AN ANALYSIS OF THE ACCEPTANCE OF RESULTS OF ORTHOGNATHIC SURGERY USING A PERSONALITY PROFILE ASSESSMENT

A research report submitted in partial fulfillment

of the requirements for the degree of

Master of Dental Surgery

by

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SUMMARY

A retrospective study was undertaken to determine whether a patient's personality influences his or her satisfaction with the outcome of orthognathic surgery. The null hypothesis for this study states that there is no relationship between personality and patient satisfaction.

Using the criteria of Alessandra et al. (1993) four personality types were identified and classified as either: Directors, Socialisers, Relaters or Thinkers. One hundred and seventy six people participated in the study sample. Eighty patients who had previously undergone orthognathic surgery were compared with a group of fifty patients who had experienced minor oral surgery. The minor oral surgery group was included in the study because they had no permanent facial change and were therefore considered unlikely to be disappointed with the surgery outcome compared with the orthognathic group. A group of 46 dental students was used as a reference group for comparative purposes.

Each patient in the study groups was given two questionnaires to complete following their surgery. The questionnaires provided were the 'Behavioural Profile' (Alessandra et al. 1993) and 'Satisfaction Determination of Surgery' (Williams et al., 1995). The reference group was asked to complete the demographic details of the satisfaction questionnaire as several the group had never experienced surgery. Chi-squared tests and Fisher's exact test were statistically applied to the collected data in order to determine correlations of significance.

The results of comparing the four personality types within the groups showed a much greater response from Socialisers. In the minor and orthognathic surgical combined group: Socialisers comprised of forty-seven per cent (61); Directors, twenty-four per cent (31); Relaters, twenty-one per cent (28) and Thinkers accounted for eight per cent (10). In the reference group Socialisers comprised of forty-two per

cent (19); Directors, twenty-one per cent (10); Relaters, twenty-seven per cent (12) and Thinkers made up ten per cent (5). All of the groups were similar in distribution of personality types.

In the combined orthognathic and minor oral surgery groups, few patients complained (22%) or were dissatisfied (6%) with the outcome of surgery. The identification of personality profile types did not provide reliable information regarding patients' negative perceptions of the outcome of surgery. It was therefore considered that personality profiles were not valid predictors of those patients who might prove to be difficult to manage after surgery. However, it was noted in that Socialisers, being generally more optimistic, responded in a more positive fashion than the other three personality profile types.

Open-ended questions revealed that patients wanted prior information regarding possible surgical problems and outcomes. One of the issues identified among those who noted an 'unsatisfactory' outcome was poor communication between the patient and the clinician. Consequently, it was suggested that an improvement in this interaction might be of benefit to both parties.

STATEMENT

This thesis is submitted in partial fulfillment of the requirements for the degree of Master of Dental Surgery. I declare that the text of this thesis has not been previously published or written by another person except where due reference is made. The findings are the result of my personal investigations. No part of this work has been previously submitted for a degree in any other University.

I give permission for the University of Adelaide Library to make available this copy for loan or photocopy.

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I

INTRODUCTION

CHAPTER 1

AIMS

The null hypothesis for this study states that there is no relationship between personality and patient satisfaction.

Therefore, the aims of the present study were to collect a suitable sample set to enable:

1. The evaluation and distribution of the personality types of patients who had undergone orthognathic surgery, minor oral surgery and a reference group.

2. The determination whether the patient's acceptance of the results of orthognathic or minor oral surgical treatment correlated with their personality type.

3. The identification of possible reasons for patients' satisfaction or dissatisfaction with the outcome of surgery.

4. The determination of any improvements which might be made to increase patient satisfaction following surgery in those who were not completely happy with their surgical outcome.

It was further expected that additional insight might be gained into the relationship between clinician and patient so that the areas of improvement might be identified.

II

REVIEW OF THE LITERATURE

CHAPTER 2

CATEGORIES OF PERSONALITY

2.1 INTRODUCTION

The study of personality, being a product of psychological reset, has proven indispensable to anyone who is interested in relating with people (Alessandra and O'Connor, 1996). Goleman in 1997 said that self-awareness, empathy and self-control regulated our personal contacts and thus our success. Because dentistry deals with people, and the clinician's ability to relate to patients may be affected by the quality of communication, it is possible that this may also influence the patients' perceptions regarding treatment.

The examination of personality has been studied and categorized. Jung (1923), Eysenck (1973), Cash and Smith (1982), Keirsy (1984) and Alessandra and O'Connor (1996) have all provided classifications of personality types that have then enabled people to be categorized according to behaviour patterns.

2.2 THE NEED FOR CATEGORIZING

Numerous factors of personality have been nominated and analyzed for categorization. According to Keirsy (1984) the analyses were done to assist explanation the various facets of personality but, as yet, no workable standardization has been reached. Mischel (1979) found personality categorization a useful tool to describe peoples' nature and to determine how they might react in certain circumstances. He found it advantageous in that classification stimulated thought and prevented the observer from being overwhelmed by a flood of stimuli. Mischel (1979) reported disadvantages in that classification allowed stereotyping that could lead to the treatment of people on the basis of the categories into which they were placed, rather than on the basis of each individual's uniqueness.

The practical implication of understanding an individual's personality was demonstrated by Kiyak *et al.* (1981). They studied the personalities of male and female patients whom they categorized in terms of introversion and extroversion, stable and temperamental, and correlated the findings with the degree of satisfaction expressed with their orthognathic surgery. Very few differences were found between the sexes in personality, motives and expressed satisfaction, but when post-surgical problems arose, the best predictor for males was their tendency toward introversion and for females, their tendency toward being temperamental.

2.3 HIPPOCRATES' CLASSIFICATION OF PERSONALITY TYPES:

Alessandra and O'Connor (1996) reported that people have been frustrated and fascinated with behavioural differences for thousands of years. Starting with the early astrologers, theorists have sought to identify theses behavioural styles. In ancient Greece, for example, the physician Hippocrates outlined four temperaments. In 360 BC, Hippocrates, (cited by Alessandra and O'Connor, 1996) stated: "The body of man has in itself blood, phlegm, yellow bile and black bile; these make up the nature of his body and through these he feels pain or enjoys health". Asimov (1975)

reported that Hippocrates believed that the body was composed of four liquids or humours which comprised blood, phlegm, choler, and melancholy, each with special characteristics. Keirsey (1991) stated that Hippocrates' scientific interpretation provided the first four-fold analogy of human differences in habitual behaviour that were labeled Choleric, Phlegmatic, Melancholic and Sanguine temperaments.

2.4 ALESSANDRA'S CLASSIFICATION OF PERSONALITY TYPES:

Alessandra *et al.* (1993) identified four distinct, identifiable and predictable behavioural patterns or styles. These behavioural styles were referred to as:

1. The Director,
2. The Socialiser,
3. The Relater and
4. The Thinker.

The research of Alessandra *et al.* (1993) noted that these categories reflected a generalized character type rather than a complete or accurate description of any individual. Furthermore, to varying degrees, people possessed traits from all four styles although most displayed a dominant pattern. Invariably, this pattern did not describe all of the traits, but was a recurring and predictable element in determining personality. In addition, like variations on a theme, people also possessed traits that varied from their dominant pattern.

Alessandra *et al.* (1993) noted that there was no "best" behavioural style. Each style had unique needs and wants, strengths and weaknesses. Much of a style's effectiveness depended on the individual's ability to be flexible in applying his or her strengths, and in compensating for weaknesses in a particular situation. Moreover, although behavioural style was only a partial description of personality, it was highly useful in describing how a person was perceived in social and business situations.

Alessandra and O'Connor (1994) reported that an increased understanding of behaviour produced more effective communication skills, which served to maintain personal comfort. This consequently reduced tension between people and heightened productivity. The researchers considered that, with an awareness of the four basic styles, it was possible to apply the spirit of the 'Golden Rule' (that is, treat others as they wish to be treated) in order to create more harmony in relationships.

Later, Alessandra and O'Connor (1996) explained the four personality types and compared them with Hippocrates earlier description:

1. Directors equated with being choleric
2. Socialisers equated with being sanguine
3. Relaters equated with being phlegmatic
4. Thinkers equated with being melancholic.

2.4.1 DESCRIPTION OF ALESSANDRA'S PERSONALITY TYPES:

1. DIRECTORS (Choleric)

Alessandra *et al.* (1993) described Directors as being self-contained, direct and extroverted. They exhibited firmness and control in their relationships with others and were oriented toward productivity and goals that affected the final result. They were further described as task-focussed and direct by accepting challenges, taking authority and solving problems without delay. They tended to exhibit great administrative and operational skills and, in addition, were able to work quickly and impressively by themselves. They seemed to others as cool, independent and competitive, especially in a business environment. Directors tried to shape their environment to overcome obstacles en route to their accomplishments. They demanded maximum freedom to manage themselves and others and used their leadership skills to become winners.

Alessandra *et al.* (1993) indicated that a Director's ideal occupation might include a hard-driving newspaper editor, a stockbroker, an independent consultant, a

corporate chief executive officer, a drill sergeant, or a monarch. As part of this important image, a Director's desk would be busy with paperwork, projects and material separated into piles. Their offices would be decorated to suggest power and arranged so that seating was formal with a large desk that separated them from visitors. They were formal and kept their distance physically and psychologically. Directors did not appreciate close contact with people and, consequently, becoming friends was not a prerequisite for doing business. In a business environment they preferred others to be decisive, efficient, receptive and intelligent while in a social environment they wanted others to be quick, assertive and witty. They saw change as a challenge to be controlled. They were positive in outlook, in that they often saw a problem with a task as an "opportunity" and an "exciting challenge". Directors were not concerned with the process nor the collection of details but only with the end result. They did not like to be kept waiting as they were busy people, and if made to wait they perceived it as showing disrespect.

Alessandra *et al.* (1993) found that Directors exhibited negative traits that included stubbornness, impatience and toughness, all of which lead to a desire to take control of other people. Consequently, they might have a low tolerance for the feelings, attitudes and inadequacies of co-workers and subordinates. They liked to move at a fast pace and were impatient with delays. People who could not keep up with their pace were viewed as incompetent. Additional weaknesses were manifest as inflexibility, impatience, and the inability to relax. Fulfilment for them was the aiming and striving for a goal.

To achieve more balance in their lives, Directors needed to practice active listening, to project a more relaxed image whilst developing patience, humility and sensitivity. They had to notice that others had feelings and were important. Furthermore, Directors needed to be less controlling and to verbalize reasons for their conclusions in order to participate more as team players. The following table 2.1 summarizes the personality profile of a typical Director.

DIRECTORS:

Emphasis is on shaping the environment by overcoming opposition to accomplish results.

Description:	Action Plan:
A Director tendencies include: • getting immediate results • causing action • accepting challenges	**A Director needs others who:** • weigh pros and cons • calculate risks
This person desires an environment which includes: • power and authority • prestige and challenge • opportunity for individual accomplishments	**To be more effective, this person needs:** • difficult assignments • understanding that they need people

Table 2.1 A Director's personality profile.

Alessandra and O'Connor's (1994) guidelines for treating a **Director** personality type,

- be on time
- let them feel that they are in control
- do not burden them with facts and product knowledge
- show them how important they are and that you respect their time
- minimize their fear of being taken advantage of
- be business like
- emphasize efficiency, profits and savings
- do not let their bluntness bother you
- acknowledge that the decision is theirs to make.... "It seems your real options are... What do you think is best for you? After all, they are your teeth."

2. **SOCIALISERS** (Sanguine)

Alessandra *et al.* (1993) described Socialisers as direct, extroverted and "people" focussed. They had open characters, exhibiting characteristics such as animation, intuitiveness, and liveliness. Socialisers were "ideas" people and had the ability to involve others in their visions because of their excellent persuasive skills. They influenced others and shaped their environment by forging alliances with their enthusiasm. They wanted to be noticed and liked and had the dynamic ability to think quickly on their feet. Socialisers were true entertainers for they loved an audience and thrived on involvement with people. They tended to work quickly and enthusiastically with others.

Alessandra *et al.* (1993) described Socialisers' primary strengths as their enthusiasm, persuasiveness and delightful sociability. Socialisers were stimulating, talkative and gregarious. They tended to operate on intuition and liked to take risks. Their greatest irritations were boring tasks, being alone and not having access to a telephone. Socialisers designed and used their space in a disorganized and cluttered manner; however they knew if anything was missing. Their office walls might contain awards, stimulating posters or notes and motivational personal slogans. Socialisers had a large social and business people network and made friends easily and quickly. Their office seating arrangement indicated warmth, openness and a willingness to make physical contact. Because they were touchers and did not mind a slap on the back or a warm handshake, they often moved to a closer seating arrangement when talking with visitors. There was little danger of alienating Socialisers by standing too close, or playing with something on their desk.

Many Socialisers were in occupations such as sales, entertainment, television, public relations, hotel business and other high profile careers. In a business environment, they liked other people to be risk takers and to act quickly. In a social environment, they preferred others to be uninhibited, spontaneous and entertaining. If kept waiting they would use the time to socialize with whoever was in the room and possibly, develop a new friendship.

Alessandra *et al.* (1993) related that the primary weaknesses of Socialisers were a tendency to get involved in too many things, coupled with impatience and a short attention span. They might be seen as being manipulative, impetuous and excitable when displaying behaviour that was overdone for the situation. Socialisers showed emotion. They cried and laughed easily and they recovered from poor moods quickly. They were eternal optimists but others might perceive them to have shallow feelings since they could become happy a short time after displaying strong sad emotions.

To achieve more balance and behavioural flexibility, Socialisers needed to control their time, emotions and develop a more objective frame of mind. They also needed to spend more time checking, verifying, specifying and organizing and to take a more logical approach to projects and issues. Socialisers needed to focus on tasks, and most should take a time management course, which they were likely to turn into a social occasion with new friends. The following table 2.2 summarizes the typical personality profile of a Socialiser.

SOCIALISERS:

Emphasis is on shaping the environment by bringing others into alliance to accomplish results.

Description:	Action Plan:
This person's tendencies included: • contacting people • making a favourable impression • verbalizing with articulateness	**This person needed others who:** • concentrate on the tasks • seek facts
This person desired an environment which included: • popularity, social recognition • public recognition of ability • freedom of expression	**To be more effective, this person needed:** • control of time • objectivity in decision making

Table 2.2 A Socialiser's personality profile.

Guidelines for treating a **Socialiser** personality patient:

- be sociable, your general approach must be people oriented
- be excited
- use prestige referrals
- ask open-ended questions that will reveal their needs
- use feeling statements with an "up beat" approach
- they can be your best endorsement for future business

3. **RELATERS** (Phlegmatic)

Alessandra *et al.* (1993) portrayed Relaters as being people focussed, supportive, unassertive, warm, reliable indirect and introverted. They were sometimes seen by others as compliant, soft-hearted and acquiescent. They sought security and therefore took action and made decisions slowly. Their pace of life stemmed from a desire to avoid risky or unknown situations. Before taking action or making a decision, they preferred to know how other people felt about their decision and chose not to hurt their feelings.

Relaters tended to be the most 'people-oriented' of the four personality styles. Having close, friendly, personal, first-name relationships with others was one of their most important objectives. They made friends slowly, but when they did, it was for life. They were better listeners than talkers and disliked interpersonal conflict so much that they sometimes said what other people wanted to hear. They had natural counselling skills and were extremely supportive.

Relaters concentrated on getting acquainted and building trust. They were irritated by pushy, aggressive behaviour. They were co-operative, steady workers and excellent team players but they did not like to be rushed into decisions. They did not mind if you were running late as they often did so themselves.

Ideal occupations for the Relater were centred on the professions, such as counselling, teaching, social work, the clergy, psychology, doctors, nursing, parenting and human resource development.

In the business environment, Relaters preferred others to be courteous and friendly. They preferred people to volunteer for duties since they did not delegate well. Because they were so perceptive of others' feelings, they expected others to be able to understand their needs without having them stated, and judged people to be uncaring if they did not. In a social environment, they liked others to be genuine and friendly. Relaters' desks might display family pictures and other personal items.

Their office walls would have photos of personal friends and family, serene pictures or mementos. Relaters were viewed as being 'high touch in a high tech' world as they gave their offices a friendly, warm ambiance and arranged seating in a side-by-side, cooperative way.

Their primary weaknesses included being unassertive, overly sensitive and easily bullied. To achieve more balance and to develop behavioural flexibility, Relaters needed to say 'no' occasionally. They also needed to concentrate on completing tasks without sensitivity to the feelings of others, but also be willing to reach beyond their comfort zone to set goals that required some extension and risk. Furthermore, they needed to learn to delegate to others. Table 2.3 below summarizes the typical personality profile of a Relater.

RELATERS:

Emphasis is on co-operating with others to carry out the task:

Description:	Action Plan:
This person's tendencies include: • performing an accepted work pattern • sitting or staying in one place • demonstrating patience **This person desires an environment which includes:** • security of the situation • status quo unless given reasons for change	**This person needs others who:** • react quickly to unexpected change • stretch toward the challenges of an accepted task **To be more effective, this person needs:** • conditioning prior to change • validation of self worth

Table 2.3 A Relater's personality profile.

Guidelines for treating a **Relater** personality patient:

- let them feel at home
- spend time to build rapport
- they are looking for a steady, stable environment
- use statements like, "Patients in the past who have had your exact problem have..."
- detail how they can take predictable action
- they tend to expect personal, touching attention
- a Relater is uncomfortable making final decisions

4. **THINKERS** (Melancholic)

Alessandra and O'Connor (1994) stated that Thinkers were indirect, introverted and task focused. They had self-contained personalities and preferred to be controlling in an indirect way. They were concerned with analytical processes and were persistent, systematic problem solvers. They were also seen as aloof, selective and highly critical. Thinkers were very security conscious and had a high need to be right which lead them to rely heavily on data collection. In their quest for data, they tended to ask many questions about specific items. Their actions and decisions were slow and extremely cautious. Although they were great problem solvers, Thinkers could be better decision-makers.

Thinkers were described as indirect, serious, and task focused. They focussed on the details and the process of work rather than the bottom line. They were described as being controlling in an indirect way and were unprepared for surprises and changes. Their emphasis was on compliance and working within existing guidelines. Thinkers preferred organization and structure and disliked excessive involvement with other people. They worked slowly and precisely by themselves and preferred an intellectual work environment. Thinkers enjoyed solitary task-focused pastimes such as music and computers. They tended to be critical of their own and others performance. They did not often display emotion but when they were sad, they

maintained these feelings for some time. They tended to be skeptical and liked to see things in writing.

Thinkers were non-contact people who enjoyed the formality of distance, a preference reflected in the functional but uninviting arrangements of their desks and chairs. They were not fond of 'huggers' and 'touchers' and preferred a cool handshake or a brief phone call.

Thinkers' primary strengths were their accuracy, dependability, independence, persistence and organizational qualities. Occupations of interest to them were accounting, engineering, computer programming, the hard sciences (chemistry, physics, math), systems analysis and architecture.

Having conservative natures, their primary weaknesses centred on procrastination which prompted their tendency to be fastidious and over cautious. The greatest irritations for Thinkers were disorganized, illogical people. In business environments they preferred others to be credible, professional and courteous. In social environments, they liked others to be pleasant and sincere. Thinkers said exactly what they meant and took time to plan their words. They felt disrespect for others who exaggerated, but would not tell them directly. They had few friends. If there was a breach of trust, they were not likely to forgive.

To a Thinker, a consideration of future possible problems was to remove the unknown and consequently provide comfort. They liked things to be kept to the same protocol as in the past, even if functioning poorly. Changes were made after exhaustive data collection and after hours of thought and time. Thinkers spent so much time focusing on the details of the task at hand that they often ran late in their schedule. Their inability to delegate and their meticulous nature led to a heavy work load, which was used as an excuse to explain tardiness and which might be perceived by others to be misappropriation of time and lack of respect.

To improve their balance and behavioural flexibility, Alessandra *et al.* (1993) noted that Thinkers would benefit by openly showing concern and appreciation of others, by trying shortcuts, time-savers and by adjusting more readily to change and disorganization. Further improvement would be gained by timely decision making and the initiation of new projects while, at the same time, showing some degree of compromise. A forthright expression of optimism in discussions and the use of policies more as guidelines rather than as set laws would further improve the Thinkers balance and behavioural flexibility. The following table 2.4 describes the personality profile of a Thinker.

THINKERS:

Emphasis is on working with existing circumstances to promote quality in products or services.

Description:	Action Plan:
A Thinker's tendencies include: • attention to key directives and standards • concentration on key details • working under known circumstances	**A Thinker needs others who:** • desire to expand authority • delegate important tasks
A Thinker desires an environment which includes: • security assurances • standard operating procedures • sheltered environment	**To be more effective, a Thinker needs:** • to develop tolerance for conflict • opportunity for careful planning

Table 2.4 A Thinker's personality profile.

