

**AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN  
PERSONALITY TYPE, AS MEASURED BY THE KEIRSEY  
BATES TEMPERAMENT SORTER, CHOICE OF PRACTICE  
SETTING AND JOB SATISFACTION OF PHARMACISTS  
WHO GRADUATED FROM THE UNIVERSITY OF THE  
WESTERN CAPE OVER THE PERIOD 1990-2005.**



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SCHOOL OF PHARMACY AT THE UNIVERSITY OF THE WESTERN CAPE IN  
FULFILMENT OF THE REQUIREMENTS FOR A M.PHARM DEGREE**

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**DECLARATION:**

**I, Susanna Magdalena le Roux, hereby declare that this report is my own work. It is being submitted in fulfilment for the degree Master of Pharmacy at the University of the Western Cape. It has not been submitted before for any degree or examination at this or any other University.**

**Signed at .....on this the .....day of  
.....20**

**Signed:**

**Witness:**



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**An investigation into the relationship between personality type, as measured by the Keirsey Bates Temperament Sorter, choice of practice setting and job satisfaction of pharmacists who graduated from the University of the Western Cape over the period 1990-2005.**

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## Glossary

<b>E</b>	Extraversion
<b>F</b>	Feeling
<b>I</b>	Introversion
<b>J</b>	Judging
<b>JDI</b>	Job Descriptive Index
<b>KBTS</b>	Keirsey Bates Temperament Sorter
<b>N</b>	Intuition
<b>NF</b>	Intuition-Feeling
<b>NT</b>	Intuition-Thinking
<b>P</b>	Perceiving
<b>S</b>	Sensing
<b>SJ</b>	Sensing-Judging
<b>SP</b>	Sensing-Perceiving
<b>T</b>	Thinking
<b>UWC</b>	University of the Western Cape



# ABSTRACT

**Title: An investigation into the relationship between personality type, as measured by the Keirsey Bates Temperament Sorter, choice of practice setting and job satisfaction of pharmacists who graduated from the University of the Western Cape over the period 1990-2005.**

**Keywords: Keirsey Bates Temperament Sorter, Personality Type, pharmacists, choice of practice setting, job satisfaction.**

For the study the Keirsey Bates Temperament Sorter was completed by 602 pharmacy students during their study period at the University of the Western Cape. The Job Satisfaction Questionnaire, a modified version of the Job Descriptive index, was either e-mailed or faxed to the same persons, now practising as pharmacists. Only 69 completed Job Satisfaction Questionnaires were returned. The results showed that the pharmacy students had a tendency towards the Extraversion, Sensing, Feeling and Judging Personality Type Preferences. The median of the Judging Personality Type Preference was exceptionally high. It was also found that there was a statistically significant difference in the distribution of the Extraversion-Introversion and Judging-Perceiving Personality Type Preferences between the pharmacy students at the University of the Western Cape and that of the general population.

Personality Temperaments of the pharmacy students were also compared with the general population and it was found that there were statistically significant more students with the SJ Personality Temperaments and statistically significant less students with the SP Personality Temperaments in the pharmacy population than in the general population. It was also found that the most dominant Personality Temperament Type was ESTJ, making out almost one-third of the UWC pharmacy student population.

When the researcher looked at the Personality Type Preferences of the pharmacists who work at the different sectors of pharmacy practice, it was found that all groups (Community, Hospital, Industry and Other) had the same tendency towards the Extraversion, Sensing, and Judging Personality Types. On the other hand it was found that pharmacists from the Hospital and Community sectors of pharmacy practice had a tendency towards the Thinking Personality Type Preference while pharmacists from the Industry and Other sectors of pharmacy practice had a tendency towards the Feeling Personality Type. This could be an indication that the Personality Type Preference can be used as a possible tool to advise pharmacy students on the choice of practice setting.

When a Spearman Correlation Matrix was done of the relationship between Personality Preferences and the different facets of job satisfaction, it was found that these relationships differ in the female and male groups. In the female group there were statistically significant positive correlations between the Sensing Personality Type and Working Experience and the Sensing Personality Type and Co-workers. There were also a statistically significant negative relationship between the Thinking Personality Type and Promotion and the Judging Personality Type and Patient Interaction. In males the correlations were different. Statistically significant negative relationships occurred between the Extraversion Personality Type Preference and Work Experience, the Thinking Personality Type Preference and Income and the Judging Personality Type Preference and Income. One can come to the conclusion that the Keirsey Bates Temperament Sorter can possibly be used as a tool to advise prospective students as to the suitability of pharmacy as a career. For example, if a female individual has a Sensing Personality Type Preference, the possibility is high for such an individual to be satisfied in her Work Experience and Co-workers facet of job satisfaction and can be advised to choose a working environment where she is not working alone but rather with co-workers.

This study very clearly points out the value of using the Keirsey Bates Temperament Sorter as an aid, not only in guiding the student in the process of career choice, but also facilitating the placing of the newly qualified pharmacist in his or her choice of practice setting. It is however recommended that further investigations should be done to investigate whether the trends found in this study apply to the general population.



# CHAPTER ONE

## INTRODUCTION

### 1.1. Literature review

#### 1.1.1 Personality Type

Personality Type is a term most commonly associated with the Myers-Briggs Type Indicator, a model of personality development created by Isabel Myers and her mother Katharine Cook Briggs. This model was developed around the ideas and theories of Dr. Carl Jung (Keirse & Bates, 1984), a Swiss physician-psychiatrist. Dr. Jung was a contemporary of Sigmund Freud and a leading exponent of Gestalt personality theory. As early as 1923 he theorised that what seems to be a random variation in human behaviour, is actually quite orderly, logical and consistent and is the result of a few basic differences in mental functioning and attitude. These differences affect what people perceive, as well as how they draw conclusions about these perceptions (Stevens, 1994).

In Jung's personality theory, he classified all conscious mental activity into four mental processes, each involving an individual's orientation towards self and the environment. The first two processes identify the way in which a person perceives a stimulus or becomes aware of things, people, events or ideas. These are the Sensing (S) process, which refers to observing information by way of the senses, and the Intuition (N) process, which refers to perceiving meanings, relationships and possibilities by using insight. The

next two mental processes refer to the way in which people make judgements or decisions. These are the Thinking (T) process, which refers to logical, objective decision-making and the Feeling (F) process, which refers to making judgements based on a system of subjective and personal values. Judgers (J) prefer a planned organized approach to life while Preceptors (P) enjoy a flexible and spontaneous approach to life (Stevens, 1994).

