn't a nice thing to do - you know- that it was....would you agree with that? Was that the same for your sister at that time?* 00:12:08-1

Um, I'm not sure; she's a lot older than me. She's 13 years older so, um, it was almost another generation but at the time it was a perfectly reputable profession and I think that perhaps because it had only been going for that length of time and it was a new opportunity for women to have a job, a kind of, a professional job. I don't think there was that problem though um the kind of dental nurses that I then met through my daughter's treatment seemed to be a bit different and we had a lot of problems with one of the ones that was attached to her primary school who was not particularly careful and missed a lot of things 00:12:45-8

*Right* 00:12:45-8



So that wasn't a very good dental experience... 00:12:45-8

*No I guess you're going to get a range of practitioners within any profession 00:12:53-8*

Of course, certainly they had changed by that stage- or at least **my image of them had changed and their attitudes had changed** 00:13:01-3

*That is really interesting to me- can you tell me the difference- like the image of one-can you tell me, sort of, in a nutshell what your image of one is against.....? 00:13:07-3*

Well, I suppose, um, by the time my daughter was at primary school they were starting to cut down the numbers so, um, they were having to see a lot of children a lot more quickly, they didn't give them, I think the time that they probably needed and that's why I think a lot of her problems began because there were a lot of things that were missed, um, and they certainly **made a lot more effort to be friendlier to the children**, um, but then there were still ones that my daughter was happy to go to and some she was not happy to go to so there's always that sort of situation 00:13:45-5

*Do you think though that there is a different, completely different sort of feel around the dental treatment especially in the school dental clinic between your going now with your daughter and when you went or is it just fairly similar? 00:14:00-1*

Um, I think there were a lot of similarities they were still using the same buildings, the set up was the same, **the smell** was the same, oh- that's another thing I need to tell you about the smell. If not the noise- yes- the smell! Yes and um I mean their equipment was better and they gave children injections and they were obviously trying to make them relax a bit more but there was still a lot of similarities 00:14:24-5

*So obviously there's still, like you say, the smell and there's the ...they still use the slow speed drill a bit so there's still noise and there's still um...but do you think that the dental nurse herself was, was...generally tried at least to be friendlier now than they did....? 00:14:46-3*

I'm sure they did because **children these days don't accept treatment in the way that we did. We went and we sat there and we did as we were told and we wouldn't have dreamed of complaining** 00:14:52-9

No, so you think...00:14:52-9

..but children nowadays don't accept that sort of thing, they will kick up a fuss or they will say "No, they won't go" and, um, in a way that we didn't and I think well because I always had to go on the days that my daughter was going to the dental nurse I was always there whereas **our parents certainly had nothing to with our going to the dental nurse**  
00:15:23-5

*So you've mentioned the murder house. Do you know...are there any other sort of, stories that come to mind about other children's experience of...you know, when you were a child, or anything that you have heard since then about people's experiences of....* 00:15:33-3

Not really, I don't I don't remember sort of talking to anyone very much I mean only other people who have had similar experiences and you know, don't like the sound of that drill and you know , that kind of thing  
00:15:45-3

*So now, I'm sorry we moved on quickly to your daughter I think...*  
00:15:48-2

Yes, that's alright 00:15:48-2

*...so your, your feelings now, you're not...are you as anxious now as you were as a child or are you less anxious now than you were as a child, do you think, about going?* 00:15:59-8

Um, yes I'm **resigned** I suppose is the thing and I know I have to go and if I don't go...well in fact my teeth stabilised a long time ago and I have had so many replaced now that I don't actually need much more than hygienist treatment so **in many ways the hygienist has taken over from the dental nurse in terms of the person who is critical and who...It could be painful experience** 00:16:34-1

*So you are relatively happy to go along to the dentist now are you?*  
00:16:41-0

The dentist- yeah, if I have to...