Guidelines for treating a **Thinker** personality patient:

- give them the facts
- they are task oriented toward details
- be ready to assess your track record
- make sure your information assures accuracy and appeals to their concern for quality
- give them as many information brochures as possible
- stress logic, accuracy and quality assurance
- support their consistent demand for logical answers

2.5 FREUD'S CLASSIFICATION OF PERSONALITY TYPES:

In 1984, researchers Keirsey and Bates noted that, the belief that people were fundamentally alike appeared to emerge in the twentieth-century and that it was likely that it related to the growth of democracy in the western world. If we were equals then we must be alike.

Freud (cited by Keirsey and Bates, 1984) believed that people were driven from within by Eros (the life instinct whose energy or libido was directed toward the enhancement or reproduction of life). Accordingly, what might seem to be higher motives were merely disguised versions of Eros. Freud conceived of personality as a dynamic system directed by three structures: the id, the ego, and the superego. Each was a complete system in its own right and behaviour in most situations involved the activity of all three (Coon, 1986). The 'Id' according to Freud, was the most primitive part of personality that supplied energy and demanded immediate gratification of needs, drives and desires. The 'superego' acted as the conscience, and represented parental values and the rules of society. The 'ego' was in conscious control of behaviour which reconciled the demands of the id, superego and external reality.

2.6 JUNG'S CLASSIFICATION OF PERSONALITY TYPES:

One of Freud's followers, Carl Jung, disagreed with the idea that instinct dictated our primary drive (Keirsey and Bates, 1984). Jung's theories of personality consisted of an extremely complex system of paired concepts that involved four functions arranged in contrasting pairs. For example, a pair of opposing attitudes would be: introversion and extroversion; a pair of opposing perception functions: sensation and intuition; and a pair of opposing judgment functions: thinking and feeling, all of which could be extroverted or introverted. There were complex compensations in which conscious extroversion might be linked with unconscious introversion (Eysenck, 1973). Jung (1923) stated that people were different in fundamental ways even though they all had the same multitude of instincts (archetypes) to drive them. One instinct of importance was the preference for how we functioned, which was a human characteristic useful for typing purposes (Keirsey and Bates, 1984).

In 1923, Jung elaborated on introversion and extroversion in that introverts focussed on their inner thoughts, intuitions, emotions, and sensations while extroverts were more oriented toward the outer world and focussed on other people and material goods. Finlay *et al.* (1995) noted that an extrovert was sociable, craved excitement and was generally impulsive, whereas an introvert indicated a preference for social solitude and privacy. The introvert had a naturally reflective and contemplative manner that could mislead the observer into assuming that the subject was thinking. The extrovert, on the other hand, naturally displayed immediate reactions that could mislead the observer into concluding that the subject's feelings prevailed when the contrary was true. In this circumstance, the extrovert might well be a "thinking" type and the introvert a "feeling" type (Jung, 1923).

Jung's (1923) description could be related to the classification determined by Alessandra *et al.* (1993), which revealed that Directors and Socialisers were extroverted, direct people while the Thinkers and Relaters were introverted and indirect people. In the present study, the classification of introversion and extroversion as adapted by Alessandra *et al.* (1993; 1994) was used.

Jung (1923) also theorized that the display of emotion worked suggestively, while the mind could unfold its effectiveness indirectly by arduous translation. He further considered that passion disturbed the life and prosperity of society and that the adapted and differentiated mind of the introvert had breadth rather than depth and so was not disturbing and provocative but reasonable and sedative. Furthermore, as the introvert was troublesome through the violence of his passion, the extrovert was irritating through an incoherent and abrupt application of half-unconscious thoughts and feelings in the form of tactless and unsparing judgments upon his fellow man.

From the point of view of scientific study, Jung's (1923) contribution had largely been negative and his theories were opposed to present-day psychological theories, which are based on normal distribution of personality traits. By allowing his mystical ideas to overshadow empirical and observational data, he had attempted to remove the concept of personality type from the realm of scientific discourse (Eysenck, 1973). These controversial ideas had not found much favour with even his most devoted followers. Eysenck (1973) quoted Jung as saying, when questioned on whether a given person was extroverted or introverted: 'In the last analysis I decide who is an extrovert and who is a introvert!' Eysenck (1973) concluded that psychologists would have to learn the plain historical fact that the understanding of personality types: extroversion and introversion, owed very little to Jung. However, it had been acknowledged that he was one of the first to study personality scientifically (Alessandra and O'Connor, 1996).

Kiyak *et al.* (1981; 1982; 1984; 1985; 1986; 1988) used Eysenck's (1973) interpretation of introversion and extroversion in their research on personality and orthognathic surgery. The theory of extroversion-introversion was intimately connected with the ancient theories of Hippocrates and later Jung (Eysenck, 1973). Introversion and extroversion began to enter the scientific arena as the concept continued to be tested for validity.

2.6.1 VALIDATION OF JUNG'S THEORIES OF PERSONALITY BY THE GRAY AND WHEELWRIGHT AND THE MYERS-BRIGGS TESTS

In 1964, Bradway, using the Myers-Briggs and the Gray and Wheelwright tests, studied the validity of classifications of Jung's personalities; namely, his concepts of opposing attitudes (introversion and extroversion), dissimilar functions (sensation and intuition) and opposing judgment functions (thinking and feeling). Twenty-eight physicians and certified psychologists (all of whom were members of two Jungian analytical societies) were used as subjects of the study and the results compared with scores from a sample population. For the purpose of the study, the Myers-Briggs judgment / perceptive score was compared with the subjects' indication of whether he/she considered their judgment function (thinking/feeling) or their perception function (sensation/intuition) to be the superior function. Comparable data from the Gray-Wheelwright test were obtained and assigned as the index of the superior function in the judgment/perception classification.

A high congruence was immediately noted for introversion/ extroversion as all three comparisons reached or approached one hundred per cent (Bradway, 1964). The researchers found no such congruence for functions (sensation and intuition) and opposing judgment functions (thinking and feeling). Introversion and extroversion were better variables for classification than were thinking, feeling, sensation and intuition (Bradway, 1964).

The concepts of introversion and extroversion had evolved into recent theories as determined by Alessandra *et al.* (1993), in that Directors and Socialisers were extroverted, direct people while the Thinkers and Relaters were introverted and indirect people. More recently, researchers developed personality theories that also took into account introversion and extroversion (Keirsey and Bates, 1984).

2.7 KEIRSEY AND BATES' CLASSIFICATION OF PERSONALITY TYPES:

Characteristics of introverts and extroverts had been described by Keirsey and Bates (1984) who adopted Jung's theory of psychological types and the Jung-Myers

typology (a method of personality analysis devised by Isabel Myers in 1955) and adapted their clinical psychology practice accordingly. Keirsey and Bates (1984) divided the four temperaments of Hippocrates (sanguine, choleric, phlegmatic and melancholic) into four pairs: extroversion and introversion; sensation and intuition; thinking and feeling; perceiving and judging. Combinations of each pair gave a total of thirty-two mixed descriptions that they described as the "temperament sorter". Summarizing these temperaments, they described a person with the temperamental sensation as practical and the person with a natural preference for intuition as innovative. Seventy-five per cent of their sample population reported a preference for sensation while twenty-five per cent indicated a preference for intuition. They described people who chose the impersonal basis of choice as the 'thinking' type and those who chose the personal basis as the 'feeling' type. Those who chose "closed" rather than "open" options were described as being 'judging' types and those who preferred to remain open and fluid as 'perceiving' types.

Keirsey and Bates (1984) concluded that temperament determined behaviour because behaviour was the instrument for the attainment of desires. Extroverts, with their need for sociability, were energized or stimulated by human contact. They were rejuvenated when able to talk, play and work with others and they experienced loneliness when not in social contact.

The same research also noted that, unlike the extrovert, the introvert was territorial insofar as he or she desired space in the form of private thoughts or a private environment. Introverts appeared to draw their energies from the stimulation of solitary activities, such as working quietly alone, reading, meditating and participating in activities that involved few or no other people. Conversely they were likely to experience a sense of loneliness when in a crowd and felt most alone when surrounded by people, especially strangers. It was incorrect to say that introverts did not like to be around people. Introverts enjoyed interacting with others but it drained their energy in a way not experienced by extroverts. They

needed to find quiet places and solitary activities to recharge. In contradistinction, quiet activities drained the extrovert of energy.

Keirsy and Bates (1984) further noted that extroverted individuals also exhibited some introverted characteristics and vice versa. There was a preferred attitude, either extroversion or introversion, while the other was suppressed to a minor characteristic. The preference was expressed in the conscious personality and reflected the aim, will and achievement of the consciousness. The suppressed characteristics were only partly expressed in the consciousness and, depending on certain circumstances, had specific and limited influence on behaviour. This least-favoured side of a person's temperament was less differentiated and less energized, and was thought to be more primitive and undeveloped.

2.8 EYSENCK'S CLASSIFICATION OF PERSONALITY TYPES

Eysenck (1973), a British psychologist, developed a theory of personality and human behaviour based on two dimensions: introversion-extroversion and stable-temperamental. The dimension of introversion-extroversion referred to the degree to which a person's basic orientation was turned toward the self or outward toward the external world, and described in essentially Jungian terms. Stable-temperamental was a dimension of emotionality, with individuals displaying traits varying from calm, well adjusted and reliable at the stable end of the spectrum to those who were moody, anxious, unreliable thus temperamental at the other as shown in the following (Figure 2.1).

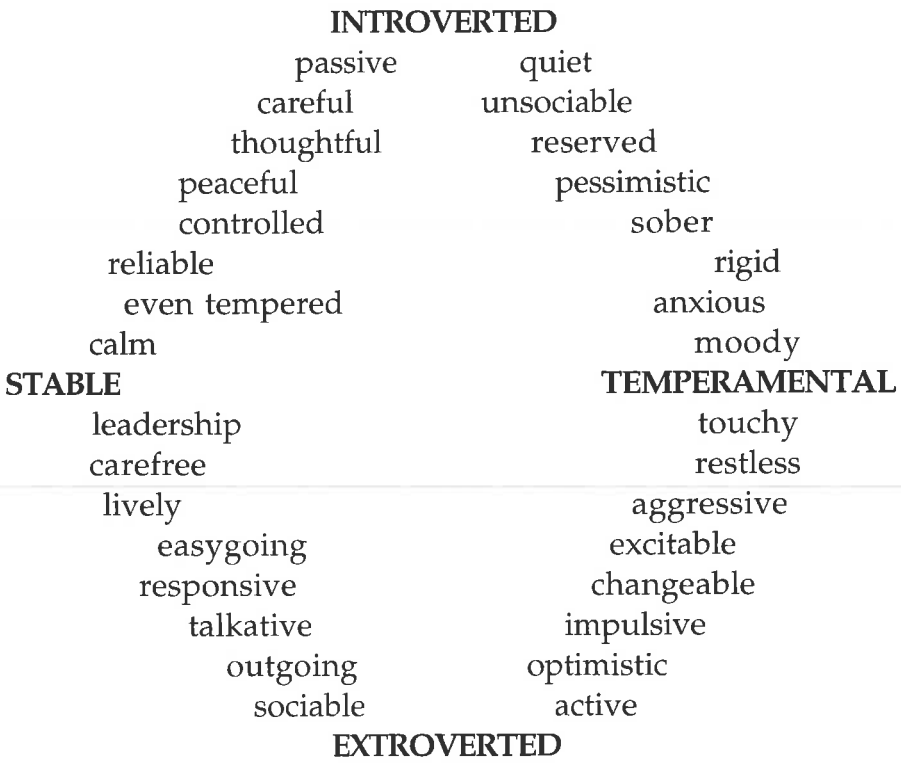

Figure 2.1 The various traits in relation to the two basic dimensions of introversion-extroversion and stable-temperamental

The theory of extroversion-introversion had lasted longer than other psychological theories and was intimately connected with the ancient theories of Hippocrates (Eysenck, 1973). Eysenck did not dispute Hippocrates' original theory of the four personality types and made no assertions that extroversion and stability were the only variables that affected personality. It was merely asserted that they were important variables and worthy of further study.

Eysenck (1967; 1973) found that personality was a complex issue and noted that the debate about identification of accurate and objective measurements continued. He further contended that, if introverts and extroverts differed in their psychological and physiological measures (such as habitual arousal level, sensory thresholds, orientation reactions, adaptation rates, electro-encephalogram response patterns, rates or conditioning and perceptual after-effects), it would be possible, accordingly, to objectively quantify the differences. His 1967 research used the hypothetic-

deductive approach in an attempt to determine differences between introverted and extroverted behaviour, both socially and in the laboratory. Eysenck's (1973) research focussed on the differences in cortical arousal mediated by the reticular formation (within the central nervous system) but he declared that the success of this research was too doubtful to be used scientifically. However, it was concluded that the weak personality type appeared to resemble the introvert, while the strong personality type resembled the extrovert.

Even though the validation was not scientifically proven Kiyak *et al.* (1981; 1982; 1984; 1985; 1986; 1988) still used Eysenck's (1973) interpretation of introversion and extroversion in their research on satisfaction with orthognathic surgery. Introversion and extroversion as stated by Alessandra and O'Connor, (1994) had been validated as measures of personality but failed to indicate how.

Alessandra *et al.* (1993) and Alessandra and O'Connor (1994; 1996) provided the most logical and straight forward explanation of personality and was therefore chosen as the analytic method for the present study. Jung (1923), Eysenck (1973), Keirsy (1984) and others referred to in the preceding discussion were not chosen because their categorizations were more convoluted and complicated.

CHAPTER 3

FACTORS THAT INFLUENCE PERSONALITY AND SURGICAL SATISFACTION

3.1 PSYCHOLOGY OF ATTRACTIVENESS/FACIAL AESTHETICS

People are concerned with their facial appearance but a patient's self perception of attractiveness may be based on factors outside actual physical reality and may be related to their personality. Plastic surgery and orthognathic surgery were often performed to correct, what might be perceived by patients, as an abnormality or to enhance facial attractiveness. Kiyak *et al.* (1982) had indicated that the majority of patients did not want physical perfection but wanted to avoid being seen as different. The aim of orthognathic surgery was not to create beauty but to correct a patient's chief complaint. However, according to Alessandra (1993), the acceptance and satisfaction with the results of surgery might be related to personality. Since a definite link between patient personality types and satisfaction with the results of orthognathic surgery had not previously been established, the present study examined whether a relationship could be determined.

Facial disfigurement might be defined as a physiognomic form that was sufficiently negatively marked so as to set the individual apart from the general population (Jones, 1984). Although facial deformity might vary in its severity, the degree of psychological discomfort a patient felt might bear no direct relationship to the severity of the deformity (Goin and Goin, 1981). This physical deformity might or might not co-exist with a psychological perception of a deformity.

Dysmorphophobia, as a psychological state, was defined as a subjective feeling of ugliness or physical defect which the patient felt was noticeable to others, although his or her appearance was within normal limits (Thomas, 1984; Birtchnell, 1988). Primary dysmorphophobia was a neurotic characteristic in the absence of any other psychiatric illness (Feinmann, 1992).

Dental and facial disfigurements were known to influence many social and psychological aspects of peoples' lives and, consequently, their behaviour (Cunningham *et al.*, 1995). Shaw (1981) even proposed that a dentofacial deformity might have such an adverse effect on an individual's self esteem and self-confidence that evoked undesirable social responses. The literature confirmed that attractive individuals were more likely to be seen as intelligent, friendly, more sensitive, interesting and successful (Berscheid *et al.*, 1971; Dion *et al.*, 1972; Clifford and Walster, 1973; Kalick, 1978).

Studies by Wilmot *et al.* (1993) and Cash and Smith (1982) alluded to the importance of aesthetics and noted that physical attractiveness might have consequences that affected interpersonal and social processes. Bell *et al.* (1985) and Wilmot *et al.* (1993) found that a patient's undesirable perception of themselves was a more important influence in deciding whether or not surgery was to be undertaken than the recommendations of a consultant surgeon.

Patzer (1985) found that physical deformity and psychological perception of deformity raised the question of what determined physical attractiveness. It was found that science had failed to provide an objective answer to this question, although it appeared that selective conditioning (that is, the more frequently a particular facial pattern was observed the more likely it was perceived to be correct) determined how faces were judged.

Terry and Davis (1976) identified features of the face that determined attractiveness and concluded that first, the mouth, then the eyes, the hair and lastly, the nose, correlated most strongly with facial attractiveness. Lucker and Graber (1980) made a further attempt to objectively determine physical attractiveness by analyzing children's responses to a series of black and white photos of frontal and profile views of other children. The children's ages ranged between ten to thirteen and their task was to decide whether there was anything wrong with faces portrayed in the photographs. A large number of measurements, grouped in general categories

relating to specific regions of the face, were taken from lateral and frontal radiographs. After correlations of each measurement and the observers' judgments were calculated, it was found that nineteen facial measurements were significant for the males and thirty-seven measurements were significant for the females (Lucker and Graber, 1980). Lucker and Graber (1980) therefore felt that it was imperative to identify facial lineaments that people found to be unaesthetic and potentially stigmatizing. It was further determined that, for both males and females, protrusion of the mandible and lower teeth relative to the rest of the face, and position of the mandible relative to the maxilla, were among the relationships that were deemed important in facial attractiveness. Lucker and Graber (1980) concluded that society had a clear standard for facial attractiveness but the facial measurements in their study were in two dimensions only, whereas in real life people are viewed in three dimensions.

Peck and Peck (1970) reported that a common basis for aesthetic judgment could be identified internationally and transculturally regardless of nationality, age, sex or occupation. In a study undertaken to identify the characteristics of pleasing facial aesthetics, they applied normal cephalometric standards to a group of fifty-two attractive, young adult (orthodontically untreated) subjects. Each subject was subjectively acclaimed to possess qualities of facial aesthetics in keeping with those of professional models, beauty contest winners or performing stars. The researchers performed multiple cephalometric analyses and the results showed that the cephalometric means of the studied group favoured a fuller, more protrusive dentofacial pattern than standard cephalometric means. When treatment results were evaluated, disagreements between orthodontists over what constituted aesthetic improvement of the face accounted for many of the differences. The researchers suggested that the orthodontist would do well to acknowledge the patients' and parents' perception of the face before planning treatment.

Birkeland *et al.* (1996) compared the orthodontic concerns among eleven-year-old children and their parents with the need for orthodontic treatment as assessed by

the Index of Orthodontic Treatment Need. No sex difference was found and the children's assessments of the aesthetic component of the Index of Orthodontic Treatment Need were closer than the orthodontists' to the attractive end of the scale. It suggested that there was a relationship between the children's aesthetic concern and assessment of the need for orthodontic treatment. However, some patients who required a great deal of orthodontic treatment did not express orthodontic concern, whereas others with near ideal occlusion expressed dissatisfaction with their dental appearance. This dichotomy indicated that there was large individual variation, and potential benefit in examining the possibility of human personality influencing the evaluation of physical attractiveness. The research of Birkeland *et al.* (1996) noted that self-assessment ultimately influenced and, consequently, determined some of life's choices.

Berscheid (1974) indicated that physical appearance dramatically affected behavioural patterns to such an extent that intimate matters as the quality of an individual's sex life and educational and career opportunities were influenced. Jacobson (1984) stated that it seemed almost undemocratic to believe that physically attractive people were generally better liked than the homely, since physical endowments were genetically determined and were no measure of competence or achievement.

Despite Jacobson's (1984) noble thought, it remained that physical attractiveness was a positive asset to possess. Evidence supporting the idea was provided by Clifford (1973). It was shown that attractive children were perceived by their teachers to be more popular and intelligent and more likely have successful careers. Shaw (1981) found that children with a normal dento-facial appearance were seen as more intelligent, more friendly and less aggressive than children with dentofacial anomalies. In the same research, Shaw (1981) also proposed that a dento-facial anomaly was likely to have an adverse affect on a person's self-esteem and self-confidence, as well as evoking such undesirable social responses as ridicule. Dion (1972) found that attractive people were perceived to be more friendly, sensitive and successful than were unattractive individuals.

Longo and Ashmore (1995) noted that accumulated evidence suggested that self-rated physical attractiveness and self-perceived personality traits were psychologically related and that there might be a direct causal connection whereby the formation of a personality was dictated by subjective beauty: 'I am pretty. Good looking people have good personalities; therefore I am sociable and confident.' The same research also noted that personality might have an important impact on how personal appearance was judged: 'I am sociable and confident, therefore I am attractive.' However, Feingold (1992) suggested that the relationship between appearance and personality traits might be spurious. As an alternative, he proposed a 'self-esteem model' by which an individual's level of global self-regard determined their judgment of their level of physical attractiveness and their personality characteristics: 'I am a good person, thus, I am beautiful and I possess positive personal qualities.' Feingold's (1992) research confirmed that the relationship between physical attractiveness and the measures of basic personality traits and mental ability were generally trivial.