Jung also identified two attitude types, Extraversion (E) and Introversion (I) that describe how an individual prefers to engage the environment and use the four basic mental functions. These two attitude types are seen as complementary orientations towards life. Extraversion defines the actions of individuals who prefer an orientation to the outer world of people, places and things. On the other hand, Introversion, describes a preferred orientation towards the inner world of thoughts, concepts and ideas (Stevens, 1994).

Using Jung's theories, Myers and Briggs developed the Myers-Briggs Type Indicator (MBTI). The MBTI instrument consists of 126 questions representing four preferences, drawing a similarity to hand preferences: although we all use both our hands, we have a preference for one hand over the other. The preferred hand leads many activities in which we use both hands (Geyer, 2005). The same apply for the mental processes. The Personality Preference will lead the mental process. According to Van Rensburg *et al.* (2001) Personality Preferences can be defined as reflections of habitual choices between the rival alternatives in the way information is received and decisions are made.

In the MBTI instrument the four preferences, Extraversion (E) / Introversion (I), Sensing (S) / Intuition (N), Thinking (T) / Feeling (F) and Judging (J) / Perceiving (P), are combined into a profile or Personality Temperament Type of which 16 possibilities exist, each with its own unique pattern of preferences. The MBTI is used to determine how people consciously prefer to attend to the world, how they choose to perceive that to which they attend, and how judgements are made about these Perceptions. Later the MBTI became a registered trademark of Consulting Psychologist Press, Inc., which also publishes and distributes the Inventory (Geyer, 2005).

Keirsey and Bates described one of the most popular methods of applying the MBTI. While the MBTI uses 16 psychological preferences or Temperament Types, Keirsey and Bates have categorized observed behaviour into four broad Personality Temperament groups, namely Sensing-Judging (SJ), Sensing-Perceiving (SP), Intuitive-Thinking (NT) and Intuitive-Feeling (NF). They also designed a 70-item forced choice questionnaire to elicit an individual's preferences, similar to those originally designed for MBTI (Keirsey & Bates, 1984).

Keirsey and Bates (1984) described people who have the combination of Sensing-Perceiving (SP) as disliking routine, enjoying risk-taking and having a strong play ethic. These people usually do not fit well into a traditional classroom setting and are usually less successful in school. People with a Sensing-Judging (SJ) combination are almost total opposites of the SP's. They love rules, regulations, duty and honour. They have a strong work ethic and a parental outlook and they usually do very well in traditional

school settings. The Intuitive-Thinking combination people (NT) are described as natural born scientists. They desire to have power over nature and to be able to predict and control reality. They highly value logic and reason. These people tend to do very well in formal education. The last Temperament Type is Intuitive-Feeling (NF). These people are on a never-ending search for self. They usually speak and write fluently and for that reason tend to do well in school. They prefer subjects that deal with people such as social sciences (Keirsey & Bates, 1984). The Keirsey Bates Temperament Sorter has a lesser view of the importance of Introversion and Extraversion than the MBTI (Turnbull, 2003).

When the Personality Preferences were combined into a profile of which 16 possibilities exist, this profile was called Personality Temperament Types (Keirsey & Bates, 1984).

Each of these 16 Personality Temperament Types has unique and specific preferences and personality characteristics (see Table 1).



Later research confirmed that the Keirsey Bates Temperament Sorter (KBTS), as a measure of Jungian personality, correlates significantly with the MBTI. Quinn *et al.* (1992) conducted an experiment with 191 students who completed both of these tests in one class meeting. He found that the correlation between the Myers-Briggs and the Keirsey instruments was significant at the 0.001 level. These results support the use of either instrument to determine an individual's Personality Type.

Research has shown that Personality Type affects how students learn, how teachers teach, how leaders lead, and also how everyone works and communicates (Elias & Stewart,

1991). Career choice as well as success (Vogt & Holder, 1988) and satisfaction with one's career (Watson & Hillison, 2005) are also often consistent with one's personality characteristics.

Table 1.1

Brief descriptions of the sixteen Personality Temperament Types.

<p><b>ENTJ:</b> Innovative organiser, aggressive, analytic, systematic, more tuned to new ideas and possibilities than to people's feelings.</p>	<p><b>ISFP:</b> Observant loyal helper, reflective, realistic, empathetic, patient with details, gentle and retiring, shuns disagreement, enjoys the moment.</p>
<p><b>ESTJ:</b> Fact minded, practical organiser, aggressive, analytic, systematic, more interested in getting the job done than people's feelings.</p>	<p><b>INFP:</b> Imaginative helper reflective, inquisitive, empathetic, loyal to ideas, more interested in possibilities than practically.</p>
<p><b>INTP:</b> Inquisitive analyser, reflective, independent, curious, more interested in organizing ideas than situations or people.</p>	<p><b>ESFJ:</b> Practical harmoniser and people's-people, sociable orderly opinionated, conscientious, realistic and well tuned to the here and now.</p>
<p><b>ISTP:</b> Practical analyser, values exactness, more interested in organizing data than situation or people, reflective, a cool and curious observer of life.</p>	<p><b>ENFJ:</b> Imaginative harmoniser and worker-with-people, sociable, expressive, orderly, opinionated, conscientious, curious about new ideas and possibilities.</p>