*Sure, sure*

... but not at the moment because as I said I haven't really established myself with another dentist 00:16:45-1

*No, oh OK right so when you had your... 00:16:48-0*

With the dentist that I had had for a long time I was perfectly happy to go and I had trust in him 00:16:54-1

*So was there a period in your life when your anxiety was at a peak? 00:17:04-9*

In terms of dentists? Probably not really, um, I had wisdom teeth taken out when I lived in Wellington but that was... no I don't remember it being too...I mean it was pretty unpleasant afterwards but I don't remember being particularly anxious about it. I probably... the most slightly nerve racking one that I had was a dentist in Wellington who had obviously been drinking before he did my treatment... 00:17:28-1

*That was unfortunate 00:17:28-1*

..and I remember distinctly smelling the alcohol on his breath and he was someone I only went to a few times and I remember feeling rather disturbed about that. 00:17:43-3

*So what would you say is um, as a member of the general public, attitudes towards dentists? How do you think the public view dentists or school dental nurses or either really um these days? 00:17:53-8*

At the moment? I think most people consider them to be **very well off** members of the public who **charge a rather large amount for the treatment that you get**. Most people are more concerned about the economic effects I think nowadays than anything else 00:18:14-7

*..and why do you think they're....you think they are not so concerned about the pain any more because? 00:18:20-4*

Yes I think so because treatments can...are **generally painless or certainly not as unbearable as they used to be** 00:18:32-8

*So we've moved on in some way to make it a more pleasant experience for people 00:18:31-7*

Oh yes, I think so 00:18:33-7

*I wonder whether, um, I've been asking a few people this, but dentistry is funded by the government for children and adolescents up to the age of 18, dental treatment is free, um, and so when you go as an adult you are hit with the full force of what it costs to go to the dentist in contrast to the doctor where the funding goes across the lifespan and so you get some cushioning of what it would cost to go to the doctor. I'm wondering whether... do we need to change the way we do things, do we actually need to spread some funding across the lifespan then so that people are not faced with the full cost of what it is, you know... the amount you have to pay to go to the dentist 00:19:24-8*

Well, I mean I don't know how particularly in the present climate whether that is at all possible. I think what has worried me more is that I've borrowed money on the house, I've got myself into considerable debt to pay for the dental treatment I needed but I used to always think well what do people do who can't afford this? And there are an awful lot of people out there some of whom are our students of course who simply wouldn't be able to look at a \$1000 treatment. They have the tooth taken out, so you have a gap, then they have another gap and then they have another gap and that's probably what's concerned me more- is just simply **how do people afford it?** 00:20:08-2

*Yeah, I think that that's what I am trying to say really is- do we need a different funding model? Because at the moment the funding is concentrated on children and adolescents and it is true that some groups of children- their dental health is very good so I think its about, I might be wrong, but about 50% of children have no dental caries. So there's a group of kids where the dental caries is very bad and getting worse but there is a huge number of children that have very good teeth these days 00:20:36-4*

But wouldn't they only be seen for a very short quick visit because their teeth- a quick look around- you can go now- they wouldn't be very expensive would they? 00:20:47-0

*Well, I'm wondering about the volume of them though, you know, there's huge...? 00:20:52-6*

Even then the larger...certainly there's supposed to be a large number- one of the dentists that my daughter went to after my dentist retired um really um took me to task for her teeth which I thought was totally unwarranted and she was in tears when we left the dental surgery because he said "What did you do when you were pregnant? Weren't

you living in New Zealand? Weren't you drinking the local water? Weren't you doing this? Weren't you doing that? Didn't you take your child to dental treatment?" I mean her teeth, I'm afraid there is no reason for the state of her teeth except genetics is the only thing I can think of but he **laid it very firmly on me and on her** 00:21:38-5

*So there was a lot of **guilt** attached* 00:21:38-5

Oh **absolutely- it was horrific**. I've never been spoken to like that by a dentist and it was... she is obviously one of the unlucky ones and presumably he was so adamant about this because he felt at her age 90% of children ought to have brilliant teeth because of fluoridated water and all the rest of it 00:21:57-7

*Oh I don't think it is 90%* 00:21:57-7

He certainly made it sound like it was 90 % and somehow it was all my fault and um yes 00:22:04-7

*No, no there are still, there are still people who get very bad decay in their teeth and as I say in those groups of people it seems to be getting even worse. The caries seems to be getting worse and we don't really know why that is and we are trying very hard to be more preventive and I guess that's one of the reasons why we would say take your child as a baby, which we never used to say, you know , it was always go when you are 2 and a half or something like that which we find is too late for kids who are going to develop caries* 00:22:37-4

Well, it was too late for my daughter and I had no idea 00:22:37-4

*Mm so we need to get people in before that so that we can say try this, try that and maybe we can stop some of the decay that way, um, so, yeah but I am concerned. It's come across to me quite clearly in these surveys that people are very concerned about cost. There's also I think a little bit of a trust issue now too with dentists, you know, can you trust every dentist that you might go to? Do you have any feelings about that?* 00:23:07-1