Longo and Ashmore (1995) reported the results of two studies that used a global self-orientation model designed to test self-esteem and social desirability, and the link between personality and attractiveness. In addition to self-rated physical attractiveness, the attractiveness of each participant in the research was assessed objectively, which tested the strength and generality of the relation between looks and personality for internal (self-perceived) and external (judges' ratings) views on appearance. Because the global self-orientation explanation applied only to the link between personality and perceived attractiveness, the studies also provided discriminate evidence validating the explanatory model of the relationship between self-rated attractiveness and personality. Jacobson (1984) suggested that attractive people, by nature of their greater experience with positive social interactions, were more likely to manifest confident behaviour patterns than less attractive people. This research also showed that there were positive relationships between attractiveness, peer acceptance and self-esteem: generally, the more attractive one's outer

appearance, the more likely was positive peer appraisal, which in turn supported a positive internal self-image.

Longo and Ashmore's (1995) research further revealed that in the objective physical-attractiveness ratings, judges' rating for females was more reliable than for males. However, the correlation between objective and subjective ratings of attractiveness was low. In terms of attractiveness, the people who felt good within themselves, rated themselves more favourably than the judges. The research also tested the relationship between self-rated physical attractiveness and personality. The results supported the hypothesis that self-rated attractiveness correlated more closely with personality traits than with objective-rated attractiveness, and that the significant correlations between subjectively-rated looks and personality were greater than those between objectively-rated appearance. Their study showed that, because people were guided by general self-assessments that influenced specific self-assessments, a relationship existed between self-rated attractiveness and personality. Jacobson (1984) had already established that the largest correlation obtained between any of the Jackson Personality Inventory Scales and attractiveness was for self-esteem. Longo and Ashmore (1995) concluded that these self-orientations supported correlations between various types of content-specific self-judgments such as personality and attractiveness.

It was Jacobson's (1984) final conclusion that the social climate in which we live rated physical attractiveness in both males and females high on the scale of priorities, with the consequence, that self-image and social interaction were often affected. Males and females perceived themselves, in terms of attractiveness, differently.

3.2 GENDER PSYCHOLOGY

A body-image survey conducted by Cash *et al.* (1986) showed that, while women generally evaluated their appearance more negatively than did men, their overall level of psycho-social well-being was slightly higher. It was more socially acceptable for women to think about their appearance, as was evident from their higher scores

on appearance orientation. Although women evaluated their bodies more harshly than men, they also placed less importance on fitness and did less self-reported exercise. The survey concluded that women might feel freer to share concerns about their appearance with friends in an effort to help them accept their concerns as normal. Cash *et al.* (1986) theorized that a poor body image for men became a private agony because they less freely discussed their looks with friends or families. Linden *et al.* (1986), in their study of response styles, found women were more willing to report somatic symptoms and psychological distress than men. Cash *et al.* (1986) further suggested that men's feelings of well-being might be more closely associated with feelings about their bodies than women's. The research revealed that women received more social and emotional support from family and same-sexed friends than men, and that these relationships were less likely to be influenced by physical appearance than were romantic friendships, the arena in which men received most of their social and emotional support.

Klima *et al.* (1979) distributed questionnaires on body image and self-concept satisfaction to three groups of eleven- to sixteen-year-old children, and one group of mothers. The groups of children comprised patients in orthodontic retention, new patients presenting for orthodontic treatment and a control group of school children, in addition to a group of mothers of new patients. They found the males in the retention and control groups were more satisfied with their body image and self-concepts than the females.

Rodin (1984) reviewed much of the literature related to motivation and gender and concluded that women spent a great deal of time and energy worrying about appearance. Brownmiller (1984) also supported the view that women were concerned with appearance. Cash and Szymanski (1995) studied women using the 'body image ideals' questionnaire and found that if women failed to attain personal physical ideals, particularly when the standards were attainable and saliently valued, they might suffer body-image dysphoria and dysfunctional struggles such as emotional distress. The questionnaire sub-scale also revealed that women who were

more appearance-schematic, by virtue of holding extensive implicit assumptions about the psychosocial salience of their appearance in their lives, gave a higher priority to their appearance. Cash and Szymanski (1995) contended after their study of the literature that women were not conceited about their appearance in the sense that they viewed their bodies with pride or overvaluation, but rather in response to a cultural imperative that women be attractive. Women did appear vain because they persistently expended much effort and attention in the pursuit of the 'svelte' ideal. It was concluded that it was not vanity nor conceit, but shame and social pressure that caused women's preoccupation with their appearance. Rodin (1984) noted that this preoccupation and the behaviours it engendered had serious psychological consequences and considerably affected physical health.

A study on sex differences in motivation for orthognathic surgery showed that, generally, females had orthognathic surgery to improve attractiveness, while males wished to improve career opportunities (Kiyak *et al.*, 1981). Pogrel and Scott (1994) interpreted this finding as representative of sexual attitudes present in society and further, suggested that society dictated that women perceived men as being attractive consequent on their careers. Additionally, men perceived women as attractive consequent to their physical beauty. The Nebraska Symposium on Motivation, reported by Rodin *et al.* (1984), reviewed studies about the normative discontent of women and found that males with the greatest status and power, as well as reasonably good looks, interested the most attractive females. Also, the most alluring and beautiful females interested the high status males. The reviewers commented that it was no surprise to see that plastic surgery had increased in popularity and that the number of female patients undergoing 'beauty enhancing' surgery exceeded males.

Garvill *et al.* (1992) studied psychological aspects in orthognathic surgery and reported that sixty-three per cent of their sample patients indicated that a problem with their facial appearance had negatively influenced their personal life and forty-four per cent, their social life. Women experienced this problem more often than

men, which might further explain why women sought orthognathic surgery treatment more frequently.

In determining the role of gender in assessing surgical satisfaction, Kiyak *et al.* (1981) found satisfaction with orthognathic surgery to be high among both males and females and that there was no significant difference between the sexes, but the type of surgery did have significance.

3.3 THE DIFFERENCE BETWEEN PATIENTS UNDERGOING ORTHOGNATHIC SURGERY AND THOSE UNDERGOING COSMETIC SURGERY.

Individuals seeking cosmetic surgery did so primarily for reasons of appearance and aesthetics. Health considerations such as mastication, speech and temporomandibular joint function were usually minor. In contrast, patients who sought orthognathic surgery generally did so for a functional problem rather than for aesthetics and appearance which were secondary considerations. These different motives for treatment resulted in investigators finding a higher level of personality disorders and dissatisfaction among the cosmetic surgery patients (Kiyak *et al.*, 1981).

According to Heldt *et al.* (1982) and Reich (1975), post-operative problems, specifically emotional problems, appeared to be less frequent in orthognathic surgery patients than in cosmetic surgery patients. Edgerton and Knorr (1971) stated that orthognathic patients received more support from friends and relatives than did cosmetic surgery patients because friends and family assumed that the orthognathic operation was for both functional and aesthetic reasons. Reich (1969; 1975) found that functional improvement was better accepted as a valid reason for orthognathic surgery, but that cosmetic surgery was gaining acceptance by the general public. Edgerton and Knorr (1971) noted that the majority of orthognathic patients sought treatment for congenital and developmental problems, rather than an acquired condition. The orthognathic patient was, therefore, more likely to be happy with an

improvement because they possibly had not experienced an image of normality prior to corrective surgery.

Plastic surgeons sometimes had to deal with emotional disturbances after cosmetic surgery. Goin *et al.* (1980) anticipated that an independent and controlling woman, who showed signs of depressive symptoms pre-operatively and who had hoped that plastic surgery would slow the aging process, would have an intensification of her depressive symptoms in the immediate post-operative period. Additionally, it was found that complaining, neurotic, passive-dependent people who had a less than optimal surgical result, were more likely to become depressed in the second or third week after surgery when their emotional supports subsided.

3.4 PSYCHIATRIC PROBLEMS AND PERSONALITY

A number of researchers had noted that patients who presented for aesthetic surgery had significant psychiatric problems (Finlay *et al.*, 1995; Hay and Heather, 1973; Jacobson *et al.* 1960; Meyer *et al.* 1960). Hay (1970) found that, of forty-five patients requesting a cosmetic rhinoplasty, eighteen had personality disorders and one was psychotic. There was no correlation found between the degree of deformity, the influence of gender, and the degree of psychological disturbance (Finlay *et al.* 1995; Hay, 1970). Edgerton and Knorr (1971) assigned psychiatric diagnoses to a sample of middle-aged women who were seeking face-lifts. The researchers noted that the patient whose change was characterized by diminishing physical vigour might do well enough immediately following surgery, but was likely to be dissatisfied later and to lapse into a severe depression within a few weeks or months. Other studies have supported the premise that a significant number of patients, who sought cosmetic surgery of the face, when analyzed by strict psychiatric criteria, had serious emotional disturbances (Reich, 1969; 1975).

Flanary *et al.* (1990) noted that most of the contemporary investigations of personality profiles revealed that orthognathic surgery patients, unlike those who specifically sought cosmetic surgery, were psychologically normal. Numerous other studies had supported this finding (Crowell *et al.*, 1970; Hutton, 1967; Kiyak *et al.*, 1982). However, Finlay *et al.* (1995) noted that some of these studies did not use standardized measures.

Kiyak *et al.* (1981) showed that when pre-operative psychological evaluations were performed on orthognathic patients, virtually all tested within the normal range. The results prompted the authors to state that, since the identification rate for psychological disease was low, a pre-operative formal, psychological evaluation was not justified as a screening test on orthognathic patients. Olson and Laskin (1980) noted that even the occasional identified instance of psychological disturbance did not correlate well with post-operative satisfaction. Pogrel and Scott (1994) also noted that studies, which showed a proportion of orthognathic surgery patients to have a

psychiatric disorder, reported that the psychological results of surgery could be successful.

Kiyak *et al.* (1984; 1988) conducted a twenty-four month longitudinal follow-up study of orthognathic surgery patients by assessing their subjects with a number of tests that included the Eysenck (1973) personality assessment. The test questionnaire measured introversion and stability plus a Body Cathexis Scale to indicate the patient's body self-image. It revealed that female patients tended to exhibit a lower body image score and a higher temperamental score than males. Other results showed that self-esteem, extroversion and stability were within the normal range for both males and females. Pogrel and Scott (1994) commented that these studies failed to identify any particular group of patients as being psychologically unsuitable for orthognathic surgery.

A psychiatric illness had been a contraindication to cosmetic surgery until a thorough assessment of the patient had been completed by a professional in the field of mental health. Cunningham *et al.* (1995) stated that dysmorphophobic patients were physically healthy but emotionally sensitive. Dsymorphophobic patients developed a concern about their appearance to the point of preoccupation. Andreasen and Bardach (1977) noted that the range of symptoms ranged from the patient believing that he or she was very unattractive to a vague notion of unattractiveness that could be improved if surgery was undertaken. Cunningham *et al.* (1995) noted that the dysmorphophobic patient often developed a sudden feeling of deformity or vague ugliness. Birtchell (1988) reported that dysmorphophobic patients could be distinguished, not only by disproportionate distress about a minimal or nonexistent deformity but also by the vagueness of the complaint and their desperation for treatment. Andreasen and Bardach (1977) estimated that two per cent of patients requesting purely cosmetic surgery were dysmorphophobic. The same researchers found that the typical dysmorphophobic patient was obsessive, had perfectionist traits and was frequently shy and self-conscious with few or no close friends. It was suggested that patients who showed these tendencies and requested orthognathic

surgery should undergo a full psychiatric evaluation. However, according to Cunningham *et al.* (1995), few psychiatrists understood the full nature and scope of orthognathic and cosmetic surgery, unless they happened to have a specific interest in this field. Nevertheless, Cunningham *et al.* (1995) felt that surgeons should heed this finding and remain cautious in dealing with patients who were greatly concerned with minor physical defects, especially if only minimal changes were being requested.

Thomas (1984) provided evidence that successful surgery could be performed on minimally deformed patients, but warned that a psychiatric diagnosis of dysmorphophobia, might lead to acceptance problems.

Several researchers found that patients who had a long history of unhappiness about a single specific feature were better candidates for surgery than those who had only recently decided to undergo treatment (Edgerton and Knorr, 1971; Peterson and Topazian, 1976). Macgregor (1981) stated that the indications for surgery were poor if a patient decided to undertake surgery on impulse. Lewis *et al.* (1983) considered that if the proposed surgery would not produce significant changes, the surgeon should think carefully before planning operative procedures.

Edgerton and Knorr (1971) noted that clinicians realized that patients, who had subjectively-rated deformities tolerated by the majority of individuals, tended to be difficult to treat. Graber (1980) confirmed that patients who had previously complained of disappointing experiences or bad treatments from other dental, surgical or mental health professionals might exhibit irrational expectations or be psychologically unhealthy. It was suggested that these patients be managed by a psychologist or psychiatrist in order to deal with their obsessive or irrational behaviour. Kiyak *et al.* (1985) were also able to demonstrate similar problems and found that patients who perceived their emotional state more negatively, had more problems and greater dissatisfaction after surgery. George and Scott (1982), in addressing post-surgical sequelae, reported that patients who stated before surgery

that they expected more post-surgical suffering did indeed experience more pain, more interference with activities and slower healing than patients with more positive expectations. Kiyak *et al.* (1986) examined orthognathic patients up to six months after surgery and concluded that highly introverted patients, assessed via Eysenck's (1973) stability/introversion scale, expressed more dissatisfaction soon after surgery, which later progressed to specific issues of pain and swelling.

Sambrook (1989), using questionnaires relating to illness, behaviour, anxiety, depression and life-events, found that pre-operative evaluation of patients was not useful to prognosticate satisfaction of outcome. The same research determined post-operative dissatisfaction when a patient had both a poor body image and a high disease conviction score. Cunningham *et al.* (1995) determined that patients who had good body image despite a facial deformity were better surgical candidates. In a study on plastic surgery patients Goin *et al.* (1980) found that neurotic people became depressed when their social resources for coping subsided.

3.5 THE INFLUENCE OF LIFE-EVENTS, STRESSES AND AGE ON PERSONALITY

Billings and Moos (1981) examined the role of coping responses and social resources in attenuating the stresses of life-events. They found that the quality of women's social resources was more strongly related to their ability to deal with stress than were the number of resources. In contradistinction, the social resources for men were somewhat less strongly related to their ability to deal with stress than were their measures of coping. Women placed more importance on the quality of their support than on the number of supportive people available. According to Billings and Moos (1981), coping mechanisms used by both men and women may be denial, overt problem-solving behaviour directed at changing the external stressor, or active attempts to avoid the external stressor. The researchers acknowledged that the working environment, which might be a source of support for males was missing as a variable in their study. They also found that the use of effective coping strategies was more prevalent among those with more education and income which

implicated these coping strategies as intervening links in the inverse relation between socio-economic status and psychopathology. The study also indicated that, regardless of the particular research perspective, a comprehensive evaluation of a person's response to stressful events must simultaneously consider the nature and context of available social resources and that person's coping process.

Ostler and Kiyak (1991) reported a high level of satisfaction for all ages in aesthetics and function and concluded that the age of the patient did not seem to be a major factor. Research by Heldt *et al.* (1982) revealed that the majority of patients undergoing orthognathic surgery were young adults who appeared more adaptable and accepting of different situations.

3.6 THE INFLUENCE OF SOCIAL CIRCUMSTANCE ON PERSONALITY

Mischel (1979) noted that the study of personality would be incomplete if it failed to seriously consider the role of specific situations in the analysis of behaviour. The study of personality was becoming more cognitivised. According to Mischel (1979), no matter what was being studied, the researcher interpreted the data from a specific point of view, derived from his or her experiences of life.

Maslow's (1954) personality theory assumed that determinants of basic needs were universally present in all human beings. His hierarchy of needs progressed from the basic biological necessities such as food and water, through to the psychological needs such as esteem and self esteem. Self-actualization was the culminating need defined by Maslow (1954) as the development of full individuality with all parts of the personality in harmony. Hilgard *et al.* (1975) stated that, although Maslow's scheme was not scientifically supported, it provided an intriguing way of examining the relationships, motives and the opportunities afforded by the environment. Secord and Jourard (1953) reported that the degree of satisfaction with various parts of the body correlated with Maslow's test for insecurity. Aronoff (1967) determined that an understanding of the relationship between individuals needs afforded the

possibility of establishing variations in personality development and motivation, not only from individual to individual but from culture to culture.

Aronoff's (1967) research showed that the patients with whom a clinician dealt in contemporary times came from very diverse backgrounds and that their acceptance of surgical outcome related to personality and culture. The research also noted that medical, residential, nutritional, demographic and economic conditions, which resulted from environmental and past socio-cultural initiatives, influenced family stability and affected peoples' levels of security and exploitation. Accordingly, the individual who grew up under difficult conditions, found little gratification for his or her basic needs and so did not progress to seek higher needs, such as increased self esteem. Aronoff (1967) concluded that when there had been great deprivation, a dominant concern for affected people was to find satisfaction of deprived needs and accordingly, one role for the professional team was to identify those needs. Furthermore, it was noted that the patient must feel comfortable in revealing those needs in clinical discussion.

Costa and McCrae (1988) found that needs, as opposed to traits, changed with the patient's psychological and emotional status. Consequently, the researchers determined that personality-trait questionnaires were flawed as they measured the relatively stable pattern of needs that characterized an individual across situations.

Wright (1984) noted that in the presence a surgeon, patients might hide their traits and needs, and seem composed and mature when they might possibly feel otherwise. Vuyk and Zijlker (1995) advised that, to deal with patients appropriately, the clinician should try to establish a rapport by showing honest empathy, understanding and concern. They considered that the patient should be given an unhurried chance to talk and be listened to with the utmost attention. Furthermore, the patient should be made aware that his or her concerns were important and would not be criticized. Initially, eye contact, body attitude and approving sounds might give positive reinforcement and help the patient to 'open up' at his or her own

pace. Conveying the patient's feelings in the clinician's own words would show empathy. Wright (1984) considered that only then would the prospective patient be willing to speak freely of his inner hopes and fears. The clinician's airing of his or her own personal thoughts and ideas prematurely might stop the patient's stream of information. Therefore, the clinician should fully realize the psychological delicacy of the interview which should allow for disclosure of the patient's motivation (Wright, 1984).

3.7 MOTIVATION: INTERNAL AND/OR EXTERNAL

Edgerton and Knorr (1971) described two types of motivation: external and internal. A patient was internally motivated when he or she sought treatment based on improving themselves for their own sake. A patient was externally motivated if he or she sought treatment to please others. Alternatively, external motivation might be related to an improvement in his or her external environment. Magregor (1981) noted that undertaking surgery to please others was a cause for dissatisfaction after surgery. Edgerton and Knorr (1971) proposed that dissatisfaction increased if the patient asked for a change in appearance as a solution for an external problem.

Cunningham *et al.* (1995) researched internally and externally motivated patients and found that, if patients placed more emphasis on surgically improving themselves for their own sake, they were more likely to be better candidates for cosmetic surgery. Furthermore, if patients felt inadequate because of a single deformity, surgery would do little to change their external environment. Cunningham *et al.* (1995) reported that, if patients perceived that the defect or deformity remained after surgery, or the external environment did not change in the way they had hoped, blame might be apportioned to the surgeon.

Kiyak *et al.* (1981) theorized that patient's motives and personalities were important determinants of post-surgical adaptation. As such, it was incumbent upon clinicians to understand the personality of their patients and to inform them of realistic expectations before surgery. Furthermore, clinicians needed to be aware of the

relevant personality traits plus the emotional and behavioural factors that influenced post-surgical outcomes.

3.8 SATISFACTION AFTER ORTHOGNATHIC SURGERY

Proffit and White (1991) indicated that orthognathic surgery had been widely accepted as a means of correcting various dento-facial deformities. As a result, there had been an increasing interest in the study of the emotional and behavioural factors that influenced adjustment to treatment, and the subsequent satisfaction or dissatisfaction experienced by the patient.

Auerbach *et al.* (1984) studied a group of thirty orthognathic surgery patients who, on pre-operative testing, were shown to be a psychologically well-adjusted group. Following surgery, there appeared to be no major changes in psychological function and most were satisfied with the results. Earlier research by Hutton (1967) supported these findings. Hutton's (1967) questionnaire sent to forty-two patients received thirty-two replies: thirty-one answered in the affirmative and one was uncertain. Ninety per cent reported major improvements in their appearance and fifty per cent felt that their personalities had changed in an unspecified way.

Edgerton and Knorr (1971) found that post-operative problems appeared less frequently in orthognathic surgery patients compared with cosmetic surgery patients. Peterson and Topazian (1976), Kiyak *et al.* (1981; 1982), Auerbach *et al.* (1984) and Flanary *et al.* (1990) had all shown that orthognathic surgery patients were essentially healthy and well-adjusted and did not exhibit psychological disturbances sometimes attributed to cosmetic surgery patients. Later research by Kiyak *et al.* (1984) added that if the patient perceived aesthetic improvement in facial features after surgery, his or her satisfaction was high, regardless of any functional problems such as paraesthesia. Macgregor (1981) attributed multiple serious psychological problems to the reasons for post-surgery dissatisfaction in cosmetic surgery patients.