<p><b>ESTP:</b> Realistic adapter into the world of material things, good-natured, tolerant, easy going, orientated to practical, first hand experience, highly observant of details and things.</p>	<p><b>INFJ:</b> People's-orientated innovator of ideas, serious, quietly forceful and preserving, concerned, with the common good with helping others develop.</p>
<p><b>ESFP:</b> Realistic adapter in human relationships, friendly and easy with people, highly observant of their feelings and needs, orientated to the practical, first hand experience.</p>	<p><b>INTJ:</b> Logical, critical, decisive innovator of ideas, serious intent highly independent concerned with the organization determined and often stubborn.</p>
<p><b>ISTJ:</b> Analytical manager of facts and details, dependable, decisive, painstaking and systematic, interested in systems and organizations, stable and conservative.</p>	<p><b>ENFP:</b> Warmly, enthusiastic planner of change, imaginative, individualistic, pursues inspiration with impulsive energy seeks to understand and inspire others.</p>
<p><b>ISFJ:</b> Systematic manager of facts and details. Concerned with people's welfare dependable painstaking and systematic stable and conservative.</p>	<p><b>ENTP:</b> Inventive analytical, planner of change, enthusiastic and independent, pursues inspiration with impulsive energy seeks to understand and inspire others.</p>

(Lawrence, 1987)

Another aspect of the different Personality Preferences is their representation in the population. It has been demonstrated that the SP and SJ Temperaments each represent approximately 38% of the general population while the NT and NF Temperaments types

each represent approximately 12% of the general population (Keirse & Bates, 1984). In contrast with this, a study has shown that students and lecturers with preferences in Sensing, Thinking and Judging were most prevalent at a School of Pharmacy in South Africa (Rothman, *et al.* 2000). Rothman *et al.* (2000) concluded that these preferences are favoured during the training of pharmacists but could on the other hand result in ineffectiveness when they are confronted with new demands in life.

Hardigan and Cohen (2003) confirmed the work of Rothman *et al.* (2000) on the Personality Preferences of pharmacy students when they worked on 8 different groups of students in the health profession. In this study 1838 osteopathic medicine students, 912 pharmacy students, 377 physical therapy students, 452 physician students, 207 optometry students, 139 dental students and 70 occupational therapy students completed the MBTI. They found that the most dominant Personality Temperament Types for pharmacy students are:

- ISTJ ( $p < 0.05$ ) (meaning they are serious, thorough, logical and realistic),
- ISFJ ( $p < 0.10$ ) (meaning they rely on fact to make judgements, tend to be organized and offer strong warmth and sympathy),
- ESTJ (meaning they are practical and realistic with a natural head for business and mechanics), and
- ESFJ (meaning they are warm-hearted and talkative with a main interest in things that affect people's lives).

In this study the Keirsey Bates Temperament Sorter (KBTS) is the instrument of choice for Personality Type because it has the following advantages:

- It is a reliable instrument to indicate Personality Type;
- It is closely related to the MBTI, which has been widely researched and has a 75% - 95% same result on retake (Geyer, 2005);
- It is relatively short; and
- It is readily available for the researcher as it is not a Category A test (limited to registered psychologists and other accredited people) (Turnbull, 2003).

### **1.1.2 Job satisfaction**

Studies on job satisfaction started to emerge in the early 1900s. In 1954 Maslow created a hierarchy of needs in which he categorised the human needs into five orders. The lowest order consisted of the basic physiological needs, e.g. food, water, reproduction and sleep. It is basically those aspects that are important to sustain life itself. The second order consisted of physical and financial security, e.g. the protection from danger and the desire for stability and predictability. The third order consisted of the social needs, which include belonging to a group, love and acceptance by other people. In the fourth order is the ego/self-esteem needs, i.e. a sense of self-worth and self-confidence and also the desire for recognition and praise from others. The fifth and last order consisted of self-actualisation needs, which include self-expression, self-development, and creativity. Maslow stated that the needs on the one level have to be met before the next level could

become a motivator. As a need is satisfied the next need becomes operative. If higher needs are fulfilled it can provide job satisfaction (Newby, 1999).

In 1959 Herzberg differentiated between job satisfiers and job dissatisfiers. He stated that job satisfiers were those aspects of work, which were intrinsic to the employee and tended to promote feelings of happiness, e.g. challenging and interesting work, achievement and recognition. Dissatisfiers of work are those aspects of work, which were extrinsic and focus on the environment of the work, e.g. the organisational policies, administration, working conditions, money and job security. Job satisfiers and job dissatisfiers are therefore not opposites. He further concluded that there were two continua present, firstly those factors that cause satisfaction or lack thereof, and secondly those factors that cause dissatisfaction or a condition of no dissatisfaction (Finley, 1991).



Locke (1969) defined job satisfaction as a pleasurable emotional state resulting from the appraisal of one's job achieving or facilitating one's values. He also claimed that job satisfaction was a function of what a person wanted from a job and what he perceives it is offering.

McCaulley (1976) postulated that the statement that Personality Type affects one's career choice as well as career satisfaction, is based on the following:

- Individuals prefers finding occupations whose tasks require them to use their preferred styles of Perception and Judgement in the attitudes they prefer, so that the tasks have intrinsic interest and satisfaction;

- High standards will constantly challenge them to develop their strengths so that they continue to grow in the strengths of their type; and
- Individuals are also sometimes required to develop those aspects of their personalities not preferred.

The Job Descriptive Index, developed by Smith, Kendall and Hulin in 1969, is the most used measure of job satisfaction (Muchinsky, 1990). It measures five facets of job satisfaction and each facet is measured using short phrases to determine if it matches the respondent's assessment of job satisfaction of that particular facet. The total score is representative of the total job satisfaction.

## **1.2 Statement of the Problem**



A need to develop a possible tool, which facilitates advice to prospective pharmacy students on the suitability of pharmacy as a career, and also to advise pharmacists on the choice of practice setting, exists. In order to develop such a tool, the researcher investigated the Personality Type, as measured by the Keirsey Bates Temperament Sorter of pharmacy students who studied during the period of 1990 – 2005 at the University of the Western Cape. She also investigated the job satisfaction level, as measured by a modified version of the Job Descriptive Index, namely the Job Satisfaction Questionnaire, of these pharmacists who practiced either in Hospital, in a Community pharmacy, in the Industry or Other practices. The researcher modified the Job Descriptive

Index to suit the pharmacy environment. The possible relationships between Personality Type, the choice of practice setting and job satisfaction were investigated.