Well, I certainly didn't feel comfortable with the 2 other dentists that she went to in this practice that my dentist used to be in before he retired and I didn't feel happy with either of those 2. Um 00:23:22-1

*..and can you give me reasons for that?* 00:23:22-1

Partly it was the one who laid this terrible **guilt trip** on both of us, I mean really it was.... if we had been responsible it was far too late anyway, she was 22, why go over this now? 00:23:31-8

*Yes, what is the point?* 00:23:31-8

If we had done all these terrible things then it was a bit late really to go on about that. The other dentist she felt um some of its manner, some of its actually not agility, skill, **physical skill in performing dental functions** and I think some people are rough and some people aren't and no matter how well trained you are and you know what you are doing but there are certain dentists you come out of feeling that this person doesn't really have the agility or the **delicacy** or whatever is required to do a nice job 00:24:14-4

*So is it a gentleness?* 00:24:16-6

Yes, yes it is and being able to give injections and to do things without... and she is now going to a woman dentist, and this is, well we thought this was worth a try and now she's perfectly happy and she says that she's quite happy to go and see her and she has a very nice manner and she is very reassuring and she put -I am anxious about dentists- **on the original form** and so the **dentist knows that she has to tread carefully** and make sure she's OK before she starts treatment. So she's very happy. 00:24:52-8

*So you think something that could help dentists to provide a better service is if they actually are caring about the service they provide* 00:25:00-7

Oh absolutely 00:25:07-6

*Because I've been worried about dentistry going down the road of marketing* 00:25:10-1

Well, I sat there. I must say I sat there in the waiting room for her cause I went to have a hygienist treatment and I had to sit and look at a television screen which was constantly advertising dental products. I thought "I don't like this" and you know, and I thought but "why?" I mean obviously they are being paid to do this but is this what I want as I sit in the waiting room and that made me feel a bit uncomfortable and the other thing that was a bit strange which perhaps now I've put my finger on it is when I went in to have the hygienist treatment they are actually using an old villa so they have got a very large room and I suppose just for sheer practicality they've just put a partition 00:26:20-3

[INTERRUPTION] 00:25:55-1

....so I was sitting in the hygienist chair and there was someone being treated on the other side of the partition and I didn't like it and I suddenly realised maybe that's what it was- **too many times when I'd sat in the second chair waiting for the dental nurse** and I'd had to sit through someone else being treated and now it makes me nervous about going back to that dentist. So I haven't really solved the problem because I'm not really...well perhaps I'll say I only want to go to the dentist who has a room upstairs by herself instead of the one that shares the room downstairs 00:26:50-1

*So, there are... you think there are a lot of...* 00:26:46-1

**Baggage** is the saying 00:26:51-2

*Yes, so the memories actually play an important role ...*00:26:57-2

I'm sure they must do 00:26:57-2

*....in how you cope now with your treatment.* 00:27:17-6

I'm sure they must, mm hmm00:27:17-6

*Yeah and so to find somewhere where you are comfortable....*00:27:05-8

Well I haven't really found it yet 00:27:17-6

*No, what do you think, what would that, what would the dentist have to do to make it a comfortable place for you?* 00:27:15-6

Yea, I think perhaps um I mean I might overcome this reluctance to sort of share the room with someone else being treated but um perhaps I'm just being um, I'd really rather just go back to the old dentist I had thank you very much. I mean he's retired but.... 00:27:38-5

Yes 00:27:36-2

But yes I **just have to make the break and find someone that I'm happy with** and go...but I don't actually anticipate having a lot more treatment being done cause I've had so much done that probably I don't need....00:27:48-2

*Yes, you're in reasonable...reasonable condition* 00:27:49-4

So it's going to the hygienist and the hygienist is another story but you probably don't worry about hygienists 00:27:51-9

*Oh no we are training hygienists actually. If you have got something you want to say about hygienists....* 00:27:56-5

..because **they I find are the real scary people now** 00:28:05-5

*Really??* 00:28:07-6

Oh yes because they're the ones that **tell you off** you see. It's the- you don't floss your teeth enough, you don't look after your teeth properly, your gums don't look good and generally speaking you go there to be told off and the longer...the less they feel you've looked after your teeth the longer it is they take to do the treatment and therefore you feel...I feel more **guilty**. **If I'm there for ½ an hour not only do I pay more but I also have the feeling that I haven't looked after my teeth properly** 00:28:31-8