In a study by Jacobson (1984), eighty per cent of those undergoing orthognathic surgery reported positively on the influence of the treatment on their lives. The surgery had provided them with more self-esteem and confidence, favorably influenced their personalities and generally led to a more positive response to people. Many patients in the study reported more than one positive change. Twenty per cent stated that they did not perceive any changes in their social life following the surgery. Arndt *et al.* (1986) were able to establish that for the majority of their group of post-surgical patients their quality of life improved. Improved self-confidence and self-esteem allowed them to overcome the social barriers they had previously felt to be present.

Laufer *et al.* (1976) conducted two post-operative reassessments of surgical patients two and six years after orthognathic surgery. Their results revealed that twenty-four of the twenty-five treated patients were satisfied with the post-surgical results and felt that the surgery had improved their personalities. However, sixteen per cent said they would not go through the operation again and stated the main reason as the long period of maxillomandibular fixation.

Wictorin *et al.* (1969) and Hillerstrom *et al.* (1971) found at their twelve-month post-surgical review examinations that almost all patients reported improved relations with others and improved self-confidence. Crowell *et al.* (1970) also found that more than half of a sample of thirty-three patients felt that their orthognathic surgery had improved their self-confidence and thus changed their personality. Barbosa *et al.* (1993) revealed that social adjustment improved in sixty-five per cent of patients and remained unchanged in the rest. Jacobson (1984) stated that eighty per cent of patients in his study reported a positive influence on their lives.

Research conducted by Flanary *et al.* (1985) noted that ninety-two per cent of orthognathic patients were satisfied with the results. In 1990, research by Flanary *et al.* investigated psychological adjustments and self-concepts of sixty-one surgery patients before and after treatment. Significant improvements were found

postoperatively in their self-esteem, self-satisfaction and self identity. The standardized tests used to assess post-operative changes also showed that subjective reports of improved self-confidence occurred in fifty to seventy-five per cent of the surveyed post-operative population. Six months after surgery significant positive changes were occurring in perceptions of self and facial image, but not in overall self-esteem. Results showed that body and profile images improved only two years after surgery, although social and overall self-esteem remained low.

At the twelve-month post-operative assessment by Wictorin *et al.* (1969) and Hillerstrom *et al.* (1971), almost all of the patients perceived their results to be equal or better than expected. Ostler and Kiyak (1991) also determined a high level of satisfaction in patients having orthognathic surgery.

Crowell *et al.* (1970) reviewed a sample of thirty-two men in the armed service and one woman dependent. The study group recorded their post-surgical response to correction of facial deformity while they were still in hospital. All but one said that they were happy with the surgery. Many of those answering in the affirmative wrote additional comments expressing how very pleased they were with the results and how grateful they were to the oral surgeons and to the service.

Lovius *et al.* (1990) identified that the significant improvement noted after orthognathic surgery was in the area of self-assessed body image.

Jensen (1978) suggested that orthognathic surgery patients were frequently referred for treatment rather than initiating the visit. It was inferred that this might be a strong factor in selecting a psychologically different population.

Peterson and Topazian (1976) indicated that most patients were pleased with the results of corrective surgery, but that five per cent were dissatisfied with what otherwise appeared to be successful treatment.

Several studies found that post-surgical dissatisfaction was influenced by many variables that were not always related to the technical skill of the surgeon, but instead, most commonly, to an unfavourable relationship between surgeon and patient (Peterson and Topazian, 1976; Reich, 1975; Macgregor, 1981; Rittersma *et al.*, 1980). The same studies found that failure to detect and deal appropriately with patients who had a high likelihood of being displeased with the results of treatment, even when the results were excellent, could place stress on both patient and clinician. In particular, Macgregor (1981) found that factors such as poor communication or a personality conflict could contribute to dissatisfaction after surgery. Additionally, Lewis *et al.* (1983) suggested that, if there was a personality clash between patient and clinician, the clinician should consider carefully before proceeding with the proposed surgery. Lewis *et al.* (1983) also suggested that if a person was defensive, critical and negative with the clinician, it was highly likely that this would continue after surgery. Auerbach *et al.* (1984) noted a growing awareness that patients' perceptions of caring, warmth and support of health-care providers played a role in patient compliance, adjustment and recovery after treatment.

In a review of the literature of the various psychological aspects of orthognathic surgery, Cunningham *et al.* (1995) suggested that the clinician should determine, through open-ended questions, the reasons why a patient was seeking treatment and what he or she hoped to achieve. This determination should occur without suggestions from the clinician and the use of the following open-ended questions were suggested by Vuyk and Zijlker (1995):

How can I help you?

What specific feature do you want corrected?

What view of your face bothers you the most?

When you look in the mirror, what is it you don't like?

If you have only one thing changed, what would it be?

How long have you been thinking about the surgery?

What caused you to begin thinking about it?

What do you think this operation will do for you?

Why do you want the operation at this time?

What other cosmetic operations have you had?

Were you happy with the results of the previous operations?

What is the attitude of your family and friends to the proposed operation?

Whose idea is it to have this surgery?

Is there anything else you would like me to tell you?

Peterson and Topazian (1976) also stressed the importance of obtaining specific answers to open ended questions and suggested that a vague response was a negative sign and further counselling should be considered. Their questions were as follows:

What do you think is wrong?

Why do you want treatment?

Why have you decided to have the treatment now?

What do you expect from the treatment?

Vuyk and Zijlker (1995) suggested that it was the clinician who should determine whether the surgery would meet the needs of the patient. Alternatively, the patient might be wise to seek counselling to deal with any unreasonable aspect of his or her perception of reality. Confirming Vuyk's and Zijlker's (1995) conclusions, Cunningham *et al.* (1995) stated that patients who did not have realistic expectations were more likely to be dissatisfied and should be sent for pre-operative counselling. Macgregor (1981) attributed part of patient satisfaction to unrealistic expectations.

Edgerton and Knorr (1971) found that dissatisfaction was more common in patients who underwent surgery to correct an acquired deformity rather than a congenital deformity. Cunningham *et al.* (1995) noted that patients who underwent surgery to correct an acquired deformity expected to look exactly the way they perceived themselves before the injury, which was an unrealistic expectation because the body image had often been glorified. The same research concluded that the majority of

orthognathic patients sought treatment for congenital rather than acquired defects and so were less likely to be critical.

Interest in the study of the emotional and behavioural factors that influenced adjustment to orthognathic treatment, and the subsequent satisfaction or dissatisfaction experienced by the patient could be studied in several ways. Previous to the present study, categorization of personality, utilizing the method of Alessandra and O'Connor (1994) to study the acceptance of orthognathic surgical results, had not been done.

CHAPTER 4

REVIEW OF THE LITERATURE RELATED TO SURVEY METHODOLOGY

4.1 INTRODUCTION

Cronbach (1957) stated that the virtue of appropriate experimental method was that it brought situational variables under tight control. It therefore permitted rigorous testing of hypotheses and confident statements about causation while a correlational method facilitated the study of uncontrolled variables.

Fitzpatrick (1991) suggested that it was worthwhile confronting several negative assumptions that might exist regarding the value of surveys of patient satisfaction. One unspoken anxiety was that widespread dissatisfaction might be uncovered and prove undermining to the patient and health worker. Fitzpatrick (1991) confirmed that health professionals seemed to estimate greater levels of dissatisfaction in their patients than surveys disclosed.

4.2 QUESTIONNAIRE SELECTION

According to Cattell (1970), behaviour in almost any situation could be made into a personality test. It was stated that it was possible to compare candidates in an interview by controlling the situation which was achieved, in part, by the use of standard questions.

Deinzer *et al.* (1995) studied situational effects in trait assessment and various personality questionnaires, including Eysenck's (1973) personality inventory. The reliability of both the extroversion and the neuroticism scales appeared consistent at two measuring periods. The measurement error accounted for about 10% (extroversion) and 20% (stability) of the variance of the test scores. No substantial differences were observed between the reliabilities on the two measurement occasions.

However, Deinzer *et al.* (1995) reported differences in the reliability coefficients of the lie scale. The coefficient was six per cent lower on the first occasion of measurement than on the second occasion. While the reliabilities of the Stability and the Extroversion scales did not differ appreciably between occasions, the same could not be said for the specificity and consistency coefficients. On the first occasion of measurement situational and/or interactional effects explained as much as twelve per cent of the variance of the Stability scale, while there was no significant effect on the second occasion.

Similar differences between occasions were observed by Deinzer *et al.* (1995) for the Extroversion scale. While only seven per cent of the variance of the test score at the first occasion of measurement was due to situational and/or interactional effects, the corresponding result at the second occasion was sixteen per cent of variance explained by the latent state residual. Only sixty-five per cent of variance was due to a common latent trait at this measuring period. For all scales, the method specificity accounted for at least eight per cent of the variance of the variables. In some cases the method factors explained more than fifteen per cent of the variance. It was considered that this result might indicate a high heterogeneity of test items (Deinzer *et al.*, 1995).

Associated with the approach to structured personality tests was the construction of items and their assembling into scales upon a priority basis. Meehl (1966) stated that this required the assumption that the psychologist constructing the test had sufficient insight into the dynamics of verbal behaviour and its relation to the inner core of personality. Meehl (1966) further reported that the examiner should be able to predict beforehand what people would say about themselves when asked particular questions.

Validity was a concern even with the widely used Minnesota Multiphasic Personality Inventory (MMPI) for testing various personality disorders (Crowne and Marlow,

1960; Dahlstrom *et al.*, 1975). Normal people having a slightly abnormal MMPI profile were differentiated from clearly abnormal persons with equally deviant profiles by a tendency to give statistically rare, as well as psychiatrically maladjusted, responses to other questions (Meehl, 1966). Accordingly, a person who said that he or she was afraid of fire, that windstorms were terrifying, that people were often disappointing, stood a better chance of being normal in his or her non-test behaviour than a person who did not make such admissions. Meehl's (1966) research on more subtle lie scales of MMPI indicated that unconscious self-deception was inversely related to verbal distortion.

David and Rabinowitz (1960) contended that it was at times difficult to decide whether a given response reflected overt conscious trends or unconscious latent tendencies and, while much projective material had symbolic value, not every response necessarily reflected deep dynamics. These researchers stated that glib interpretive analogies and direct transposition of psychoanalytic concepts constituted a constant threat for the novice.

Gur and Sackeim (1979) provided evidence indicating that self-deception on the part of respondents contributed more to the lack of validity of self-reported personality inventories than did other deceptions or conscious lying. They considered it erroneous to assume that cognition must be subject to awareness. It was said that rejection of cognition being subject to awareness, was implicit in the common use of the term 'self-deception'. Gur and Sackeim (1979) described an individual as self-deceived when they contradicted an avowed belief. They found that the magnitude of the associations between self-deception and psychopathology measures was greater than that between standard lie scales and self-reported psychopathology. It was concluded that lie scales were mainly directed at conscious falsehood while ignoring the more subtle tendencies to self-deception which were probably of even greater importance in affecting scores.

McCrae and Costa (1983) were of the opinion that many psychologists still regarded correlations with social desirability scales as evidence of the invalidity of measures, despite twenty years of research showing that this interpretation was usually unjustified. Although items or scales might be characterized as high or low in social desirability, there was little evidence that individuals differentially responded to this property when completing self-report questionnaires under normal instructional conditions. In an attempt to separate substance from style in social desirability scales, self-reports from two-hundred-and-fifteen adult men and women were compared to the external criterion of spouse ratings on a range of personality domains of stability, extroversion and openness to experience (McCrae and Costa, 1983). Their conclusion was that the widespread use of correcting scores for lying, defensiveness or social desirability should be questioned. Their study failed to improve correspondence with an external, objective criterion and in several cases lowered agreement, when corrected for error, with two widely used measures of response. They reported that correlations between social desirability scales and self-reports could be interpreted to mean that the stability scales were substantially biased by social desirability responding and that scales measuring warmth, gregariousness and openness to fantasy had a small susceptibility to this tendency.

Mahar *et al.* (1995) studied response strategies when faking personality questionnaires in a vocational selection setting. Their analyses revealed that success in faking was not a function of either the personality nor sex of the respondent but was highly sensitive to instructional manipulation.

Fitzpatrick (1991) reported that a multiple response was preferred in the determination of patient satisfaction, whilst the simplest form of questionnaire requested a Yes/No response. It was suggested that most respondents would give a favourable answer to questions about health care and that increasing the range of answers would increase the reliability of the response.

The limited and defined quality of the response material elicited by brief projective techniques generally permitted direct, uncomplicated, and rapid scoring, which was a decided economic advantage (David and Rabinowitz, 1960). Most of the methods described used simple content analyses involving only a few classification categories with explicit, operational rules that minimized interferences or interpretations in making scoring judgments.

The frequent criticism of poor agreement among independent scorers, often voiced against traditional projective techniques, was only rarely applicable to brief methods (David and Rabinowitz, 1960). They stated that perhaps more importantly, was the report of high levels of agreement which could be achieved by novice scorers of unsophisticated psychological background. Brief methods included questionnaires as opposed to interviews that required skilled consistent independent observers. David and Rabinowitz (1960) stated that the worth of a test could be determined by the extent to which it contributed to the improvement of decisions. In making decisions about a subject, certain basic data were almost always available (e.g. age, sex, education, work history, marital status). Additional relevant information might be obtained by using simple, brief projective or non-projective devices, whose value, however, was dependent on the extent to which they improved prediction. The frequent practice of evaluating a test by implicitly assuming that decisions made without it were no better than by chance was both deceptive and misleading since initial information was already available.

In addition, David and Rabinowitz (1960) confirmed that no test had a single over-all validity coefficient. Instead, every test had a different validity for each decision problem to which it was applied and any change in the decision problem could change the validity of the test. It had been further determined that a test might be useful if it had great bandwidth, which indicated that the range and number of decisions to which it contributed relevant information, was large.

Furthermore, David and Rabinowitz (1960) indicated that a test required great fidelity, in which the provided information was very accurate. Classical test theory had emphasized fidelity at the expense of bandwidth. David and Rabinowitz (1960) concluded that tests containing little error variance (chiefly objective intelligence and achievement tests) had been considered better measuring devices than tests with a great deal of error variance (chiefly projective methods). Decision theory suggested that, in evaluating a test, bandwidth must be considered along with fidelity. Projective techniques were wide-band instruments as they elicited information relevant to many decisions. However, the information was, in general, less accurate than that obtained from tests with a very restricted bandwidth (David and Rabinowitz, 1960).

One reason why projective methods and clinical interviews had not been successful in research efforts at validation was that they had been misused to reach terminal decisions for which they did not have the accuracy (David and Rabinowitz, 1960). The projective methods and interviews served a vital function when implemented sequentially or in combination which lead to further testing to clarify the results. The researchers stated that the confidence which clinicians continued to express in the results was probably the result of the way in which they actually used the testing devices.

David and Rabinowitz (1960) were of the opinion that some of the brief projective methods surveyed, particularly those that were relatively unstructured, seemed to have a desirable bandwidth in an initial phase of testing and considered that in a sequential testing program, projective methods might prove fruitful sources for hypotheses. Additional research should determine how effectively they led to more focused testing. Ideally, these researchers felt that the initial wide band techniques would suggest many more true than false hypotheses techniques with low validity but high bandwidth.

Fitzpatrick (1991) suggested that limited projective methods with better reliability and limited response questionnaires with more validation could be useful. Limiting the projection and sequencing of the experimental method reduced the cost of testing, and one of the obvious merits of any brief procedure was that its cost was low (David and Rabinowitz, 1960). Limited response questionnaires permitted rigorous testing of hypotheses and confident statements of results (Cronbach, 1957).

The present study used the limited projective method and a form of high band-width. The limited projective method was used by Alessandra's (1994) questionnaire. The satisfaction questionnaire used both limited response and open-ended questions of great band-width.

III

MATERIALS AND METHODS

CHAPTER 5

MATERIALS AND METHODS

5.1 SELECTION OF PATIENTS FOR THE STUDY

A list of patients who had recently undergone orthognathic surgery, was retrieved from the Oral and Maxillofacial Surgery Unit database files as well as a group of patients obtained from a private Oral and Maxillofacial Surgeon. All of the orthognathic surgery patients contacted were included in the study, except those who did not return the questionnaires or those who did not fill out the questionnaires completely nor correctly. Eighty orthognathic patients who had fully completed the questionnaires were included in study group one (Group 1) which therefore comprised of both public and private patients.

A second group of patients who had undergone minor dentoalveolar surgery (e.g. surgical removal of third molars), was obtained from both the Oral and Maxillofacial Surgery Unit of the Adelaide Dental Hospital and from private practice. Of the minor oral surgery patients contacted, fifty returned the correctly completed questionnaires and were therefore included in the study as Group 2.

The reference group consisted of first-year dental students most of whom had not experienced any elective oral surgery. They were instructed to complete the personality profile questionnaire and the top portion of the second questionnaire with the demographic details only. A group of 46 dental students therefore

comprised a reference group which was used to compare the percentages of each personality type in all of the groups.

5.2 METHOD OF TESTING

Standardization and categorization of the four personality types and patient satisfaction was assessed using questionnaires. Because of time limitations, the present study used a retrospective design (referring back to the patient's memory of their surgical experience) and standardized test instruments to evaluate personality and patient satisfaction.

Patients were asked to complete a psychological questionnaire and a patient satisfaction questionnaire after experiencing either orthognathic surgery or minor oral surgery. The two questionnaires (Appendices 1 and 2) were produced and provided for each patient, either by mail or delivered to the patient in the Orthodontic Unit, Oral and Maxillofacial Surgery Unit or in private practice. The study was performed in a blind fashion, in that neither those who administered the questionnaires nor the patient knew of the hypothesis being tested (Pearlman *et al.*, 1997). As the person delivering the questionnaires was unaware of the hypothesis being tested, a degree of impartiality was assumed which would lead to unbiased responses. Neither the patient nor the person handing out the questionnaire was expected to bias the results with regard to knowledge of personality categories in relation to satisfaction of surgery outcome.

5.3 THE QUESTIONNAIRES

1. The 'Patient satisfaction questionnaire' was developed by the author in conjunction with the guidance of Alison Williams (see Appendix 1) who had conducted similar research of cleft palate surgery in England and Wales (Williams et al., 1994, 1996; Shaw et al., 1996; Sandy et al., 1998). The modified questionnaire employed in the present study elicited demographic details such as gender, age group and race. Further questions were asked in relation to information provided by the operator

prior to surgery and how the patient felt about the outcome of the surgery. A number of qualifying questions were asked to enable the patient to express their concerns with the surgery, whether orthognathic or minor oral surgery. In addition, each patient was asked to comment about the surgery in terms of the outcome, pain, anaesthetics or sedation, surgery quality, post-operative complications, expectations, the recovery period, cost, asymmetry, unfinished treatment, speech dysfunctions, inattentive staff and oral function post-operatively. Inadequate pre-operative information was considered as a complaint. The author did not consider praise of the work, surroundings or operators, to be a complaint. If patients provided no reasons for their feelings of pleasure or disappointment with the outcome of surgery, it was also taken as not complaining.

Within each group of complainers and non-complainers, the patient's perception of the outcome following surgery was noted. The possible responses which were offered for the patient's selection of perception of outcome following surgery ranged from: 1. very disappointed, 2. disappointed, 3. satisfied, 4. pleased and 5. very pleased. (see Appendix 1)

2. Alessandra and O'Connor (1994) Behavioural Profiles: Self-Assessment and a Self- Directed Assessment of Outcome questionnaire (Appendix 2) was used in the present study. This questionnaire included eighteen paired statements in which a score between zero and three was assigned. For each pair of statements, the total score assigned had to total three. Consequently, only two scores were noted for each pair of statements in the returned questionnaires, that is, zero and three or one and two. Permission was granted by Alessandra to use his questionnaire in the current study.

5.4 TEST VARIABLES

The test variable was the variation of personalities in comparison to the perception of satisfaction following surgery. Two different types of procedures were selected, being orthognathic surgery and dentoalveolar surgery and two types of orthognathic patients (public and private) were studied. The public and private orthognathic patients and the minor oral surgery patients were assessed in terms of their satisfaction. Patients in each of the groups were able to perceive a definitive level of satisfaction or dissatisfaction to their surgical results and this was assessed in terms of their personality category.