### **1.3 Research Questions**

The researcher attempted to determine whether the Keirse Bates Temperament Sorter could possibly be used as a tool to advise prospective students on the suitability of pharmacy as a career and also to advise pharmacists on the choice of practise setting. A wide range of questions had to be asked to investigate the relationship between personality characteristics, pharmacy students and job satisfaction in pharmacists and to determine the validity of the Keirse Bates Temperament Sorter as such a tool:

#### 1.3.1 Pharmacy students who studied at UWC during the period 1990 to 2005 (pharmacy student study group)



Personality Preferences (please refer to the introduction for differences between Personality Preferences, Personality Temperaments and Personality Temperament Types)

- What are the dominant Personality Preferences of the pharmacy student study group?
- Do the Personality Preferences of the pharmacy student study group differ from those of the general population?
- Did the Personality Preferences of the pharmacy students change during the period 1990 to 2005?

Personality Temperaments

- What are the dominant Personality Temperaments of the pharmacy student study group?

- Do the Personality Temperaments of the pharmacy student study group differ from that of the general population?

#### Personality Temperament Types

- What are the dominant Personality Temperaments Types of the pharmacy student study group?

- Do the Personality Temperament Types of the pharmacy student study group differ from that of the general population?

#### Gender Distribution

- Did the gender distribution of the pharmacy students change over the period 1990 - 2005?

### 1.3.2 Respondents to the Job Satisfaction Questionnaire request



#### Personality Preferences

- What are the dominant Personality Preferences of the respondents of the Job Satisfaction Questionnaire?

#### Personality Temperaments

- What are the Personality Temperaments of the respondents of the Job Satisfaction Questionnaire?

#### Personality Temperament Types

- What are the Personality Temperaments Types of the respondents of the Job Satisfaction Questionnaire?

### Gender Distribution

- What is the gender distribution of the respondents to the Job Satisfaction Questionnaire request?

### Sectors of Pharmacy Practice

- What is the distribution of pharmacists that responded to the Job Satisfaction Questionnaire request within the different sectors of Pharmacy Practice?
- Is there a difference in the response to the six facets of job satisfaction of the pharmacists in the different sectors of pharmacy practice?
- Do the Personality Preferences of the pharmacists differ within the different sectors of pharmacy practice?
- Do the responses to the different facets of job satisfaction differ within the different sectors of pharmacy practice?
- What is the number of people in the different sectors of pharmacy practice i.e. Hospital, Community, Industrial and Other sector, that were either very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied in the different facets of job satisfaction?
- Is there a correlation between the different Personality Preferences of the female students?



### Correlations between Personality Types and Facets of Job Satisfaction.

- Is there a correlation between the responses of the female pharmacists to the different facets of job satisfaction?
- Is there a correlation between the Personality Preferences of the female pharmacists and their response to the different facets of job satisfaction?
- Is there a correlation between the different Personality Preferences of the male students?

- Is there a correlation between the responses of the male pharmacists to the different facets of job satisfaction?
- Is there a correlation between the Personality Preferences of the male pharmacists and their response to the different facets of job satisfaction?

#### **1.4 Objectives and Significance**

The objective of this research study is to investigate the relationship between Personality Types and choice of practice setting as well as job satisfaction of the pharmacist. If evidence of such a relationship can be found, it will demonstrate that the Keirsey Bates Temperament Sorter can be used as a tool:

- To advise prospective students on the suitability of pharmacy as a career of choice;
- To educate the pharmacy student about his own and other people's personality characteristics in order to:
  - guide self-development,
  - develop the future pharmacist's managerial skills (knowing which people to place in certain positions in the pharmacy).
- To guide the pharmacy student in the choice of practice setting.



## 1.5 Hypothesis

There is a direct relationship between Personality Type, as measured by the Keirsey  
Bates Temperament Sorter and

- choice of practice setting, as well as
- job satisfaction of the pharmacist.



## **CHAPTER TWO**

### **METHODOLOGY**

Chapter Two explains the methods and procedures that were utilized to determine the Personality Preferences as well as the job satisfaction level in pharmacists who graduated in the period 1990 to 2005 at the University of the Western Cape (UWC). The chapter contains a discussion of the design of the study, a description of the population, a description of the research instruments, the methods that were used to collect and analyse data and methodological limitations.

#### **2.1 Design of the study**



The research design for this study was descriptive, i.e. a study that is mainly concerned with finding out “what is” (Borg & Crag, 1983). By conducting this study the researcher mainly focussed on the following:

- The Personality Preferences and Personality Temperaments and Temperament Types as measured by the Keirsey Bates Temperament Sorter, of the pharmacy students who studied at the UWC from the period 1990 to 2005 (pharmacy student study group);
- The job satisfaction level of the pharmacists who studied at the University of Western Cape from the period from 1990 to 2002 (pharmacist study group);
- The correlation between the job satisfaction level and Personality Preferences of the pharmacist study group.

The University of the Western Cape only partially funded the research project and e-mail was chosen as method of communication due to the budgetary constraints. An introductory letter, together with the questionnaire, was sent via e-mail to a pharmacist study group. In the introductory letter I introduced myself as a post-graduate student from the University of the Western Cape. The purpose and objectives of the study were explained to the pharmacists and they were asked to participate in the research project.

The research project was undertaken in terms of standard ethical practices for survey research. The UWC Ethics Committee provided ethical approval. Assurance of confidentiality was given in the introductory letter. The reply e-mails were proof of the pharmacists' informed consent. The pharmacists and pharmacies were and will not be identified in any publication of the research.  The nature of this study was such that there was no risk for the respondents and the questions asked were unlikely to be considered an invasion of privacy.

## **2.2 The study population**

The participants for the study on the Personality Preferences and Temperament Types were students who graduated from the University of the Western Cape with a B Pharm. degree during the period of 1990 to 2005. The students were asked to complete the Keirse Bates Temperament Sorter during one of the classes they attended. The population size for the individual Personality Types varied between 520 and 602. This variation was due to missing values for some ancillary measurements or attributes, e.g.

sections of the questionnaires that were not fully completed. In total, 280 male students and 318 female students completed the Keirsey Bates Temperament Sorter.

In the study the researcher attempted to contact all of the above pharmacists who had completed their studies during or before 2002. Students who completed their studies in 2003 to 2005 were not contacted because they were busy with either the Internship year or Community Service year and therefore did not have the chance to make a choice on a pharmacy practice setting. This also meant that pharmacists who completed more than two years of professional work only completed the Job Satisfaction Questionnaire. This exclusion was done to lend more validity to the investigation.