*That's very interesting...that's very interesting because I think, you know, being a dentist and working with a hygienist I always feel that people must be much happier to go and see the hygienist because...* 00:28:42-4

Not in my case and it is actually **often more painful, the hygienist than actually the dentist itself** because they get down and they pick away and you come out feeling very uncomfortable afterwards whereas the dentist you go and get one filling done and that's it, finished 00:29:03-8

*Right, right* 00:29:05-7

But there you go away with all your teeth having been picked at 00:29:06-5



*So a hygienist would do well to try and encourage people rather than admonish them about... 00:29:18-0*

I think positively would be better and this last hygienist I went to was just as bad and she has put me on the **naughty list** which is... 00:29:21-8

*Really, did she say that? 00:29:21-8*

No, that was the tone [laughing], that was the tone -come back in 4 months. No I'm not letting you wait for 6 months- its come back in 4 months and we'll see what its like and yeah 00:29:36-3

*Ok 00:29:36-3*

..and so I wasn't too thrilled about that one either 00:29:45-0

*Is there anything else you want to mention to me at all about.....? 00:29:50-4*

I 'm sure that you have now heard the long saga of my dental experiences 00:29:54-5

*No, no its very interesting and its amazing how things are similar but not with people that although there are a lot of similarities there's just those little interesting differences as well 00:30:06-5*

**It's a thing that you do by yourself** and unless you have a little moan fest with someone else about going to the dentist it's a **very personal experience its not something you really share with other people** 00:30:17-8

*Do you hear anything...does anyone mention the murder house these days, do you know? 00:30:23-6*

Um, when would I? I've had conversations with people over time about that but no and I don't think my daughter would be aware of that term or anything. I probably wouldn't have talked with her about going to the dentist cause that's the last thing I wanted to talk about 00:30:39-6

*So it's kind of buried in a way then do you think? 00:30:40-5*

Um 00:30:42-6

*Consciously buried? Unconsciously buried?* 00:30:44-2

That particular idea? I think so. I think that has probably gone except for the unlucky children who have had to have worse experiences 00:30:54-1

*But do you think the whole dental thing- that you don't talk about it much- you just bury that?* 00:31:00-9

Oh I see what you mean. Oh yes I suppose as an adult most people moan more about the cost than anything else 00:31:09-2

*But what I'm wondering is I mean people do moan about the cost and I realise that the cost is a big factor but is it an excuse? Not an excuse but is it a reason not to like going and not to want to go that is actually covering up other reasons as well why you wouldn't want to go?* 00:31:19-9

Oh, I think there are other people who have serious problems I mean my partner has a serious dental issue cause he has had particularly nasty experiences. His teeth also I think are one of those sets of unlucky teeth that have all sorts of problems and even now he is pretty reluctant to go 00:31:43-4

*So his is more of an anxiety about the other issues that you know...* 00:31:48-9

**The memories of past dental treatments** and things, yeah.

Finalities not recorded

Interview concluded.

## **Appendix C**

### **Draft patient questionnaire and practitioner guidelines**

The model of factors affecting the development of dental anxiety in New Zealand adults presented in Figure 5 has been used to develop a draft patient questionnaire. Practitioners may find this document helpful in identifying factors that are affecting individual patient's anxiety levels and this may help in decision-making about appropriate interventions which are summarised in the practitioner guidelines.

## Draft patient questionnaire

How dentally anxious are you? Place yourself on the scale below:

Low -----/----- High

If your anxiety level falls above the mid- point please answer the following questions.

What do you value in an examination and treatment plan?

---

How important is it to you to have an opportunity to make choices regarding treatment?

Extremely ☐ Very ☐ Important ☐ Not very ☐ Not ☐

What attributes do you value in a practitioner?

---

What can your practitioner do to make you feel comfortable?