5.5 ANALYSIS OF THE QUESTIONNAIRES

Upon return, each set of questionnaires was placed into either the study group or the reference group. The demographic details were noted and recorded. The behavioural profiles: self assessment questionnaire was analyzed by the method of Alessandra and O'Connor (Copyright 1994). This entailed a formal scoring sheet in which each of the eighteen pairs of statements (i.e. thirty six statements in all) were categorized into two sets of letter combinations which were indicative of behavioural styles (see Appendix 3):

The first set of letter combinations was that of 'O' or 'S' in which 'O' stands for Open and 'S' stands for 'Self-Contained'. The Open/Self-Contained spectrum described a set of behaviours reflecting a person's priorities ranging from "relationship" oriented to "task" oriented. The second set of letter combinations was that of 'D' or 'I' in which 'D' stands for Direct and 'I' stands for 'Indirect'. The Direct/Indirect spectrum described a set of behaviours reflecting a person's degree of extroversion or introversion.

Subsequently, the score assigned to each statement by each patient was entered onto the scoring sheet. The total scores for each behavioural style was calculated by

summation and a total score was derived for each of the behavioural styles. The 'Open' score was compared to the 'Self-Contained' score and the higher score of the two was recorded. The same was preformed for the scores between the 'Direct' score and the 'Indirect', the higher of the two also being recorded.

From the above calculations of highest scores, only four combinations could be derived with each of the set of letters i.e. Open and Direct; Open and Indirect; Self-Contained and Direct; Self-Contained and Indirect. These combinations were then used to identify the personality types of either "Thinker", "Relater", "Socializer" or "Director" according to the instrument grid. The following table (Table 5.1) illustrates the various combinations of letters and the observed personality type.

HIGHEST SCORE OF Open/Self-Contained	HIGHEST SCORE OF Direct/Indirect	PERSONALITY TYPE
'O' (Open)	'D' (Direct)	Socializer
'O' (Open)	'I' (Indirect)	Relater
'S' (Self-Contained)	'D' (Direct)	Director
'S' (Self-Contained)	'I' (Indirect)	Thinker

Table 5.1 Identification of personality types as related to behavioural styles.

5.6 STATISTICS

The results were analyzed statistically by using the Pearson Chi square test, Fisher's Exact Test and a Log Linear Model for the comparison of two proportions in paired or independent samples. Further analysis was provided by calculating the row and/or column Chi square in an attempt to elicit further detail when no significance could be obtained by the Pearson Chi square.

The general formulation of chi square is:

$$\chi^2 (df) = \Sigma (O-E)^2 / E$$

where

O = observed count in a category

E = expected count in that category if the null hypothesis is true

Statistical significance was accepted if $p < 0.05$. (Dixon, 1992)

The Fisher's exact test is recommended for a 2x2 table when the minimum expected frequency is less than 5. The Fisher's exact test calculates the probability exactly. The following formula may be used to determine the probability that the observed values for each cell will occur together:

$$\Pr(a_{11}, a_{12}, a_{21}, a_{22}) = \frac{r_1!r_2!c_1!c_2!}{N!a_{11}!a_{12}!a_{21}!a_{22}!}$$

Where N is the total number of observations in the tables, a_{11} is the observed frequency in the cell in column 1 and row 1, a_{12} is the observed frequency in the cell column 1 and row 2, while and r_1 represents row 1 c_1 represents column 1, etc. The ! symbol used in probability mathematics represents factorial calculations, such that if a cell frequency is 3, then 3! is 3x2x1.

The direction of the 1-tail probability is chosen as follows: if $a_{11}a_{22} \leq a_{12}a_{21}$ choose the minimum of a_{11} and a_{22} ; otherwise, choose the minimum of a_{12} and a_{21}. For example, let cell (1,1) be the selected cell. Then the probability that a value of cell (1,1) is equal to or less than a_{11} is

$$\mathcal{P}_1 = \sum_{x=0}^{a_{11}} \Pr(a_{11}-x, a_{12}+x, a_{21}+x, a_{22}-x)$$

Assuming that a_{11} was chosen, the other tail probability is computed as follows:

$$\mathcal{P}_2 = \sum \Pr(a_{11}+y, a_{12}-y, a_{21}-y, a_{22}+y)$$

where the sum is over y such that

$$\Pr(a_{11}, a_{12}, a_{21}, a_{22}) \geq \Pr(a_{11}+y, a_{12}-y, a_{21}-y, a_{22}+y)$$

and $y > 0$; i.e., over all terms in the 2nd tail whose probability does not exceed that of the observed outcome (a_{11}, a_{12}, a_{21}, a_{22}):

$$\text{PROB(1-TAIL)} = \mathcal{P}_1$$

$$\text{PROB(2-TAIL)} = \mathcal{P}_1 + \mathcal{P}_2$$

Fisher's exact statistical significance was accepted if $p < 0.05$ (Dixon, 1992).

The Fisher's exact test involved finding the probability of the observed table and that of every other arrangement of cell frequencies in an attempt to produce evidence of an association.

The Fisher's exact test indicated departure from the null hypothesis in a specific direction in contrast to the chi-square test that assessed departures in either direction (Delucchi, 1993). Extensive cross tabulation of the data was done using the Fisher's exact test looking at each pair of all possible combinations since statistics was not often useful when zeros existed in cells of the tables.

The Log linear model was most applicable and was used in the present study for analyzing multidimensional tables to describe relationships among categorical variables fitted to the cell frequencies. The Log linear model represented the natural logarithm of the expected cell frequency as a linear combination of main effects and interactions. The log linear model could compute in multiway tables of any dimension, a pair of tests for each interaction to determine the likely importance of the interaction in the model (Dixon, 1992).

The log linear model is computed as follows;

$$\ln F_{ijkl} = \theta + \lambda^{A}_{i} + \lambda^{B}_{j} + \lambda^{C}_{k} + \lambda^{D}_{l} + \lambda^{AB}_{ij} + \lambda^{AC}_{ik} + \lambda^{AD}_{il} + \lambda^{BC}_{ik} + \lambda^{BD}_{jl}$$

$$+ \lambda^{CD}_{kl} + \lambda^{ABC}_{ijk} + \lambda^{ABD}_{ijl} + \lambda^{ACD}_{ikl} + \lambda^{BCD}_{jkl} + \lambda^{ABCD}_{ijkl}$$

Where f_{ijkl} and F_{ijkl} are the observed and expected values of cell (i, j, k, l) in an I x J x K x L contingency table. Also let

$$y_{ijkl} = \ln F_{ijkl}$$

for all cells (Dixon, 1992).

IV

RESULTS

CHAPTER 6

RESULTS OF THE ANALYSIS OF THE QUESTIONNAIRES

6.1 INTRODUCTION

Initial examination of the collected data involved analysis of the two questionnaires returned by the patients following surgery. Two test groups of patients were used:

1. Patients undergoing orthognathic surgery who were treated in public or private clinics.
2. Patients having minor oral surgery e.g. removal of third molars.

The third group, acting as a reference, was used in relation to the distribution of personality types.

The public sector response rate was fifty per cent (ninety out of one-hundred-and-eighty). In the private sector the rate was eighty per cent (forty out of fifty patients). The reference group had a response rate of ninety-two per cent (forty-six out of fifty).

The personality distribution is presented at the end of the results. The satisfaction level is described in section 6.6 onward.

6.2 THE STUDY GROUP

The number of patients in the study included 80 patients receiving or having received orthognathic surgery and 50 patients who underwent minor oral surgery (Table 6.1).

TYPE OF SURGERY	NUMBER OF PATIENTS	%
MINOR ORAL SURGERY	50	38.5%
ORTHOGNATHIC SURGERY	80	61.5%

Table 6.1 Comparison of patient numbers having surgery.

6.3 GENDER OF PATIENTS UNDERGOING SURGERY

The number of male and female patients in the test groups was analyzed. The total number of male patients having either orthognathic or minor oral surgery was fifty two, which accounted for 40.0% of the total study sample. There were seventy-eight female patients having either orthognathic or minor oral surgery and this accounted for 60.0% of the total test population. This is reported in the following table (Table 6.2).

TYPE OF SURGERY	MALES	FEMALES
MINOR ORAL SURGERY	12.3% (16)	26.2% (34)
ORTHOGNATHIC SURGERY	27.7% (36)	33.8% (44)
TOTAL NO. OF TEST PATIENTS	40.0% (52)	60.0% (78)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON		1	0.1410
FISHER EXACT TEST 1 TAIL			0.0984
FISHER EXACT TEST 2 TAIL			0.1975
YATES CORRECTED χ^2	1.659	1	0.1978
ROW RELATIVE SYMM. χ^2	5.657	1	0.0174
COLUMN RELATIVE SYMM. χ^2	7.254	1	0.0071

Table 6.2 Comparison of overall patient's gender having surgery and the analysis of observed frequency.

6.4 AGE OF THE PATIENTS

The age profile of the groups was analyzed the following table reports the ages of patients undergoing both minor oral surgery and orthognathic surgery. In the female group, the majority of patients who underwent both minor oral surgery and orthognathic surgery were in the 21-40 year age group. In the male group, the majority who underwent minor oral surgery were in the 21-40 year age group, whereas the majority who underwent orthognathic surgery was under 20 years of age (Tables 6.3 and 6.4).

6.4.1 AGE OF FEMALE PATIENTS

TYPE OF SURGERY	≤ 20 yr	21-40 yr	41-60 yr	ε 61 yr
MINOR ORAL SURGERY (n=34)	17.7 % (6)	64.7 % (22)	8.8 % (3)	8.8 % (3)
ORTHOGNATHIC SURGERY (n=44)	36.4% (16)	54.5% (24)	6.8% (3)	2.3% (1)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON CHI SQUARE	4.423	3	0.2193

Table 6.3 Comparison of female patients' ages having surgery.

There was no statistically significant difference between the ages of patients who underwent minor oral surgery compared with orthognathic surgery.

6.4.2 AGE OF MALE PATIENTS

TYPE OF SURGERY	≤ 20 yr	21-40 yr	41-60 yr	ε 61 yr
MINOR ORAL SURGERY (n=16)	6.3 % (1)	68.7 % (11)	12.5 % (2)	12.5 % (2)
ORTHOGNATHIC SURGERY (n=36)	61.1% (22)	33.3% (12)	5.6% (2)	0 % (0)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON CHI SQUARE	15.873	3	0.0012

Table 6.4 Comparison of male patients' ages having surgery.

There was a statistically significant difference in the ages of patients who experienced minor oral surgery compared with orthognathic surgery. This is shown in the group under 20 years of age.

6.5 RACE OF PATIENTS

More Caucasians were in the study than other races. Of the female patients who had received minor oral surgery, the vast majority were Caucasian with a minor representation from the Asian race. Of those who had received orthognathic surgery, the majority were Caucasian with minor representation from the Asian and Indian groups. These results are highlighted in the following tables (Table 6.5, 6.6).

6.5.1 RACE OF FEMALE PATIENTS

The most responses came from Caucasian females, with very few or no responses from other races. There were no responses from the negroid race. There were thirty-three minor oral surgery female patients that responded and forty-two orthognathic surgery female patients. The following table (6.5) illustrates the relationship of females to race and type of surgery:

RACE	MINOR ORAL SURGERY	ORTHOGNATHIC SURGERY
ASIAN	2.9 % (1)	2.3% (1)
CAUCASIAN	97.1 % (33)	95.4% (42)
INDIAN	0 % (0)	2.3% (1)
TOTAL	100 % (n=34)	100 % (n=44)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON CHI SQUARE	0.811	2	0.6665

Table 6.5 Comparison of female surgery patients' race.

6.5.2 RACE OF MALE PATIENTS

The majority of the responses came from Caucasian males with a few responses from Asian males. There were more Caucasian orthognathic male patients compared with Caucasian minor oral surgical male patients. The following table (6.6) illustrates the race of the males in receipt of surgery:

RACE	MINOR ORAL SURGERY	ORTHOGNATHIC SURGERY
ASIAN	18.8 % (3)	8.3 % (3)
CAUCASIAN	81.2 % (13)	88.9% (32)
INDIAN	0 % (0)	2.8% (1)
TOTAL	100 % (n=16)	100 % (n=36)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	1.561	2	0.4582

Table 6.6 Comparison of male surgery patients' race plus related statistics.

Of the male minor oral surgery patients, the majority were Caucasian but with more Asian representation compared with the female group. In the study sample, there was one response from the Indian but none from the Negroid race. Of those who had orthognathic surgery, the majority of responses were from Caucasians but

some responses were received from Asian patients. There was one response from Indian but none from the Negroid orthognathic surgery patients.

6.6 COMPLAINERS versus NON-COMPLAINERS

Analysis of the questionnaires showed that one-hundred-and-one (77.7%) out of the one-hundred-and-thirty patients enlisted in the study had no complaints of any kind. Twenty-nine (22.3%) patients complained about some aspect of their surgical result. The table below details these findings (Table 6.7).

TYPE OF SURGERY	COMPLAINERS	NON-COMPLAINERS
MINOR ORAL SURGERY	5.4 % (7)	33.1% (43)
ORTHOGNATHIC SURGERY	16.9% (22)	44.6 % (58)
TOTAL NO. OF PATIENTS	22.3% (n=29)	77.7 % (n=101)

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	3.236	1	0.0721
FISHER EXACT TEST 1 TAIL			0.0546
FISHER EXACT TEST 2 TAIL			0.0855
YATES CORRECTED χ^2	2.504	1	0.1136
ROW RELATIVE SYMM. χ^2	39.813	1	0.0000
COLUMN RELATIVE SYMM. χ^2	8.699	1	0.0032

Table 6.7 Comparison of number of complainers and non-complainers having either minor oral surgery or orthognathic surgery.

There was a significant difference between the number of complainers and non-complainers irrespective of the type of surgery for only the column relative chi-square.

Table 6.7 was examined in terms of percentages of the type of surgery with the number of complaints; there were more complainers in the orthognathic surgery study group than in the minor oral surgery group. There were seven complainers

(14%) in the minor oral surgery group when compared with the orthognathic surgery group (27.5%). Consequently, there were more non-complainers in the minor oral surgery group (86%) compared with the orthognathic surgery group (72.5%) (Table 6.8).

	MINOR ORAL SURGERY	ORTHOGNATHIC SURGERY
COMPLAINERS	14 % (7)	27.5% (22)
NON-COMPLAINERS	86 % (43)	72.5 % (58)
TOTAL NO. OF PATIENTS	100 % (n=50)	100 % (n=80)

Table 6.8 Comparison of number of complainers and non-complainers by type of surgery.

The analysis of the results indicated that patients who were complainers in terms of the outcome of either minor or orthognathic surgery, ranged from 'very disappointed' to 'pleased'. Most of the complainers who had surgery were either 'satisfied' or 'pleased' with the surgical result. Sixteen (12.3%) patients who were 'satisfied' with the outcome of surgery still had a complaint whereas only five (3.9%) were 'pleased' and still complained. Two (1.5%) patients were 'very disappointed' and a further six (4.6%) were only 'disappointed' with the outcome of surgery but also complained.

Of the non-complainers, the patients' perception of outcome of surgery ranged from 'satisfied' to 'very pleased'. Most of the non-complainers were 'very pleased' with the outcome of surgery which was fifty-four of the one-hundred-and-one (41.5%). Twenty-four of the non-complaining patients (18.5%) were "pleased" and twenty-three of the non-complaining patients (17.7%) were "satisfied" with the outcome of surgery. The following table (6.9) illustrates the above.

COMPLAINERS		NON-COMPLAINERS	
'very disappointed'	1.5% (2)	'very disappointed'	0 % (nil)
'disappointed'	4.6% (6)	'disappointed'	0 % (nil)
'satisfied'	12.3% (16)	'satisfied'	17.7% (23)
'pleased'	3.9% (5)	'pleased'	18.5% (24)
'very pleased'	0% (nil)	'very pleased'	41.5% (54)
TOTAL NO. OF PATIENTS	22.3% (n=29)	TOTAL NO. OF PATIENTS	77.7% (n=101)

Table 6.9 Comparison of the range responses of complainers and non-complainers having either minor oral surgery or orthognathic surgery.

Non occurrence prevents error free statistical analysis (Delucchi, 1993).

6.6.1 MINOR ORAL SURGERY COMPLAINERS

By extrapolation of the patient's behavioural style from the questionnaire score, a personality profile could be determined for each person. The personality profile of each patient was compared with their perception of outcome of minor oral surgery in order to determine whether a pattern was evident among the complainers. There were no minor oral surgery patients who were 'very disappointed' and complained. There was one (14.3%) minor oral surgery patient (a Director) who was disappointed and complained. There was one (14.3%) Director personality profile, one (14.3%) Relater and two (28.6%) Socialisers comprising the complainers in the minor oral surgery group who were 'satisfied'. There were two (28.5%) Socialisers in the minor oral surgery patient group who were pleased and complained. There were no minor oral surgery patients who were 'very pleased' and complained. The following table (6.10) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	0	0	1 14.3%	0	1
'satisfied'	1 14.3%	0	1 14.3%	2 28.6%	4
'pleased'	0	0	0	2 28.5%	2
'very pleased'	0	0	0	0	0
TOTAL	1	0	2	4	7 100%

Table 6.10 Table of complainers' responses for each personality profile type following minor oral surgery.

6.6.2 MINOR ORAL-SURGERY NON-COMPLAINERS

The personality profile of each uncomplaining patient was compared with their perception of the outcome of the minor oral surgery. There were no patients in the minor oral surgery group who were 'very disappointed' and did not complain. There were no patients in the minor oral surgery group who were 'disappointed', and did not complain. There were three (7%) Socialisers, two (4.6%) Directors, one (2.3%) Relater and one (2.3%) Thinker in the minor oral surgery group, who were 'satisfied', and did not complain. There were three (7%) Relaters, three (7%) Socialisers and one (2.3%) Director who were 'pleased' and did not complain, about the outcome of the minor oral surgery. There were six (14%) Relaters, four (9.3%) Thinkers, five (11.7%) Directors and fourteen (32.5%) Socialisers who were 'very pleased' and did not complain about the outcome of the minor oral surgery. The following table (6.11) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	0	0	0	0	0
'satisfied'	1 2.3%	1 2.3%	2 4.6%	3 7%	7
'pleased'	3 7%	0	1 2.3%	3 7%	7
'very pleased'	6 14%	4 9.3%	5 11.7%	14 32.5%	29
TOTAL	10	5	8	20	43 100%

Table 6.11 Table of non-complainers' responses for each personality profile type following minor oral surgery with statistics.

6.6.3 PUBLIC ORTHOGNATHIC SURGERY COMPLAINERS

The personality profile of each public-sector patient who complained was compared to their perception of the outcome of the orthognathic surgery. There was one 'Relater' (10%) and one 'Director' (10%) who complained and was 'very disappointed' with the orthognathic surgery in the public system. There was only one (10%) Relater who was 'disappointed' and complained about the orthognathic surgery. There were four (40%) Socialisers who were 'satisfied' and complained about the orthognathic surgery. There were two (20%) Socialisers and one (10%) Director who were "pleased' and complained about the orthognathic surgery. No patients in the orthognathic public surgery group were 'very pleased' and complained. The following table (6.12) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	1 10%	0	1 10%	0	2
'disappointed'	1 10%	0	0	0	1
'satisfied'	0	0	0	4 40%	4
'pleased'	0	0	1 10%	2 20%	3
'very pleased'	0	0	0	0	0
TOTAL	2	0	2	6	10 100%

Table 6.12 Table of complainers' responses for each personality profile type following public-sector orthognathic surgery.

6.6.4 PUBLIC-SECTOR ORTHOGNATHIC SURGERY NON-COMPLAINERS

The personality profile of each public patient who did not complain was compared with their perception of the outcome of the orthognathic surgery There were no public orthognathic patients who were 'very disappointed' nor "disappointed' with the outcome of surgery and did not complain. There was one (3.3%) Socialiser and one (3.3%) Relater (public orthognathic patient) who was 'satisfied' and did not complain. There was one (3.3%) Relater, one (3.3%) Thinker, one (3.3%) Director and four (13.4%) Socialisers who were 'pleased' with the orthognathic surgery undertaken in a public hospital system and did not complain. There were five (16.7%) Relaters, two (6.7%) Thinkers, two (6.7%) Directors and twelve (40%) Socialisers who were 'very pleased' with the outcome of the public orthognathic surgery and did not complain. The following table (6.13) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	0	0	0	0	0
'satisfied'	1 3.3%	0	0	1 3.3%	2
'pleased'	1 3.3%	1 3.3%	1 3.3%	4 13.4%	7
'very pleased'	5 16.7%	2 6.7%	2 6.7%	12 40%	21
TOTAL	7	3	3	17	30 100%

Table 6.13 Table of non-complainers' responses for each personality profile type following public hospital orthognathic surgery with statistics.