Due to the fact that most pharmacists were not listed in the telephone directory, and could therefore not be contacted, and due to the low response rate of those who were listed, only 69 completed Job Satisfaction Questionnaires were received.

### **2.3 The research instruments**

Two research instruments were used namely the Keirsey Bates Temperament Sorter (Appendix A) and a Job Satisfaction Questionnaire (Appendix C), which was a modified version of the Job Descriptive Index (Appendix B). The researcher modified the Job Descriptive Index for a pharmacy specific environment.

The Keirsey Bates Temperament Sorter is a self-report questionnaire that is modelled after the Myers-Briggs Type Indicator. It provides a framework for determining predisposition towards favoured tendencies in human behaviour. Both instruments are based on Jung's psychological theory (Plessman, 1985) and both Type Preference instruments seek to determine the way people perceive and make judgements (Sharp, 1987)

The Keirsey Bates Temperament Sorter is a 70-item, forced choice questionnaire design to elicit an individual's preference on the four dichotomous scales or dimensions. The questionnaire allows separate indices for the four basic Personality Preferences of Extraversion (E)-Introversion (I), Sensing (S)-Intuition (N), Thinking (T)-Feeling (F) and Judging (J)-Perception (P) (Plessman, 1985). Specific relationships between the four dichotomous scales lead to descriptions and characteristics for 16 separate psychological types or Personality Temperament Types. The Personality Temperament Types are expressed by a four-letter composite that represents an individual's preference on each of the four indices, e.g. ISTJ.

Keirsey and Bates (1984) categorized observed behaviour into four broad Personality Temperament groups. The four Personality Temperaments, based on Jung's attitude (Extraversion and Introversion) and functions (Perceptions and Judgement) are:

### EI Personality Temperaments

Extraversion (E): People with an active involvement with other people as a source of energy. Their perception and judgment are focused on people and things.

Introversion (I): People with a preference for solitude to recover energy. Perceptions and judgement are focused on concepts and ideas.

Three-fourths of the general population prefers an Extraversion orientation, while one-fourth prefers an introvert orientation (Keirsey and Bates, 1984).

### SN Personality Temperaments

Sensing (S): People that receive information directly through use of the five senses

Intuition (N): People that receive information indirectly, through hunches or a sixth sense. It represents the unconscious incorporation of ideas and association with outside Perceptions.



Seventy- five percent of the general population reports a Sensing preference. Twenty-five percent prefers Intuition as a means of Perceiving and gathering information (Keirsey and Bates, 1984).

### TF Personality Temperaments

Thinking (T): People that draw conclusions based on a logical process using impersonal and objective facts.

Feeling (F): People that draw conclusions based on personal values and subjective observations.

Fifty percent of the general population reports a preference for Thinking and fifty percent of the population reports a preference for Feeling (Keirsey and Bates, 1984).

### JP Personality Temperaments

Judgement (J): People with a preference to live in a structured, orderly and planned environment.

Perception (P): People with a preference to live in a more spontaneous and flexible environment.

Again, the general population is equally divided between a preference for Judging (50%) and Perception (50%) (Keirsey and Bates, 1984).

Keirsey and Bates (1984) took the Meyer-Briggs Temperament Index and compared it to the Temperament types of Jung. They then categorized behaviour into four broad temperament groups namely Sensing-Judging (SN), Sensing-Perceiving (SP), Intuitive-Thinking (NT) and Intuitive-Feeling (NF) (Wicklein, 1995). Keirsey and Bates also concluded that the SP and SJ temperament each represent approximately 38% of the general population, while the NT and NF Temperament Types each represent approximately 12 % of the general population (Keirsey and Bates, 1984).

According to Spector (1997) job satisfaction is the most frequently studied variable in organizational research and can be defined as how people feel about their jobs and different aspects of their jobs. It can also be defined as the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs. Job satisfaction is therefore an

attitudinal variable. Previously job satisfaction was approached from the perspective of needs fulfilment, i.e. whether or not the job met the employees' physical and psychological needs for things provided by work, e.g. Income. Later the attitudinal perspective has become the predominant focus. Job satisfaction can also be seen as a global feeling about the job or as a related constellation of attitudes about various aspects or facets of the job. The facet approach is used to find out which parts of the job produce satisfaction or dissatisfaction (Spector, 1997).

It has previously been proven that people differ in their satisfaction across facets, and that the facets are only modestly related to each other. This revealed that people have distinctly different feelings about various aspects of their job and do not have global feelings that produce the same level of satisfaction with every job aspect (Spector, 1997).



The Job Descriptive Index (JDI) developed by Smith, Kendall & Hulin (1969) has probably been the most popular facet scale amongst organizational researchers (Yeager, 1981). It may also have been the most carefully developed and validated (Spector, 1997). Okpara confirmed these speculations in his studies in 2004. There is a wide range of literature available in which this scale has been used. Cook *et al.* (1981) listed more than 100 publications that used the Job Descriptive Index. The JDI has been translated into Afrikaans, Arabic, Chinese, Dutch, German, Greek, Malay, Norwegian, Portuguese, Spanish and Thai (Raphael, 2004).

Recently more studies were conducted to confirm the validity of the JDI, which includes the following: In 2002 Kinicki *et al.* investigates the validity of the JDI by using a meta-analysis to summarize previous empirical studies that examined job satisfaction. He found that the “construct validity of the JDI was supported by (a) acceptable estimates of internal consistency and test-retest reliability, (b) results that conform to a nomological network of job satisfaction relationships and (c) demonstrated convergent and discriminant validity”. Kinicki *et al.* (2002) also found that the JDI correlates with the performance evaluations scores.

According to Skibba (2002) Balzer found in 1997 that the internal reliability of the JDI was high with the coefficient alphas of reliability ranging from 0.86 to 0.92. The Work on Present Job facet of job satisfaction had a coefficient of 0.90, while the Present Pay facet had a coefficient of 0.86. The Opportunities for Promotion facet had a coefficient of 0.87 while both the Supervision and Co-workers facets had a coefficient of 0.91. The Job in General had the highest coefficient of 0.92 (Skibba, 2002).