---

Put an x in the boxes beside those things that **increase** your anxiety/ that you suffer from:

|  |  |
|--|--|
| Needle phobia                                  |  |
| Gagging  |  |
| Practitioner not listening to you              |  |
| Practitioner admonishing you                   |  |
| Practitioner not believing you                 |  |
| Prospect of losing teeth                       |  |
| Local anaesthetic not working                  |  |
| Anticipation/ Being kept waiting               |  |
| Hearing others being treated                   |  |
| Treatment need or difficulty of treatment high |  |
| High cost                                      |  |
| Usual dentist not available                    |  |
| Embarrassment                                  |  |
| Appearance issues (with teeth)                 |  |
| Sensing practitioner frustration               |  |
| Smell  |  |
| Noise  |  |
| Vibration of low speed drill                   |  |
| Sitting in dental chair                        |  |

Put an x in the boxes beside those things that **decrease** your anxiety:

|  |  |
|--|--|
| Trusted, familiar dentist  |  |
| Using topical anaesthetic  |  |
| Local anaesthetic working  |  |
| Dentist who understands anxiety                                  |  |
| Treatment carried out immediately                                |  |
| Treatment carried out only after consideration of treatment plan |  |
| Gentle technique   |  |
| Regular care   |  |
| Wanting to keep teeth  |  |
| Environment- music, videos                                       |  |
| Improved technology  |  |
| Male/female dentist  |  |
| Your conscious effort to control anxiety                         |  |
| Practitioner attention/interest                                  |  |

Please add any other specific issues here:

---

Take your most important treatment issue and place it in the box on the left hand side of the page. Brainstorm “why” this is an issue and list the reasons in the next row of boxes. Repeat for each reason until the root cause is reached. This will assist your practitioner in future planning.

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Is there anything else we should know when designing your care?

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Thank you for taking the time to complete this questionnaire.

## Draft practitioner guide to patient questionnaire

1. There is no absolute recipe with which to ameliorate dental anxiety
2. There will be a variety of explanations given for anxiety for which there will be a variety of responses.
3. By using the patient questionnaire the hope is to identify causal attributions. The “why” questions and brainstorming are designed to reach the underlying reasons or root causes for anxiety.
4. It is extremely important to recognise and acknowledge a patient’s reasons for anxiety and to respond with empathy. The questionnaire can aid your discussions with the patient during which you may ask specific questions about intensity, origin and practitioner behaviour that may potentiate anxiety. Using “*Can you tell me?*” questions or asking “*What are you thinking about?*” when the patient is in the chair makes it possible to define the parameters and variations of the problem.
5. Once the problem has been identified and elaborated there are a variety of measures with which to reduce anxiety. Each practitioner should develop an toolkit from which to choose the most appropriate measures for each case. It may be necessary to work in consultation with a psychologist or a psychiatrist or to use sedation as a supplement depending on the treatment difficulty/extent and the level of anxiety.

### *Toolkit*

1. **Supportiveness while allowing patient autonomy:** Communicate understanding and acceptance to the patient as well as your intent to explore the problem and help where you can. Through effective communication you will build trust and rapport. Explain your interpretation of the problem and ensure that there is alignment with the patient’s perspective. Offer possible solutions but allow the patient control over the decision-making process. Remember that your non-verbal communication will transmit your true feelings so if you are not sincere about this process the patient will know this. Be aware of eye contact, vocal characteristics and body orientation (Friedman, 1983, Munster Halvari et al., 2010).



2.       **Environment:** Improved techniques and technology help here so that pain-free treatment is delivered and the surroundings and staff are calm and inviting with the provision of distracting apparatus such as music and videos. More advanced procedures should be introduced slowly and if sedation is being used this should be gradually withdrawn (de Jongh et al., 2005).
3.       **Modelling behaviour:** “Tell-show-do” with stop signals is a method that provides predictability and some level of control to patients (Dental Fear Central, 2004).
4.       **Informative education:** Understanding the reasons for treatment and why things are done in a certain way can help to increase patient satisfaction and improve anxiety levels (Litt et al., 1993).
5.       **Cognitive-behavioural therapy, narrative therapy or Re-attribution therapy:** Reframe maladaptive thought patterns and reinforce those that are helpful. Patients may find telling their stories about dental treatment therapeutic. Make patients aware that they can acquire the skills to overcome their anxiety and that dental treatment is not something that “happens to them” but that they have some control over their reactions, emotions and expectations. They must generate alternative explanations with the practitioner’s guidance and re-attribute causes. Reward effort and vocalise success. Teach the patient to self-assess (Parkin & Boyd, 2008).
6.       **Teach coping strategies:** Distraction, relaxation, hypnosis, stress management, emotional control (Litt et al., 1993).