6.6.5 PRIVATE ORTHOGNATHIC SURGERY COMPLAINERS

The personality profile of each privately-treated patient who complained, was compared with their perception of the outcome of orthognathic surgery. There were no private patients who were 'very disappointed' and complained about their orthognathic surgery. There was one (8.3%) Relater, two (16.8%) Directors, and one (8.3%) Socialiser private patient who were 'disappointed' and complained about their orthognathic surgery. There were six (50%) Directors, one (8.3%) Relater and one (8.3%) Thinker patient type who were 'satisfied' and complained about their orthognathic surgery. Privately-treated patients who were 'pleased' or 'very pleased' with their orthognathic surgery did not complain. The following table (6.14) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	1 8.3%	0	2 16.8%	1 8.3%	4
'satisfied'	1 8.3%	1 8.3%	6 50%	0	8
'pleased'	0	0	0	0	0
'very pleased'	0	0	0	0	0
TOTAL	2	1	8	1	12 100%

Table 6. 14 The complainers' responses for each personality profile type following private orthognathic surgery and statistics.

6.6.6 PRIVATE ORTHOGNATHIC SURGERY NON-COMPLAINERS

The personality profile of each privately-treated orthognathic patient, who did not complain, was compared with their perception of the outcome of the surgery. There were no private patients that were 'very disappointed'. There were no 'disappointed' private patients who did not complain about their perception of the outcome of orthognathic surgery. There were three (10.7%) Relaters, four (14.3%) Directors and seven (25%) Socialisers in the private group that were 'satisfied' and did not complain about their orthognathic surgery. All "pleased" private orthognathic patients did not complain about their surgery. This group comprised: one (3.6%) Relater, four (14.3%) Directors and five (17.8%) Socialisers. All 'very pleased' private orthognathic patients did not complain about their surgery. These were two (7.1%) Relaters, one (3.6%) Thinker and one (3.6%) Socialiser. The following table (6.15) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	0	0	0	0	0
'satisfied'	3 10.7%	0	4 14.3%	7 25%	14
'pleased'	1 3.6%	0	4 14.3%	5 17.8%	10
'very pleased'	2 7.1%	1 3.6%	0	1 3.6%	4
TOTAL	6	1	8	13	28 100%

Table 6. 15 Table of non-complainers' responses for each personality profile type following private orthognathic surgery and statistics.

6.6.7 COMBINED ORTHOGNATHIC SURGERY COMPLAINERS

The private and public orthognathic surgery groups were combined to study the trends between personality type and patients' perception of orthognathic surgery. There were only 22 (25%) patients out of all orthognathic surgical patients who complained about their surgery. Of those who complained in the combined private and public orthognathic surgery group, there was one 'Relater' (4.5%) and one 'Director' (4.5%) personality profile type who was 'very disappointed'. There were two (9.1%) Relaters, two (9.1%) Directors and one (4.5%) Socialiser in the combined private and public orthognathic group who were disappointed and all complained. There were one (4.5%) Relater, one (4.5%) Thinker, six (27.4%) Directors and four (18.3%) Socialisers in the combined private and public orthognathic group who were 'satisfied' and complained. There were two (9.1%) Socialisers and one (4.5%) Director in the combined orthognathic group who were 'pleased' and complained. There were no patients who were 'very pleased' and complained in the combined orthognathic group. The following table (6.16) illustrates the above.

RESPONSE/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
'very disappointed'	1 4.5%	0	1 4.5%	0	2
'disappointed'	2 9.1%	0	2 9.1%	1 4.5%	5
'satisfied'	1 4.5%	1 4.5%	6 27.45	4 18.3%	12
'pleased'	0	0	1 4.5%	2 9.1%	3
'very pleased'	0	0	0	0	0
TOTAL	4	1	10	7	22 100%

Table 6. 16 Table of combined private and public complainers' responses for each personality profile type following orthognathic surgery and statistics.

6.6.8 COMBINED ORTHOGNATHIC SURGERY NON-COMPLAINERS

The orthognathic patients who did not complain were assessed in terms of personality type and response to surgery. There were no patients who were 'very disappointed' or 'disappointed' and who did not complain about their private or public orthognathic surgery. There were four (6.9%) Relaters, four (6.9%) Directors and eight (13.8%) Socialisers who were 'satisfied' and did not complain about their private or public orthognathic surgery. There were two (3.4%) Relaters, five (8.6%) Directors, one (1.1%) Thinker and nine (15.5%) Socialisers who were 'pleased' and did not complain about their private or public orthognathic surgery. There were seven (12%) Relaters, Three (5.2%) Thinkers, two (3.5%) Directors, and thirteen (22.4%) Socialisers that were very pleased and did not complain in the combined group of public and private orthognathic patients. The following table (6.17) illustrates the above.

RESPONSE/PROFILE	R	T	D	S	TOTAL
'very disappointed'	0	0	0	0	0
'disappointed'	0	0	0	0	0
'satisfied'	4 6.9%	0	4 6.9%	8 13.8%	16
'pleased'	2 3.5%	1 1.7%	5 8.6%	9 15.5%	17
'very pleased'	7 12%	3 5.2%	2 3.5%	13 22.4%	25
TOTAL	13	4	11	30	58 100%

Table 6.17 Table of combined private and public non-complainers' responses for each personality profile type following orthognathic surgery and statistics.

6.6.9 ADEQUACY OF INFORMATION GIVEN TO PATIENT

A response regarding the self-assessment of the adequacy of surgical information received by the patient was requested in the questionnaire completed following orthognathic and minor oral surgery. Eighty-five per cent of the non-complaining orthognathic patients were deemed to have received adequate information about the surgery. Fifteen per cent of the non-complaining orthognathic patients felt that they did not receive adequate information. Seventy-seven per cent of the complainers were deemed to have received adequate information about the orthognathic surgery and twenty-two per cent of the complainers felt that they did not.

Eighty-two per cent (66/80) of the total orthognathic sample responded that they had received adequate information about the surgery, whereas only seventeen and a half per cent (14/80) responded that they had not received adequate information. The following table (Table 6.18) illustrates the above.

ADEQUACY OF INFORMATION GIVEN TO PATIENT	NON-COMPLAINERS	COMPLAINERS	NO OF ORTHOGNATHIC PATIENTS
YES	84.5 % (49)61%	77.3 % (17)21.2%	82.5%(66)
NO	15.5 % (9)11.3%	22.7 % (5)6.2%	17.5%(14)
NO. OF ORTHOGNATHIC PATIENTS	100 % (n=58)	100 % (n=22)	(n=80)

Table 6.18 Comparison of complainers versus non-complainers in relation to whether adequate information perceived by patient was supplied prior to orthognathic surgery. The right-hand side percentage relates to the rows and the left-hand side percentage relates to the columns.

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	.574	1	0.4486
FISHER EXACT 1 TAIL			0.3251
FISHER EXACT 2 TAIL			0.5144
YATES CORRECTED χ^2	0.183	1	0.6684
ROW RELATIVE SYMM. χ^2	6.158	1	0.0131
COLUMN RELATIVE SYMM. χ^2	24.985	1	0.0000

Table 6.19 Statistical analysis of complainers versus non-complainers in relation to whether adequate information as perceived by the patient was supplied prior to orthognathic surgery.

No statistically significant interactions were detected.

In the minor oral surgery group of the non-complainers, ninety-three per cent of patients said they had received adequate information about the surgery. Only seven per cent of the non-complaining patients felt that they did not receive adequate information. Of the complainers, 71.4 per cent were deemed to have received adequate information about the surgery and 28.6 per cent felt that they did not receive adequate information.

In the minor oral surgery group of the non-complainers, eighty per cent (40) of the patients responded that they had received adequate information about the surgery

whereas only six per cent (3) responded that they had not received adequate information. In the minor oral surgery group of complainers ten per cent (5) of the patients responded that they had received adequate information about the surgery whereas only four per cent (2) responded that they had not received adequate information. The following table (table 6.20) summarises the above.

ADEQUACY OF INFORMATION GIVEN TO PATIENT	NON-COMPLAINERS	COMPLAINERS	NO. OF MINOR ORAL SURGERY PATIENTS
YES	93% (40)80%	71.4 % (5)10%	90%(45)
NO	7 % (3)6 %	28.6 % (2)4 %	10%(5)
NO. OF MINOR ORAL SURGERY PATIENTS	100 % (n=43)	100 % (n=7)	n=50

Table 6.20 Comparison of complainers versus non-complainers in relation to whether adequate information perceived by patient was supplied prior to minor oral surgery. The right-hand side percentage relates to the rows and the left-hand side percentage relates to the columns.

Table 6.21 Shows that few statistically significant interactions were detected and were likely due to chance.

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	3.119	1	0.0774
FISHER EXACT TEST 1 TAIL			0.1380
FISHER EXACT TEST 2 TAIL			0.1380
YATES CORRECTED χ^2	1.181	1	0.2771
ROW RELATIVE SYMM. χ^2	4.778	1	0.0288
COLUMN RELATIVE SYMM. χ^2	14.120	1	0.0002

Table 6.21 Statistical analysis of complainers versus non-complainers in relation to whether adequate information perceived by patient was supplied prior to minor oral surgery.

6.6.10 COMPLAINERS AND NON-COMPLAINERS SUGGESTED IMPROVEMENTS

An additional question was asked in order to qualify whether there was anything that could be done to improve patient treatment. Of the non-complainers, 91.4% responded that no improvement in treatment could be effected whereas 8.6% responded and indicated that something could have been done to improve their treatment. Nearly eighty-nine per cent of all the patients undergoing orthognathic surgery believed that their treatment could not be improved and 11.3 per cent wanted better treatment. The figures are illustrated in Table 6.22.

TREATMENT COULD BE IMPROVED	NON-COMPLAINERS	COMPLAINERS	NO. OF ORTHOGNATHIC PATIENTS
YES	8.6 % (5)6.3%	18.2 % (4)5 %	(9) 11.3%
NO	91.4 % (53)66.2%	81.8 % (18)22.5%	(71)88.7%
NO. OF ORTHOGNATHIC PATIENTS	100 % (n=58)	100 % (n=22)	n= 80

Table 6.22 Comparison of complainers versus non-complainers in relation to whether treatment could be improved as perceived by patients following orthognathic surgery.

There were more non-complainers who thought that treatment could not be improved. The statistics are shown in table 6.23. No statistically significant interactions were detected.

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	1.460	1	0.2269
FISHER EXACT TEST 1 TAIL			0.2039
FISHER EXACT TEST 2 TAIL			0.2499
YATES CORRECTED χ^2	0.660	1	0.4167
ROW RELATIVE SYMM. χ^2	2.235	1	0.1349
COLUMN RELATIVE SYMM. χ^2	38.222	1	0.0000

Table 6.23 Statistical analysis of complainers versus non-complainers in relation to whether treatment could be improved as perceived by patients following orthognathic surgery.

The question of whether anything could be done to improve treatment was asked among the minor oral surgery group. Of the non-complainers, 88.4% responded that no improvement in treatment could have been done, whereas 11.6% responded that a more favourable outcome could have been achieved.

The majority of all of the patients who undertook minor oral surgery (84%) believed that no improvement in their treatment was necessary and 16% would have liked to have improved their treatment outcome , as shown in table 6.24.

TREATMENT COULD BE IMPROVED	NON-COMPLAINERS	COMPLAINERS	NO. OF MINOR ORAL SURGERY PATIENTS
YES	11.6 % (5)10%	42.9 % (3)6 %	(8)16 %
NO	88.4 % (38)76%	57.1 % (4)8%	(42)84 %
NO. OF MINOR ORAL SURGERY PATIENTS	100 % (n=43)	100 % (n=7)	n=50

Table 6.24 Comparison of complainers versus non-complainers in relation to whether treatment could be improved as perceived by patients following minor oral surgery.

There were more non-complainers who thought that treatment could not be improved but was shown to be not significant by Fishers exact test ($p<0.05$). The statistics are shown in table 6.25.

STATISTIC	VALUE	DEGREES OF FREEDOM	PROBABILITY
PEARSON χ^2	4.368	1	0.0366
FISHER EXACT TEST 1 TAIL			0.0713
FISHER EXACT TEST 2 TAIL			0.0713
YATES CORRECTED χ^2	2.354	1	0.1250
ROW RELATIVE SYMM. χ^2	9.440	1	0.0021
COLUMN RELATIVE SYMM. χ^2	5.647	1	0.0175

Table 6.25 Statistical analysis of complainers and non-complainers in relation to whether treatment could be improved as perceived by patients following minor oral surgery.

6.7 SUGGESTED IMPROVEMENTS, COMPLAINTS AND INFORMATION DEFICIENCIES

Patients were encouraged to share suggested improvements, reasons for their choice of outcome of the surgery and further information they would have preferred to have received. The following describes the above for the minor oral surgery then for orthognathic surgery patients.

6.7.1 DEFICIENCIES IN INFORMATION GIVEN TO MINOR ORAL SURGERY PATIENTS

Table 6.26 below, lists patients' perceived deficiencies in pre-operative information for minor oral surgery. Most of the responses indicated deficiencies related information regarding surgical technique, pain control and post-operative recovery. One perceived deficiency in the type of information given prior to surgery was related to the effects of the anaesthetic (Table 6.26).

MINOR ORAL SURGERY DEFICIENCIES re: INFORMATION	NUMBER OF DEFICIENCIES
ANESTHETICS	1
POSTOPERATIVE -PAIN OR RECOVERY	2
SURGERY	2
TOTAL DEFICIENCIES re: INFORMATION	5

Table 6.26 Details of the type of perceived deficiencies in relation to the information given prior to undergoing minor oral surgery.

6.7.2 MINOR ORAL SURGERY COMPLAINTS re: OUTCOME OF SURGERY

Patients were asked to indicate their reasons for their selection of levels of satisfaction in terms of the surgical outcome. For minor oral surgery patients pain was indicated most often as a complaint of the outcome of surgery. There were no complaints of post-operative numbness, a known complication of minor oral surgery. Two patients offered unspecified responses in that the patients' expectations

were not met. Other complaints included an eventful (e.g. headache), although uncomplicated, post-operative recovery (Table 6.27).

COMPLAINT re: OUTCOME OF SURGERY	NUMBER OF COMPLAINTS
POSTOPERATIVE -NUMBNESS	0
EXPECTATIONS NOT MET	2
PAIN	5
POSTOPERATIVE RECOVERY	2
TOTAL NO. OF COMPLAINTS	9

Table 6.27 Details of the type of complaints in relation to the perceived outcome of minor oral surgery.

6.7.3 MINOR ORAL-SURGERY PATIENTS' SUGGESTED IMPROVEMENTS

Outlined in the table (6.28) below are improvements in treatment suggested for minor oral surgery. The responses were quite variable and individual. (Table 6.28).

MINOR ORAL SURGERY re: IMPROVEMENT	NUMBER OF IMPROVEMENTS
MUSIC / UNPLEASANT SOUNDS	1
LESS STAFF WHILE OPERATING	1
NO STUDENT INVOLVEMENT	1
SEDATION / GA	1
BETTER PAIN RELIEF	2
POSTOPERATIVE RECOVERY	1
TOTAL NO. OF IMPROVEMENTS	7

Table 6.28 Details of the suggested improvements that could be implemented for those patients undergoing minor oral surgery.

6.7.4 DEFICIENCIES IN INFORMATION GIVEN PRIOR TO ORTHOGNATHIC SURGERY

Table 6.29 below lists patients' perceived deficiencies in pre-operative information for orthognathic surgery. Most of the responses related to pain control and post-operative recovery. One complaint was directed at post-operative aesthetics, two

complaints involved finances and one complaint concerned information about the actual surgery (Table 6.29).

ORTHOGNATHIC DEFICIENCIES re: INFORMATION	NUMBER OF DEFICIENCIES
POSTOPERATIVE -AESTHETICS	1
POSTOPERATIVE -PAIN and RECOVERY	4
COSTS	2
SURGERY	1
TOTAL NO. OF DEFICIENCIES re: INFORMATION	8

Table 6.29 Details of the type of perceived deficiencies in relation to the information given prior to undergoing orthognathic surgery.

6.7.5 ORTHOGNATHIC SURGERY COMPLAINTS re: OUTCOME OF SURGERY

The orthognathic patients listed their complaints about the outcome of their surgery. Post-operative numbness, pain and facial imbalance were known complications of orthognathic surgery and consequently complaints about this were expected. A number of unspecified responses were noted in that the patients' expectations were not met. Other complaints included unfinished treatment and costs. One patient who had several complaints included speech dysfunction. Table 6.30 indicates the complaints given by orthognathic patients.

COMPLAINT OF OUTCOME ORTHOGNATHIC SURGERY	NUMBER OF COMPLAINTS
POSTOPERATIVE -NUMBNESS	4
EXPECTATIONS NOT MET	3
POSTOPERATIVE -ASYMMETRY	4
PAIN	6
COSTS	2
UNFINISHED TREATMENT	2
SPEECH DYSFUNCTION	1
TOTAL NO. OF COMPLAINTS	1 0

Table 6.30 Details of the type of complaints in relation to the perceived outcome of orthognathic surgery.

6.7.6 ORTHOGNATHIC SURGERY PATIENTS' SUGGESTED IMPROVEMENTS

The following improvements in treatment were suggested and outlined in table 6.31. The majority centred around pain control and pre-operative information.

COMPLAINT re: IMPROVEMENT	NUMBER OF IMPROVEMENTS
MORE ATTENTION FROM STAFF	1
ANESTHETIC EFFECTS	1
PREOPERATIVE INFORMATION	3
PAIN	5
FUNCTION	1
TOTAL NO. OF IMPROVEMENTS	10

Table 6.31 The suggested improvements that could be implemented for those patients undergoing orthognathic surgery.

6.8 DISTRIBUTION OF THE PERSONALITY TYPES IN THE SURGICAL AND REFERENCE GROUPS IN RELATION TO COMPLAINING AND SEX DISTRIBUTION

The personality types of the surgical patients were examined in terms of males and females, complainers and non-complainers, and minor public surgery patients and private surgery patients. The reference group was included to compare personality types in terms of males and females with the surgical groups. The group called the total surgical group was compiled from the combination of minor oral surgery plus the public and private orthognathic surgery groups.

The number of replies from Directors in the total surgical group was twenty-four per cent (31/130) and in the reference group twenty-one per cent (10/46). Thinkers made up eight per cent (10/130) of the total surgical group and ten per cent (5/46) of the reference group. Relaters made up twenty-one per cent (28/130) of the total surgical group and twenty-seven per cent (12/46) of the reference group. Socialisers comprised forty-seven per cent (61/130) of the surgical total group and forty-two

per cent (19/46) of the reference group. The groups of orthognathic and minor surgery were similar in distribution of personality types.

Of the total surgical groups from the most responses to the least:

~non-complaining Socialiser females (twenty-seven per cent, 35/130)

~non-complaining Socialiser males (eleven per cent, 15/130)

~non-complaining Relater females (eleven per cent, 14/130)

~non-complaining Director females (nine per cent, 12/130)

~non-complaining Relater males at seven per cent (9/130)

~complaining Director males at six per cent (8/130)

~non-complaining Director males and complaining Socialiser females at five per cent 7/130) each.

~non-complaining Thinker males at four per cent (5/130)

at three per cent (4/130) each non-complaining Socialiser male, complaining

~Director female and non-complaining Thinker female

~ complaining Relater males at two per cent (3/130).

~complaining relater females at one per cent (2/130)

~complaining Thinker females at less than one per cent (1/130)

~complaining Thinker male, where there were no responses.

Of those who had no complaints (101/130, 78%), the personality profiles included all types i.e. 'Relaters', 'Thinkers', 'Socialisers' and 'Directors'. The dominant personality profile type among the non-complainers was the 'Socialiser' (47% 50/101). There were 18.8 per cent (19/101) Directors, 22.8 per cent (23/101) Relaters, and 8.9 per cent (9/101) Thinkers who did not complain.

For the total surgical group, the males and females were compared in terms of whether they complained. Of the males who had surgery, sixteen (31%) complained, thirty-six (69%) did not complain. Of the females who had surgery, thirteen (16.7%) complained while sixty-five (83%) did not.

When combining both male and female surgical patients (130): twelve per cent were male complainers, twenty-eight per cent were male non-complainers, ten per cent were female complainers and the largest group was female non-complainers at fifty per cent.

The distribution of personality profiles are shown in the following table 6.32 together with the distribution of males and females, complainers and non-complainers for each personality type.