Raphael found in 2004 that the reliability of the JDI subscales namely Work, Pay, Promotion, Supervision and People in Present Job range from 0.8717 to 0.8945, with a overall reliability of 0.8945, confirming that the results of the JDI can be used with confidence, that the scale is reliable and that the results can be repeated in the future. Raphael (2004) also found that the JDI does have some inter-correlations between the subscales. These JDI inter-correlations provide further evidence that the information provide by the JDI is useable (Raphael, 2004).

Wang and Russel (2005) examined the measurement equivalence of the JDI across Western and Eastern cultures. They used the Confirmatory Factor Analyses and the Item Response Theory to ensure a comprehensive test measurement equivalence at the facet level. The measurement equivalence of the JDI was established using both approaches. This study provides psychometric justification for direct comparisons of job satisfaction scores of multinational companies.

Stanton *et al.* (2001) raised the concern that the JDI takes a substantial amount of space on a survey instrument and require several minutes to complete. He agreed that adequate measuring of job satisfaction guarantees a lengthy survey instrument but this on the other hand, increases the likelihood of non-response (Stanton et al., 2001).



The five scales of the Job Descriptive Index are: Work, Pay, Promotion, Supervision and Co-workers (Spector, 1997). The researcher modified the Job Descriptive Index to a pharmacy- related environment by adding another facet of job satisfaction namely Patient Interaction. This was done because patient interaction plays an important role in the degree of job satisfaction that pharmacists experience. The researcher also changed the questionnaire by using short sentences instead of only single words. This was done to minimize any ambiguity on the meaning of the questions (please see Appendix B and C).

In the Job Descriptive Index the number of questions in each facet of job satisfaction differed between 9 and 18. In the Job Satisfaction Questionnaire the number of questions

for all the facets of job satisfaction were changed to 8, with the exception of the Work Experience facet, which was changed to 16. The reason for this changes were two-fold. In the first place the researcher wanted to make the questionnaire as short as possible (to encourage pharmacists to complete the questionnaire) without losing validity. Secondly she wanted all the facets of job satisfaction to count equally when the total of job satisfaction was determined, with the exception of the Work Experience facet of job satisfaction. The Work Experience facet of job satisfaction had more questions because it was an overall indicator of job satisfaction and should therefore play a more important role in the total of job satisfaction. These decisions were made after a discussion with Dr Theuns Kotze, a statistics expert, who also did the statistical analysis of this research project.



The researcher also included questions on gender and year of study. Although this information about the pharmacists was already available, it was included in the questionnaire to be able to double-check the identity of the pharmacist with the student names who studied at the University of the Western Cape and previously completed the Keirse Bates Temperament Sorter in order to ensure the validity of data. Each question in the Job Satisfaction Questionnaire had four response choices: very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied.

A cover letter (Appendix D) with the modified Job Satisfaction Questionnaire was sent to the pharmacists either by e-mail or fax, to explain the nature of the study and to motivate the reader to participate in the research.

## 2.4 Methods used to collect data

The source of data for this research was the responses made by the participants on the Keirsey Bates Temperament Sorter and the Job Satisfaction Questionnaire. The Keirsey Bates Temperament Sorter was completed by pharmacy students at the University of the Western Cape while attending classes. The Job Satisfaction Questionnaire was completed by a sample of the same persons, now practicing pharmacists. Due to budgetary constraints e-mail was chosen as the method of communication with these pharmacists.

The e-mail addresses of the pharmacists were obtained from information received from the South African Pharmacy Council, as they were the most reliable source. Two separate lists (both received from the SAPC) had to be used in order to select the correct e-mail addresses. The first list, the Register of Pharmacists in the Republic of South Africa, contained the name, the address, the degree, the university where the student studied and the year of registration as a pharmacist (without the e-mail address). Pharmacists who studied at the University of the Western Cape and graduated in the period 1990 to 2003 were selected by hand from this register. The second list, a list of all pharmacists in South Africa, only contained the name, the address and the e-mail address of the pharmacists. The e-mail addresses of pharmacists from the first list were then selected by hand from the second list.

The total number of students who studied at the University of the Western Cape during this period was 440. In the two lists that were received from the South African Pharmacy

Council only 388 of the 440 pharmacists were found. The difference in the two numbers was attributed to the fact that students from countries other than South Africa also studied at the University of the Western Cape, and some pharmacists immigrated since their graduation. Only 207 of these pharmacists had e-mail addresses and the remaining 181 pharmacists' telephone-number was obtained by phoning the telephone directory inquiries. 154 pharmacists were not listed. The remaining 27 pharmacists that were listed were called, informed about the research, asked to participate and then the cover letter and Job Satisfaction Questionnaire were faxed to them.

A one-page cover letter explaining the nature of the study and asking the pharmacists to participate, together with the questionnaire, were e-mailed to the 207 pharmacists that had e-mail addresses. Of these e-mails 81 were returned as unknown. The sample of pharmacists that responded was very small (32) and all were reminded and asked again to participate in the research 14 days after sending the first e-mails. The telephone numbers of the 81 pharmacists that did not receive the e-mails were obtained from the telephone directory inquiries, so that they could be phoned and asked to participate in the research. 61 out of the 81 pharmacists were not listed. The cover letter and questionnaire were then faxed to the remaining 20 pharmacists.

The telephone number of the researcher was included in the cover letter in case pharmacists had any questions. Confidentiality was also guaranteed. This research project was undertaken in terms of standard ethical practices for survey research. The returned e-mail from the pharmacists served as proof of informed consent.

The Job Satisfaction Questionnaire was a modified version of the Job Descriptive Index (Smith, Kendall & Hulin, 1969). It was modified for a pharmacy specific environment by the researcher. The self-report questionnaire also included information such as gender, age, years of pharmacy practice and practice setting.

## **2.5 Methods used to analyse data**

The primary objectives of the data analyses were to answer the research questions as set out in section 1.3

The Keirsey Bates Temperament Sorter is a self-report questionnaire that is modelled after the Myers-Briggs Type Indicator. It provides a framework for determining predisposition towards favoured tendencies in human behaviour. The completed Questionnaires were scored according to the directions from Keirsey and Bates (1984) and the scores of the individual data sheets were entered into an Excel datasheet. Different statistical methods, e.g. descriptive statistics, Chi-square analysis and Spearman correlations were used to analyse the data.

The Job Satisfaction Questionnaire utilizes 6 facets of job satisfaction with a total of 56 items. It is a self-administering questionnaire with directions for the respondents appearing on top of each dimension. Although the time to complete the questionnaire was

not limited, it was determined that the completion of the questionnaire would typically take about 10-15 minutes (depending on individual working speed).

Each question in the Job Satisfaction Questionnaire had four response choices: very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied. The answers were weighted as follows:

Very Satisfied	+4
Slightly Satisfied	+2
Slightly Unsatisfied	-2
Very Unsatisfied	-4

The sum of each of the job facets were calculated and entered into the same Excel data sheet as the datasheet used for the Keirsey Bates Temperament Sorter.

## **2.6 Limitations of the study**

There were certain limitations to the study. The first limitation was that a large percentage of pharmacists could not be contacted due to the fact that their telephone numbers were not listed in the telephone directory. The second limitation was that the response rate of the pharmacists that could be contacted was very low although the importance of the study was explained in a cover letter and they were reminded twice. The sample of pharmacists therefore was not a random selection but rather largely self-selected. The third limitation was financial. If more money were available, more

pharmacists could be contacted by mail, which is an expensive process. The small sample size implies that the results of this study can not be generalized the general population of pharmacists

## **2.7 Summary**

Following the analytical procedures outlined on the preceding pages, the researcher was able to show quantitative data that fulfilled the objectives for this research.



## **CHAPTER THREE**

### **RESULTS**

The purpose of this section is to present the analysis of data that were collected from pharmacy students who studied at the UWC during the period of 1990 to 2005 as well as the data that were collected from the Job Satisfaction Questionnaire.

The first part of this chapter reports on the scores for the Keirsev Bates Temperament Sorter of the pharmacy students who studied at the University of the Western Cape in the period of 1990 to 2005 (pharmacy student study group), followed by reports of the scores of the sub-group, namely the pharmacists that responded to the request to complete the Job Satisfaction Questionnaire. The last part of this chapter reports on the correlation between the results of the Keirsev Bates Temperament Sorter and the Job Satisfaction Questionnaire. The data is presented in the form of tables followed by a brief summary of the findings.

### 3.1 Personality Types

#### 3.1.1 Pharmacy Student Study Group

Table 3.1.1.1

Descriptive Statistics of the Scores of the Keirsey Bates Temperament Sorter of Pharmacy Students Study Group.

	<b>Mean</b>	<b>SD</b>	<b>Max Score</b>
<b>Extraversion</b>	5.68	2.44	10
<b>Introversion</b>	4.32	2.44	
<b>Sensing</b>	11.22	3.02	20
<b>Intuition</b>	8.78	3.02	
<b>Thinking</b>	9.87	3.44	20
<b>Feeling</b>	10.13	3.44	
<b>Judging</b>	14.19	3.1	20
<b>Perceiving</b>	5.81	3.1	

The scores in Table 3.1.1.1 show a tendency towards preferences for Extraversion, Sensing, Feeling and Judging. It must be kept in mind that the Extraversion-scale was complementary to the Introversion-scale, i.e. for any value on the Extraversion-scale:

$$\text{Extraversion-value} = 10 \text{ minus the Introversion-value.}$$

The same was true for:        Sensing-value = 20 minus the Intuition-value;  
    Thinking-value = 20 minus the Feeling-value;  
    Judging-value = 20 minus the Perception-value.

Table 3.1.1.2

Summary of the Type Preferences according to the Keirsey Bates Temperament Sorter of  
 Pharmacy Students Study Group

	<b>Number of Students</b>	<b>% Students</b>	<b>General Population</b>
<b>Extraversion</b>	362	61.7%	75%
<b>Introversion</b>	225	38.3%	25%
<b>Sensing</b>	381	71.05%	75%
<b>Intuition</b>	152	28.95%	25%
<b>Thinking</b>	265	50.2%	50%
<b>Feeling</b>	269	49.8%	50%
<b>Judging</b>	474	88.65%	50%
<b>Perceiving</b>	57	11.35%	50%

Although it has been proven that 75% of the general population are Extroverts, it can be seen in the table above that the Pharmacy Student population at the UWC consists of only 61.7% Extroverts, i.e. a difference of 13.3 %. There was also a slight difference in the Sensing / Intuition distribution. The general population consist of 75 % Sensors while the

Pharmacy Students only consists of 71.05% Sensors, i.e. a small difference of 3.95%.

The difference between the general population (50%) and the UWC Pharmacy students (50.5%) with regards to Thinking and Feeling was only 0.2%. On the other hand, the normal population consists of 50% Judgers while the Pharmacy Student population at the UWC consists of 88.65% Judgers, i.e. a statistical significant difference of 38.65 %.

The difference between the Pharmacy Students at the University of the Western Cape and the general population were compared by means of the Chi-squared test. The value of the Test statistic of Extraversion and Introversion was 55.4 and that of Judging and Perceiving was 327.1 with 1 degree of freedom.



Table 3.1.1.3

The Distribution of the Personality Types Extraversion (E), Introversion (I) or Level scores (X) according to the Keirsey Bates Temperament Sorter of Pharmacy Student Study Group over the years.