GROUP/PROFILE	Relater	Thinker	Director	Socialiser	TOTAL
private orthognathic males private orthognathic females	2cm 2nm 0cf 4nf	0cm 1nm 1cf 0nf	6cm 3nm 2cf 5nf	1cm 3nm 0cf 10nf	
private orthognathic	8	2	16	14	40
public orthognathic males public orthognathic females	0cm 4nm 2cf 3nf	0cm 2nm 0cf 1nf	1cm 2nm 1cf 1nf	1cm 8nm 5cf 9nf	
public orthognathic	9	3	5	23	40
minor oral surgery males minor oral surgery females	1cm 3nm 0cf 7nf	0cm 2nm 0cf 3nf	1cm 2nm 1cf 6nf	2cm 4nm 2cf 16nf	
minor oral surgery	11	5	10	24	50
surgical total males surgical total females	3cm 9nm 2cf 14nf	0cm 5nm 1cf 4nf	8cm 7nm 4cf 12nf	4cm15nm 7cf 35nf	
surgical total	28	10	31	61	130
reference males reference females	4m 8f	2m 3f	4m 6f	8m 11f	
reference	12	5	10	19	46
SURGICAL TOTAL AND REFERENCE	40	15	41	80	176

where: c = complaining n = non-complaining f = females m = males

Table 6.32 Distribution of personality types in the surgical and reference groups in relation to: males and females, and complaining and non-complaining

Table 6.32 was statistically computed for measures of association in the log-linear model in terms of probability for:

1 complain, non-complain 3 males, females

2 Relater, Thinker, Director, Socialiser 4 private, public, minor

The effects of: c = complain, non-complain

t = Relater, Thinker, Director, Socialiser

g = males. females

s = private, public, minor

were computed in terms of partial association. At a 5% level of confidence c, t and g (complain, non-complain, Relater, Thinker, Director, Socialiser, male and female) were significant; however s (private, public, minor) was not. The variables of complain or non-complain, personality type and gender were individually significant but the types of surgery had no individual significance.

When the variables c, t, g, and s were paired and analyzed for measures of association in the log-linear model in terms of probability, there was no significance detected in both partial and marginal association.

When the variables were grouped into threes and analyzed for measures of association in the log-linear model in terms of probability, there was significance in c g s in both partial association at the twentieth iteration and marginal association at the fourth iteration. c t g, c t s and t g s were not significant in either partial nor marginal association.

It is relevant to note that the type of surgery was not significant on its own, nor when paired with gender nor complaint; however, surgery was significant when grouped together with gender and complaint. This is illustrated in the following table 6.33.

	Partial association		Marginal association	
Effect	CHISQ	PROB	CHISQ	PROB
c	42.22	0.0000		
t	41.97	0.0000		
g	6.08	0.0137		
s	1.50	0.4716		
ct	5.10	0.1649	6.27	0.0991
cg	1.34	0.2467	2.40	0.1212
cs	2.26	0.3230	3.65	0.1613
tg	3.18	0.3648	3.42	0.3316
ts	9.05	0.1706	9.62	0.1415
gs	2.50	0.2865	2.95	0.2286
ctg	5.46	0.1412	3.13	0.6805
cts	8.85	0.1825	6.73	0.5659
cgs	11.70	0.0029	10.89	0.0043
tgs	2.56	0.8615	1.04	0.9842

indices where: c= complain g= gender

s= surgery t= type

Table 6.33 Statistical analysis of association between: complain, non-complain; Relater, Thinker, Director, Socialiser; males, females; private, public, minor.

Extensive cross tabulation was done using Fisher's exact test for individual comparison between each pair (for example, minor oral surgery and orthognathic surgery with the age groups 41-60 and 60 plus) of all combinations which revealed no substantial findings.

V

DISCUSSION

CHAPTER 7

DISCUSSION

7.1 INTRODUCTION

Personality is a common term used to describe the 'charm', 'charisma' or 'style' of an individual. Using such terminology, a person might be portrayed as 'friendly, outgoing and attractive'. It is a hypothetical construct (an explanatory concept that is not directly observable), and is often confused with what is technically known as 'character'. The term 'character' implies that a person has been 'evaluated' and not just 'described'. Consequently the examining of personality has always been a difficult task as it cannot be directly quantified.

It would be reasonable to consider that personality has a significant influence on behaviour and decision making. Whether or not a person decided to have surgery to correct a dentofacial deformity and the degree of satisfaction with the outcome of such surgery might be linked to their 'personality'. As such, a practical categorization of personality types would enable a scientific analysis of any possible links between the two.

Kiyak *et al.* (1986), in their study of personality characteristics as predictors and sequelae of surgical and conventional orthodontics, examined ninety patients and found that introversion and extroversion had no influence on surgical satisfaction. However, it was determined that being temperamental did play a role. Alessandra *et al.*, (1993) stated that Thinkers and Relaters were introverts while Directors and Socialisers were extroverts. In the present study, there were few who were dissatisfied, thus there was no discernible relationship detected between introverts, extroverts and dissatisfaction with surgical outcome. This result therefore was in agreement with that previously reported by Kiyak *et al.* (1986).

The present study had values of zero among the dissatisfied. The chi-square test produces errors when the values of the table were small or zero (Delucchi, 1993). The chi- square might be applied if no more than 20% of the cells had expected values between one and five. Fisher's exact test is a test of significance for the hypothesis of no association in 2 x 2 tables (Everitt, 1993). Extensive cross tabulation of the data was done using the Fisher's exact test in an examination of each pair of all possible combinations. Fisher's exact test did not identify any useful correlations in the present study.

In testing for association between values, the log-linear model might eventually supercede the use of chi-square in the future (Delucchi, 1993). The log-linear method was used in the present study because the procedure can be applied directly to multinomial data with several observed cell values of zero, and almost always produces data with non-zero estimates for such cells (Delucchi, 1993).

The present study computed measures of association in the log-linear model in terms of probability for: complain, non-complain; males, females; Relater, Thinker, Director, Socialiser; private, public, minor surgeries. The results indicated that the type of surgery was not significant on its own, nor when paired with gender or complain/ non-complain; however, surgery was significant when grouped together with gender and complain. The fact that surgery was only significant when grouped

with gender and complain but not when paired with gender or complain was an interesting finding but might show that it was a superfluous correlation.

The null hypothesis of the present study stated that there was no relationship between personality and patient satisfaction. Laufer *et al.* (1976) conducted two post-operative re-assessments of surgical patients two and six years after orthognathic surgery. The results showed that twenty-four of the twenty-five treated patients were satisfied with the post-surgical results and felt that the surgery had improved their personalities in that the patients expressed changes in personality such as being more out going and self-confident after their surgery. Research conducted by Flanary *et al.* (1985) noted that ninety-two per cent of orthognathic patients were satisfied with the results. At a twelve-month post-operative assessment by Wictorin *et al.* (1969) and Hillerstrom *et al.* (1971), almost all of the patients commented that their results were equal or better than expected. Ostler and Kiyak (1991) also determined a high level of satisfaction in patients having orthognathic surgery. In the present study the combined orthognathic and minor oral surgery groups had few patients who were dissatisfied (6%) with the outcome of the surgery. It is therefore suggested that personality profiles might not be valid predictors of patients who proved to be difficult to manage after surgery. However, it was noted that Socialisers, being more optimistic and open in their personalities, responded more often and in a more positive fashion than the other three personality types.

7.2 PATIENT SELECTION

In the present study one hundred and seventy-six adults, of whom sixty-two per cent were orthognathic patients, completed the questionnaires. In their study of psycho-social aspects of adult orthodontic treatment, Sergl and Zentner (1997) enlisted sixty patients, twenty per cent of whom were orthognathic patients. In the study of psychological aspects of the dentofacial patient, Sambrook (1989) had a sample group of one hundred and twenty; forty of whom had planned surgery but did not proceed with treatment, forty orthognathic surgery patients and minor oral surgery patients.

In the present study, there were eighty orthognathic surgery patients and fifty minor surgery patients and a reference group of forty-six dental students. Among these groups there were few dissatisfied people, as the majority were positive about their perceptions.

A list of patients who had recently undergone orthognathic surgery, was retrieved from the Oral and Maxillofacial Surgery Unit database files as well as a group of patients obtained from a private Oral and Maxillofacial Surgeon. All of the orthognathic surgery patients contacted were included in the study, except those who did not return the questionnaires or those who did not fill out the questionnaires completely nor correctly. The method of selecting and sampling used Sambrook (1989) as the prototype.

7.3 MATERIAL AND METHODS

Sergl and Zentner (1997) used a single questionnaire containing sixty questions, that were either dichotomous (to be answered yes or no), multiple choice or open-ended. The answers to the open-ended questions were assigned categories in a similar manner to the present study. The present study used two questionnaires of forty-seven questions that were opened-ended, multiple-choice or dichotomous. The

questionnaire used in the study by Sergl and Zentner (1997) was delivered by a clinical psychologist not involved with the orthodontic treatment, but no mention was made as to whether this person was involved in the study. Sinha *et al.* (1996) conducted a study of patient's perception of his or her orthodontist's behaviour, the relationship between the orthodontist and the patient, and the compliance of the patient during orthodontic treatment in order to determine factors that might influence satisfaction with the results of treatment. Their sample of one hundred and ninety-nine patients was guided in completing the questionnaire by a research assistant. Neither of the above studies gave any indication of the research knowledge possessed by the person helping/handing out the questionnaires. If the person distributing and assisting the filling out of the questionnaires was familiar with the aims of the study, bias would have occurred, because the responses would not have been totally generated by the patient. The benefit of providing assistance to patients would have increased the sample size by removing incompletely recorded forms but seriously jeopardized the results. The present study was preformed in a "blind" fashion (Pearlman *et al.,* 1997) in so far as the person distributing the questionnaires and those completing the questionnaire were unaware of the research and thus the answers to the questions were unbiased. The responses to the questionnaire were not influenced by instructional manipulation. Mahar *et al.* (1995) studied response strategies when faking personality questionnaires in a vocational selection setting. Their analyses revealed that success in faking was not a function of either the personality or sex of the respondent but was highly sensitive to instructional manipulation.

While most of the questionnaires were recorded by assistants in the oral surgery setting, a proportion were received by mail of which the response rate was poor. In addition, it has been suggested that a patients recall of information and events deteriorates with time. Falvo and Tippy (1988) assessed the ability of clinicians communicating information to patients regarding proposed surgery and reported that recall rate was deficient within a very short period of time. Patient's memory in the clinical setting was found to be related to their perceptions of the clinician

providing the information, and so the memory recall and assessment of past orthognathic surgery patients in the present study must be viewed with some degree of reservation. In this circumstance, the clinician - patient relationship in past cases could not be accurately identified.

7.3.1 VALIDITY AND RELIABILITY OF THE QUESTIONNAIRES

Cunningham *et al.* (1995) reviewed the literature of the various psychological aspects of orthognathic surgery and suggested that the surgeon should determine through open-ended questions why a patient was seeking treatment and what he or she hoped to achieve. They considered it important for the patient to understand why he or she was seeking treatment, and not be influenced by others. Peterson and Topazian (1976) also stressed the importance of obtaining specific answers to open-ended questions. The 'Satisfaction' questionnaire used in the present study was designed with these suggestions in mind, by having open-ended questions as well as specific queries to test the reliability of the questionnaire. Most people in the study were satisfied with the results of their surgery; however, the few who were unhappy did not indicate any external factor for their dissatisfaction, although the questionnaire encouraged an explanation of each response.

The 'Behavioural Profiles: Self-Assessment' format (the validity of which was said to have been determined by Alessandra and O'Connor in 1996) was used unchanged in the present study. Bradway (1964) researched the validity of classifications using the Myers-Briggs and the Gray Wheelwright tests and determined that they had a high correlation for introversion and extroversion. Patient compliance was an important factor in test selection, with the length and the difficulty of the interpretation of those tests, made their use unsuitable in the present study. The questionnaires of Alessandra *et al.* (1994) took introversion and extroversion into account but the questionnaires were at times inadequately completed and so there was possible bias towards the type of people who were co-operative in filling out questionnaires.

Socialisers were the largest group represented in the present study, and they were the least reserved of all personality types.

Eysenck (1973) stated that the study of personality was complex and that debate continued with regard its accuracy and objective measurement. It was reasoned that if introverts and extroverts differed in their psychological and physiological measures, it should be possible to objectively quantify the differences. In an attempt at quantification Eysenck (1967) used a hypothetic-deductive approach, both socially and in the laboratory. In 1973, Eysenck concluded that the success of these efforts was still too doubtful to be used scientifically, noting only that the weak personality type appeared to resemble the introvert, while the strong personality type resembled the extrovert. Alessandra and O'Connor (1994) stated that the Socializer and Director were extroverts while the Thinker and Relater were introverts. Both Eysenck (1973) and Alessandra and O'Connor (1996) acknowledged that their theories were based on Jung's (1923) ideas. If the theories used by Eysenck (1973) were presumed to be valid and reliable, the results obtained by Kiyak *et al.* (1981; 1982; 1984; 1985; 1986; 1988) and the results of the present study may also deemed to be equally as valid and reliable.

There were major problems in considering personality studies in relation to orthognathic surgery (Cunningham *et al.*, 1995). Firstly, personality studies failed to examine pre-surgical characteristics and relied on self-descriptions rather than standardized measurements. The second problem was the high difficulty in determining, except under rigorous experimental conditions, whether a patient's personality had changed as a result of the surgery and surgery alone. Unfortunately, these conditions were not applied in the previous study by Cunningham *et al.* (1995). Because of these inherent problems, pre-surgical and post-surgical personalities were not examined in the present study. An additional inherent problem that must be considered when assessing the results of a sample is that, introverts, being reserved, were less likely to fill out a questionnaire, which might account for the greater number of current responses from Socialisers compared with other personality

types. A considerable amount of research has been done on personality and acceptance of surgery by Kiyak *et al.* (1981; 1982; 1984; 1985; 1986; 1988). However, they did not study whether extroverts more than introverts complied with research. This would be a worthwhile topic for future research.

7.4 PSYCHIATRIC PROBLEMS AND PERSONALITY

Psychiatric illness was not the aim of the present study and so was not formally assessed. In the public hospital system, a protocol existed for orthognathic surgery patients to be assessed using an Illness Behaviour Questionnaire (Sambrook, 1989). In the private orthognathic patients, the need for psychiatric illness assessment was determined by the surgeon.

It had been noted that patients who presented for cosmetic surgery had significant number of psychiatric problems (Finlay *et al.*, 1995; Hay and Heather, 1973; Jacobson, 1960; Meyer *et al.*, 1960). Most investigations of personality have revealed that orthognathic surgery patients were psychologically normal before surgery (Flanary *et al.*, 1990; Crowell *et al.*, 1970; Hutton, 1967; Kiyak *et al.*, 1982). However, it should be noted that neither Crowell *et al.* (1970) nor Hutton (1967) used standardized measures nor did they use strict tests for mental health. Kiyak *et al.*, (1981) showed that virtually all orthognathic patients tested within the normal range when pre-operative psychological evaluations were performed. The results prompted those authors to state that a pre-operative, formal, psychological evaluation was not justified as a screening test on all orthognathic patients since the identification rate for psychological disease was low.

The study by Kiyak *et al.* (1981) substantiated the premise that formal psychiatric assessment of the present study of orthognathic patients was not warranted. The only current psychiatric assessment was the Illness Behavioural Questionnaire in the protocol of the Oral and Maxillofacial Surgery unit directed by Sambrook (1989). Because the present study and those of Alessandra *et al.* (1993; 1994; 1996) did not

assess psychiatric illnesses, such an evaluation of orthognathic patients before and after surgery could be a fruitful subject of future study.

7.5 GENDER OF PATIENTS

Most orthognathic surgery studies reveal a higher proportion of females than males undergoing surgery (Pepersack and Chausse, 1978; Franco *et al.*, 1989). Their studies showed comparable results with a higher proportion of females (seventy-eight), than males (fifty-two), having both minor oral surgery and orthognathic surgery. In the present study the number of female patients (forty-four) did not exceed the number of males patients (thirty-six) undergoing orthognathic surgery in a statistically significant ratio.

A possible reason why more females than males were motivated to accept surgery as a treatment option might be that women were less satisfied with their body image (Kiyak et *al.*, 1984; 1988). Rodin (1984), however, claimed that there was an analogous difference in the way men and women viewed their bodies. Men primarily viewed their bodies as actively functional, as tools that needed to be in shape and ready to use, whereas women primarily saw their bodies as commodities, their physical appearance serving as an interpersonal currency. However, the present study might indicate that people were starting to change the way they perceived their facial appearance, since the male to female ratio was not significant.

Another possible reason why females more than males were motivated to accept surgery was that the stereotype 'window of attractiveness' was smaller for women than for men (Longo and Ashmore, 1995). In their 1995 research it was revealed that the use of objective physical attractiveness ratings enabled judges to rate females more reliably than males and men were deemed physically attractive with more variability than women. Women, in an attempt to reach that smaller window, might have felt a greater need to have orthognathic surgery than men; however, that view

was not substantiated by the present study since the male to female ratio was not as disparate as in previous studies.

7.6 COMPLAINERS VERSUS NON-COMPLAINERS

From the sample of patients who were 'complainers', it was found that the perceptions of the outcome of surgery ranged from 'very disappointed' to 'pleased'. The interpretation of how someone was 'pleased' with the outcome of surgery and yet still 'complained' was that overall the surgery went well, but there was still a negative perception of some aspect. The surgical patients totalled one hundred and thirty and of those seventy-eight per cent did not complain and twenty-nine per cent did. In the present study six orthognathic patients complained of pain, four of numbness and asymmetry, three of expectations not being met, two of financial costs and unfinished treatment and one of speech dysfunction. Ostler and Kiyak (1991) determined a high level of satisfaction in patients having orthognathic surgery, and Hutton (1967) found from an assessment of thirty-two replies to their questionnaires, a high satisfaction with the orthognathic results. In contrast to the studies by Hutton (1967) and Kiyak (1991), the present study encouraged free comments, both positive and negative. Negative comments were considered complaints. Complaining or not complaining and their relation to personality type are discussed in section 7.65.

The current results indicated that one hundred and twenty-two (94%) patients were either 'satisfied', 'pleased' or 'very pleased' with the results of their surgery. Various reasons were given for being pleased such as the results being better than expected. Arndt *et al.* (1986) found that the quality of life improved for the majority of their group of post-surgical patients because improved confidence and self-esteem enabled them to overcome the social barriers they had previously felt. Crowell *et al.* (1970) found that more than half of his thirty-three patient sample felt that the orthognathic surgery improved their self-confidence. In the open-ended responses of the present study, no one mentioned improved confidence and self-esteem as a reason for a positive response.

Laufer *et al.* (1976) found that two and six years after orthognathic surgery, twenty-four of the twenty-five patients studied were satisfied and felt that the surgery improved their personalities. However, sixteen per cent said they would not go through the operation again and expressed the main reason as the long period of maxillomandibular fixation. Fixation after surgery has improved since the study of Laufer et al. (1976) and in the group of 'complaining' patients in the present study, none mentioned maxillomandibular fixation as the reason for their unhappiness with the results.

The complaints of orthognathic surgery in the present study included: pain, cost, unexpected results and asymmetries. Two patients mentioned that if they had known the extent of the negative outcomes before surgery, they would not have proceeded. One patient who suffered chronic tempomandibular joint pain for years and had minimal jaw movement before surgery was greatly disappointment after surgery. She complained most about her expectations being very different to her results. It would seem prudent for the clinician to be sure that patients understood the complications and limitations of surgery beforehand. Some authors have stated that post-surgical dissatisfaction could be minimized if an accurate description of the treatment was provided and if there was effective communication of the expectations (Olson and Laskin, 1980; Hillerstrom *et al.*, 1971; Quellette, 1978).

Twenty-two (16%) orthognathic surgery patients complained about their surgical outcome, while fifty-eight (44.6%) did not. Seven (5.4%) minor oral surgery patients complained about their surgical outcome, while forty-three (33.1%) did not.

To minimize complaints following orthognathic surgery, Lavell (cited by Lewis *et al.*, 1983) emphasized that satisfaction began with selection of the appropriate patient. He used the following criteria, the first letters of which the letters spelt the acronym SAFE:

1. Self assessment of attractiveness was important. The more positively the patient responded to their general attractiveness, the more likely the post-operative success would be achieved (Cunningham *et al.*, 1995). Alessandra *et al.* (1993) determined that Socialisers were optimists and generally saw themselves as attractive. The results of the present study confirmed that Socialisers viewed their surgical results more positively than did the other personality types.

2. Anxiety. The more relaxed the patient, the greater the chance of success and satisfaction (Cunningham *et al.*, 1995).

3. Fear. Care must be taken with patients with compulsive traits, especially those who sought multiple opinions or excessive detail regarding treatment (Cunningham *et al.*, 1995). The Thinkers (who tend to be perfectionists) of the present study could have had compulsive traits and needed to seek excessive detail (Alessandra *et al.*, 1993). Post-operative satisfaction was frequently difficult to achieve with perfectionists (Cunningham *et al.*, 1995). In the present study there were too few responses from Thinkers to make any definite conclusions, except that possibly thinkers failed to respond to questionnaires because they were reserved in nature (Alessandra *et al.*, 1993) Alternatively, Thinkers may have questioned the need and implications of surgery and therefore did not proceed when all was revealed. According to Alessandra *et al.* (1993) this type of patient had the tendency to contemplate things until the opportunity to participate might well have slipped away. Thinkers liked to examine the advantages and disadvantages of a given situation and therefore consider all aspects before arriving at a decision. The Thinker's need to weigh the possibilities and ramifications takes time, which could create stress in the more impetuous behavioural types: Dominant Directors and Interacting Socialisers.

4. Expectations. The more realistic the expectations the more likely the patient would be satisfied (Cunningham *et al.*, 1995). The present study did not assess how realistic were the patients' expectations and so no valid comment could be made.

Of all the surgical patients involved in the study, the 'non-complainers' (78% or 101/130) of the total test population exceeded the 'complainers' (22% or 29/130). Further analysis of the two surgical groups showed that the number of 'complainers' in the orthognathic surgery group was greater which was not surprising given the greater severity of surgery experienced. Patients who had minor oral surgery performed and who expected no aesthetic change, experienced minimal post-operative complications and an uneventful recovery and thus complained less.

7.6.1 ADEQUACY OF THE INFORMATION GIVEN PRIOR TO SURGERY.

Olson and Laskin (1980) found that patients who were not fully warned of all the possible outcomes of their surgery described its side effects as upsetting. Other authors have stated that post-surgical dissatisfaction could be minimized if an accurate description of the treatment was provided and if there was effective communication of the goals (Olson and Laskin, 1980; Hillerstrom *et al.*, 1971; Quellette, 1978). Adult patients who thought that they had been comprehensively informed about orthodontic treatment expressed higher satisfaction (Sergl and Zentner, 1997). The present study was in tentative agreement with these findings but it was uncertain how much pre-surgical information was provided to the patients. As this study was generally retrospective in design, the amount and detail of pre-surgical information could not be reliably evaluated.

Sinha *et al.* (1996) studied the patient's perception of the clinician's behaviour that might influence patient satisfaction. This was conducted during orthodontic treatment in order to assess the relationship between the clinician and patient compliance. It was found that adequate information before treatment was not the most important factor in patient satisfaction. Instead, it was the patient's perception of whether or not the clinician paid attention to what he or she said, and whether what was said was taken seriously.

Cunningham *et al.* (1995) noted the need for patients to be informed of all possible problems they might encounter during the post-operative phase of treatment if maximum satisfaction was to be achieved. Macgregor (1981) supported this view and stated that a major factor influencing patient satisfaction after orthognathic surgery was adequate information prior to surgery. Barbosa *et al.* (1993) also confirmed that after surgical treatment, lack of patient satisfaction was probably closely related to failure of the clinician to realistically inform the patient about the treatment results. It was also noted that unrealistic expectations on the part of the patient played a significant role in his or her satisfaction with the surgery. The present study identified a number of specific complaints about inadequate pre-surgical information. However, it was difficult to assess whether this was due to poor retention of information by the patient or to failure by the clinician to adequately explain all of the necessary information. The present study attempted to determine whether patients perceived pre-surgical information to be adequate. Of those who responded that they would have liked additional information, four of a total of eight suggestions related to post-operative pain and recovery.

Of those who stated there was inadequate information given prior to surgery, few gave reasons why they felt this, and when reasons were indicated other contributing factors might not have been mentioned. When figures for the 'complaining' and 'non-complaining' orthognathic surgery patients were combined, 82.5 per cent (66) said they had received adequate information and 17.5 per cent (14) did not.

When comparing those patients who complained about their surgical outcome with their response to the question on whether the information given prior to surgery was adequate, of the 'non-complaining' orthognathic surgery patients in the present study, 84.5 per cent (49) were deemed to have received adequate information and 15.5 per cent (9) did not.

Of the 'complaining' orthognathic surgery patients, 77.3 per cent (17) were deemed to have received adequate information prior to surgery and 22.7 per cent (5) did not.

The patients indicated a lack of presurgical information on the amount of pain and difficulty with recovery. Some patients indicated that more information was needed prior to surgery but did not indicate what information was lacking. The results of the present study revealed that the clinician should warn patients prior to surgery of any possible problems prior to surgery, so that they were prepared for all eventualities.

In the minor oral surgery group, 'non-complainers' accounted for eighty-six per cent (43) of the total minor oral surgery patients and of these 'non-complainers' of their surgical outcome, ninety-three per cent (40) were of the opinion that they had received adequate presurgical information while seven per cent (3) did not.

Of the seven 'complainers' of their surgical outcome, in the minor oral surgery group, seventy-one-point-four per cent (5) were deemed to have received adequate presurgical information and twenty-eight-point-six per cent (2) did not. In the minor oral surgery group the major complaint was of pain (7), however they did not indicate that the presurgical information about pain was inadequate.

Kiyak *et al.* (1982) indicated that those who experienced less pain were more satisfied than those whose anticipation of pain was low. In the present study patients were asked for reasons for their positive or negative responses and sometimes pain was mentioned, but the level was not assessed. Level of pain was difficult to accurately assess as it was highly subjective and practical applications for research were limited (Kiyak *et al., 1982*).

7.6.2 INDICATIONS OF POSSIBLE IMPROVEMENTS IN THE MANAGEMENT OF PATIENTS PRIOR TO, DURING AND AFTER SURGERY

Improvements in the management of patients during all stages of treatment were always possible. Kiyak *et al.* (1985) found high depression levels immediately after surgery until fixation removal, after which patients became more positive in their

outlook. It was noted that, when patients were experiencing negative side-effects of surgery, the knowledge that this was a normal transient process, better enabled them to cope. In the present study there was no measure of time lapsed since the surgery which may have affected the patient's perception and recall of events. There was no measure of depression levels in the study of Kiyak et al. (1985) nor in the present study because orthognathic patients were generally healthy individuals rather than psychiatric patients. However because of her serious disappointment after surgery, one patient in the present study indicated several improvements that could have been made. If patients were forewarned of the possibility of negative occurrences, its level of impact could be reduced (Cunningham *et al.*, 1995).

The present study produced data that indicated a wide range of suggested improvements. Some individual requests would be difficult to implement because they ranged from having music in the clinician's rooms to not having students perform the surgery. Most of the suggested improvements were centred on pain control, fewer asymmetrical results and more pre-operative information. Kiyak *et al.* (1988) studied patients' expectations in relation to satisfaction with orthognathic surgical outcomes and found that those who expected minimal problems reported fewer problems and expressed more positive moods after surgery.

7.6.3 LIFE'S EVENTS AND SATISFACTION WITH SURGERY

Cunningham, *et al.* (1995) recommended counselling if the clinician felt that a patient's life-events might affect the surgical outcome and to help the patient who might have an external locus of control of his or her life; such as someone who has just lost their job or loved one. Such patients might initially blame their appearance, and be hasty in seeking surgery to rectify the situation. After the patient had dealt with their unresolved issues and understood that expertise of the surgeon was to enhance the face and not change the external environment, he or she made a better candidate for surgery. It was a false hope on the part of the patient to seek corrective surgery to rectify internal conflicts. What might constitute a life-changing event for the patient also signified a potential problem in his or her satisfaction after surgery.

A patient with an internal locus of control in a life-changing event would be a better candidate for surgery than one with an external locus of control (Cunningham, *et al.*, 1995). None of the patients in the present study mentioned any external locus of control when asked their reasons for dissatisfaction or satisfaction with their surgery.

Sergl and Zentner (1997) studied psychosocial aspects of adult orthodontic treatment and found that during treatment one third of the sample had personal burdens, such as loss of a loved one, divorce or unemployment. Of those with personal burdens, only twenty-five per cent said that the burden affected treatment progress. In the present study, when asked for reasons for their responses, no patients offered personal burdens as a reason for their perceived poor results of surgery.

Sergl and Zentner (1997) examined the assumed relation between seventy psychosocial factors and patients' attitudes, reactions and experiences associated with adult orthodontics. Statistical evaluation failed to support the large majority of assumed tested factors. However, they did find that patients who perceived their malocclusion as a severe handicap before treatment, also thought that orthodontic appliances affected their appearance and classified the aesthetic appearance of the appliance as the most disturbing aspect of the treatment. The authors believed this to be due to a steadiness of personality traits. Individuals for whom aesthetic appearance before treatment had caused substantial distress and personal insecurity, also felt more strongly inhibited about wearing an orthodontic appliance. In the present study, some patients recorded complaints centred on pre-surgical aspects and the same people complained about the outcome after surgery. However, there were too few complaints to draw definite conclusions about patterns of complaints.

7.6.4 COMPLAINTS ABOUT SURGICAL OUTCOME

Magregor (1981) reported that patient dissatisfaction was related to unrealistic expectations. Flanary and Alexander (1983) assessed ninety-three post-orthognathic surgery patients and found that nine dissatisfied patients had a common element in

their dissatisfaction in that their expectations had not been met. In the present study only three of eighty orthognathic surgery patients mentioned that their expectations were not met, but provided no specific reasons.

Kiyak *et al.* (1982) said that a possible explanation for poor satisfaction after orthognathic surgery was that often the patient was still undergoing orthodontic treatment after completion of the surgery phase. In the present study two patients mentioned that they were still in treatment, which might have contributed to their dissatisfaction.

In addition, Kiyak *et al.* (1982) reported that neither pain nor any other variable was a significant predictor of satisfaction beyond the immediate post-operative period. The present study revealed six orthognathic patients who voluntarily mentioned pain as a complaint but there may have been more negative feelings that were not expressed.

7.6.5 PERSONALITY TYPE AS IT RELATES TO COMPLAINING

Kiyak *et al.* (1981) in their study of sex differences in motives and outcomes of orthognathic surgery of twenty-nine males and forty-nine females, showed introverted males to complain of pain more often. No similar correlation was seen in the present study, the number of orthognathic patients who complained of pain was very low (6) and no pattern was obvious.

The present study showed that Socialisers (who were generally more positive) were least likely to complain. It was possible that Socialisers (48% in the minor surgery patients and 47% in the orthognathic patients) were the personality types who sought surgery more often, and being extroverted might comply with personality questionnaires more readily than other personality types.

Alessandra and O'Connor (1996) found that Socialisers made quick decisions based on their assessment of people rather than facts and they preferred to know what other patients had done when contemplating a similar choice. Socialisers were more comfortable if they contacted past patients to determine their opinions. The same researchers found that, because they were optimists and given that their treatment was eighty per cent successful, Socialisers tended to dwell on the positive aspects of the results, rather than the negative. Evidence was found in the present study to support this premise as no Socialiser was found to be very disappointed with treatment. Alessandra and O'Connor (1996) stated that Socialisers made decisions quickly and changed their minds equally quickly. They tended to spend their money on the newest and latest trends and surgery was no exception. They made good patients in that they had many social contacts and provided their needs were met would refer their friends and acquaintances. Communication that was light-hearted, friendly and demonstrative that showed interest in the patient along with social recognition would endear the clinician to them. This was reinforced by research conducted by Kiyak *et al.* (1981) who suggested that patients' personalities were important determinants of post-surgical adaptation and, as such, it was incumbent

upon clinicians to understand those personality characteristics of their patients that would influence post-surgical satisfaction.

When dealing with patients, the clinician's approach could be adjusted to the individual's personality type so that happier patients would be the result. Goleman (1998) described teaching people to become more aware of the other person's perspective in order to be successful in communication. Alessandra *et al.* (1993) stated that an understanding of people's personality type was essential, so that people were assisted and not coerced in the decision-making process. Alessandra *et al.* (1993) further stated that Thinkers and Relaters needed communication in a quiet, restrained and unhurried way. If this was not done the Relater might feel directed and later blame the clinician for making the wrong choice. The Thinker sought the right choice but what was right in the eyes of the clinician might not be for the Thinker and the disparity might only be apparent after surgery. Directors sought control of their environment and feared deceit (Alessandra *et al.*, 1993). If miscommunication occurred a "Director" might resent the clinician. Sinha *et al.* (1996) noted that legal action could be avoided with good communication skills.

In the present study the desire to express personal information and motives varied between personality types. Directors were competitively task-focused and often kept their motivations private (Alessandra *et al.* 1993; 1996) which might account for only twenty-four per cent (31/130) of replies in the surgical groups and twenty-one per cent ((10/46) in the reference group. Alessandra *et al.* (1993; 1996) established that Relaters and Thinkers were introverts and thus very private people. In the present study, Thinkers comprised eight per cent (10/130) of the surgical groups and ten per cent (5/46) of the reference group. Relaters made up twenty-one per cent (28/130) of the surgical groups and twenty-seven per cent (12/46) of the reference group. These figures confirmed propositions by Alessandra *et al.* (1993; 1996) that Relaters were more apt to comply than Thinkers, even though they too were reserved. Socialisers were the only extroverted and open personality type, which was

supported by the higher number of replies in both the surgical (47% ,61/130) and reference (42%, 19/46) groups in the present study.

Kiyak *et al.* (1981) studied sex differences in motives and outcomes of orthognathic surgery and determined that clinicians must be aware of relevant personality traits that might influence post-surgical outcomes. The personality profile of each patient in the present study was compared with his or her perception of outcome of surgery in order to determine a relationship and it was found that Socialisers were more likely to respond and be positive when questioned about their surgical outcome.

Pogrel and Scott (1994) used the Eysenck personality questionnaire and a distorting mirror on normal controls and orthognathic-surgery patients and found that, the better people think they look, the less they really knew about their true appearance. They concluded that it was impossible to identify the 'psychologically bad-risk' orthognathic-surgery patient. The present study came to the same conclusion, but noted it was possible to identify a personality group that was more likely to be excellent patients. Socialisers were the largest group that were positive about their surgery. The small number of people who were unhappy did not readily correlate to any personality type.

Recognizing people with certain personality attributes could greatly enhance our lives (Goleman, 1998). According to Alessandra *et al.* in (1993), Socialisers were the charming motivators, even though more precise behavioural types saw them as too informal and open. However, the present research found that having Socialisers as allies could be advantageous.

VI

CONCLUSIONS

CHAPTER 8

1. The results of the present study concluded that the identification of the patient's personality profile was unable predict those patients who would not have a successful perception of the outcome of surgery. These findings mirror those of Pogrel and Scott (1994) who found that it was impossible to identify the 'psychologically bad-risk' orthognathic-surgery patient.

2. It was found that Socialisers were generally more optimistic in their outlook and this was reflected in he higher number of Socialisers who had a more positive response. There were more 'pleased' and 'very pleased' responses among this group than in any of the other personality groups. The present study found that Socialisers were more likely than other personality type to be positive when questioned about their surgical outcome.

3. The desire to express personal information and motives varied between personality types. The people focused personality types (Socialisers and Relaters) appeared to comply and respond to a greater degree than the more task focused Directors and Thinkers.

4. The present study revealed that Socialisers (who were generally more positive) were least likely to complain. It was possible Socialisers (48% in the minor surgery patients and 57% in the orthognathic patients) were the personality

types who sought surgery more often than other personality types and made better patients.

5. Of those who had no complaints (101/130, 78%), the personality profiles included all types i.e. 'Relaters', 'Thinkers', 'Socialisers' and 'Directors'. The dominant personality profile type among the non-complainers was evident in the 'Socialisers' (47% 50/101). There were 22.8% (23/101) Relaters, 18.8% (19/101) Directors and 8.9% (9/101) Thinkers.

6. The present study was unable to assess whether patients had negative feelings unreported in the questionnaire. Extracting personal opinions from reserved people proved to be a challenge.

7. In the present study there were too few responses received from Thinkers which made definite conclusions difficult. However, it was possible that Thinkers either did not respond to questionnaires because they were reserved, or they thought too much about the surgery and gave the impression of an unwillingness to proceed.

8. The present study provided evidence to suggest that a major factor influencing patient satisfaction was adequate information prior to orthognathic surgery.

9. A large proportion of female patients undergoing both orthognathic and minor oral surgery were in the twenty one to forty age-group, while the male patient population undergoing minor oral surgery were in the twenty-one to forty age-group. By comparison, the majority of male patients undergoing orthognathic surgery were less than twenty years of age. Males tended to undergo orthognathic surgery at a younger age than females.

VII

APPENDIX

APPENDIX 1

Questionnaire for Patients

To help the orthodontic and surgical team meet your needs better, your cooperation in providing us with your views is beneficial. Please answer all pages.
On this page, please circle the response that best fits your view and feel free to add any additional information you might think is important to make your treatment a better experience.

1. Male / Female

2. Age: 20 years and under 21-40 41-60 61 and older

3. Race: Asian Caucasian Indian Negroid Other_____

4. Were you given all the information you required about the operation?

   yes / no

   If no, what further information would you have liked?

   .....

   .....

5. How do you feel about the outcome of the operation?

   a) very pleased b) pleased c) satisfied d) disappointed e) very disappointed

   Why is

   this?.....

6. How did you feel about your going into the hospital for the operation?
   a) I felt very anxious b) I felt slightly anxious c) I was not at all anxious

7. Would it have been helpful for you to talk to someone about how you were feeling at this time? yes / no

8. Was there anything that could have been done to improve any of your treatment? yes / no
   If yes, please
   specify.....

9. How long ago was the surgery ?.....

10. Was the surgery teeth extraction? yes/no

11. Was the surgery facial surgery with braces? yes/no

We thank you for taking time to give us your opinion.

Please return questionnaire.

APPENDIX 2

Behavioural Profiles: Self Assessment

If A is very characteristic of you and B is very uncharacteristic, write 3 next to A and 0 next to B.

If A is more characteristic of you than B, write 2 next to A and 1 next to B.

If B is more characteristic of you than A, write 2 next to B and 1 next to A.

If B is very characteristic of you and A is very uncharacteristic, write 3 next to B and 0 next to A.

Be sure that the numbers that you assign to each pair of statements add up to 3.

1A ____ I am usually open to getting to know people personally and establishing relationships with them.

1B ____ I am usually not open to getting to know people personally and establishing relationships with them.

2A ____ I usually react slowly and deliberately.

2B ____ I usually react quickly and spontaneously.

3A ____ I am usually guarded about other people's use of my time.

3B ____ I am usually open to other people's use of my time.

4A ____ I usually introduce myself at social gatherings.

4B ____ I usually wait for others to introduce themselves to me at social gatherings.

5A ____ I usually focus my conversations on the interests of the parties involved, even if this means that the conversations stray from the business or subject at hand.

5B ____ I usually focus my conversations on the tasks, issues business or subject at hand.

6A ____ I am usually not assertive, and can be patient with a slow pace.

6B ____ I am usually assertive, and at times I can be impatient with a slow pace.

7A ____ I usually make decisions based on facts or evidence.

7B ____ I usually make decisions based on feelings, experience, or relationships.

8A ____ I usually contribute frequently to group conversations.

8B _____ I usually contribute infrequently to group conversations.

9A _____ I usually prefer to work with and through others, providing support when possible.

9B _____ I usually prefer to work independently or dictate the conditions in terms of how others are involved.

10A _____ I usually ask questions or speak more tentatively and indirectly.

10B _____ I usually make emphatic statements or directly express opinions.

11A _____ I usually focus primarily on the idea, concept, or results.

11B _____ I usually focus primarily on the person, interaction, and feelings.

12A _____ I usually use gestures, facial expressions, and voice intonation to emphasize points.

12B_____ I usually do not use gestures, facial expressions, and voice intonation to emphasize points.

13A _____ I usually accept others' points of view (ideas, feelings, and concerns).

13B _____ I usually do not accept others' points of view (ideas, feelings, and concerns).

14A _____ I usually respond to risk and change in a cautious or predictable manner.

14B _____ I usually respond to risk and change in a dynamic or unpredictable manner.

15A _____ I usually prefer to keep my personal feelings and thoughts to myself, sharing only when I wish to do so.

15B _____ I usually find it natural and easy to share and discuss my feelings with others.

16A _____ I usually seek out new or different experiences and situations.

16B _____ I usually choose known or similar situations and relationships.

17A _____ I usually am responsive to others' agendas, interests, and concerns.

17B _____ I usually am directed toward my own agendas, interests, and concerns.

18A _____ I usually respond to conflict slowly and indirectly.

18B _____ I usually respond to conflict quickly and directly.

APPENDIX 3

Behavioural Profiles: Scoring Sheet

Transfer your scores from each of the blanks on the instrument to the table that follows. Note that sometimes the 'A' response appears first and other times the 'B' response appears first. When you have finished, total each column.

O	S	D	I
1A	1B	2B	2A
3B	3A	4A	4B
5A	5B	6B	6A
7B	7A	8A	8B
9A	9B	10B	10A
11B	11A	12A	12B
13A	13B	14B	14A
15B	15A	16A	16B
17A	17B	18B	18A
O Total	**S Total**	**D Total**	**I Total**

Compare the **O** and **S** scores. Which is higher? Write the higher score in the blank below and circle the corresponding letter:

_____ **O** **S**

Compare the **D** and **I** scores. Which is higher? Write the higher score in the blank below and circle the corresponding letter:

_____ **D** **I**

VIII

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