<b>Year</b>	<b>% E</b>	<b>Number E</b>	<b>% I</b>	<b>Number I</b>	<b>% X</b>	<b>Number X</b>	<b>Total (n)</b>
<b>1991</b>	41.46	17	43.90	18	14.63	6	41
<b>1992</b>	57.89	11	21.05	4	21.05	4	19
<b>1993</b>	50.00	15	33.33	10	16.67	5	30
<b>1994</b>	56.67	17	33.33	10	10.00	3	30
<b>1996</b>	30.77	12	53.85	21	15.38	6	39
<b>1997</b>	57.14	24	28.57	12	14.29	6	42
<b>1998</b>	57.89	22	28.95	11	13.16	5	38
<b>1999</b>	60.87	14	39.13	9	0.00	0	23
<b>2000</b>	65.57	40	27.87	17	6.56	4	61
<b>2001</b>	64.44	29	26.67	12	8.89	4	45
<b>2002</b>	61.90	26	26.19	11	11.90	5	42
<b>2003</b>	45.71	16	40.00	14	14.29	5	35
<b>2004</b>	52.63	30	38.60	22	8.77	5	57
<b>2005</b>	64.71	55	23.53	20	11.76	10	85
<b>Total</b>	55.88	328	32.54	191	11.58	68	587

The year 1995 had an extremely low number (n) due to lost data and was eliminated from the table above. The distribution of these three classes (Extraversion, Introversion or Level scores) did not differ over the years ( $p>0.1$ ) and this calculation was repeated, eliminating those with level scores. The result for the tables in which the column was eliminated, did not change from the initial three-column table.



Table 3.1.1.4

The Distribution of the Personality Types Sensing (S), Intuition (N) or Level scores (X) according to the Keirsey Bates Temperament Sorter of Pharmacy Student Study Group over the years.

<b>Year</b>	<b>% S</b>	<b>Number S</b>	<b>%N</b>	<b>Number N</b>	<b>% X</b>	<b>Number X</b>	<b>Total</b>
<b>1991</b>	20.00	23	65.71	7	14.29	5	35
<b>1992</b>	11.76	14	82.35	2	5.88	1	17
<b>1993</b>	16.67	18	75.00	4	8.33	2	24
<b>1994</b>	25.00	14	58.33	6	16.67	4	24
<b>1996</b>	23.53	20	58.82	8	17.65	6	34
<b>1997</b>	28.95	25	65.79	11	5.26	2	38
<b>1998</b>	28.13	17	53.13	9	18.75	6	32
<b>1999</b>	30.00	12	60.00	6	10.00	2	20
<b>2000</b>	14.81	35	64.81	8	20.37	11	54
<b>2001</b>	27.50	24	60.00	11	12.50	5	40
<b>2002</b>	28.95	24	63.16	11	7.89	3	38
<b>2003</b>	28.57	23	65.71	10	5.71	2	35
<b>2004</b>	24.56	38	66.67	14	8.77	5	57
<b>2005</b>	16.47	63	74.12	14	9.41	8	85
<b>Total</b>	22.70	350	65.67	121	11.63	62	533

The year 1995 had an extremely low number (n) and was eliminated from the table above. The distribution of these three classes (Sensing, Intuition or Level scores) did not differ over the years ( $p>0.1$ ) and after eliminating the level column the result stayed the same.



Table 3.1.1.5

The Distribution of the Personality Types Thinking (T), Feeling (F) or Level scores (X) according to the Keirsey Bates Temperament Sorter of Pharmacy Student Study Group over the years.

<b>Year</b>	<b>% T</b>	<b>Number T</b>	<b>% F</b>	<b>Number F</b>	<b>% X</b>	<b>Number X</b>	<b>Total</b>
<b>1991</b>	42.86	15	42.86	15	14.29	5	35
<b>1992</b>	29.41	8	47.06	5	23.53	4	17
<b>1993</b>	41.67	13	54.17	10	4.17	1	24
<b>1994</b>	41.67	10	41.67	10	16.67	4	24
<b>1996</b>	64.71	10	29.41	22	5.88	2	34
<b>1997</b>	55.26	15	39.47	21	5.26	2	38
<b>1998</b>	46.88	11	34.38	15	18.75	6	32
<b>1999</b>	35.00	12	60.00	7	5.00	1	20
<b>2000</b>	38.89	24	44.44	21	16.67	9	54
<b>2001</b>	57.50	14	35.00	23	7.50	3	40
<b>2002</b>	36.84	20	52.63	14	10.53	4	38
<b>2003</b>	42.86	16	45.71	15	11.43	4	35
<b>2004</b>	38.60	31	54.39	22	7.02	4	57
<b>2005</b>	44.71	35	41.18	38	14.12	12	85
<b>Total</b>	44.65	234	43.90	238	11.44	61	533

The year 1995 had an extremely low number (n) and was eliminated from the table above. The distribution of these three classes (Thinking, Feeling or Level scores) did not differ over the years ( $p>0.1$ ) and this calculation was repeated eliminating those with level scores. The result for the tables in which the column was eliminated did not change from the initial three-column table.



Table 3.1.1.6

The Distribution of the Personality Types Judging (J), Perception (P) or Level scores (X) according to the Keirsey Bates Temperament Sorter of Pharmacy Student Study Group over the years.

<b>Year</b>	<b>% J</b>	<b>Number J</b>	<b>% P</b>	<b>Number P</b>	<b>% X</b>	<b>Number X</b>	<b>Total</b>
<b>1991</b>	88.57	31	11.43	4	0.00	0	35
<b>1992</b>	93.75	15	6.25	1	0.00	0	16
<b>1993</b>	95.83	23	0.00	0	4.17	1	24
<b>1994</b>	79.17	19	16.67	4	4.17	1	24
<b>1996</b>	82.35	28	11.76	4	5.88	2	34
<b>1997</b>	84.21	32	13.16	5	2.63	1	38
<b>1998</b>	81.25	26	9.38	3	9.38	3	32
<b>1999</b>	78.95	15	15.79	3	5.26	1	19
<b>2000</b>	88.89	48	7.41	4	3.70	2	54
<b>2001</b>	87.50	35	10.00	4	2.50	1	40
<b>2002</b>	86.84	33	13.16	5	0.00	0	38
<b>2003</b>	91.43	32	8.57	3	0.00	0	35
<b>2004</b>	92.98	53	5.26	3	1.75	1	57
<b>2005</b>	88.24	75	5.88	5	5.88	5	85
<b>Total</b>	87.57	465	9.04	48	3.39	18	531

The year 1995 had an extremely low number (n) and was eliminated from the table above. The distribution of these three classes (Judging, Perception or Level scores) did not differ over the years ( $p>0.1$ ) and after eliminating the level column the result stayed the same.

Table 3.1.1.7

The Distribution of Personality Temperaments of Pharmacy Student Study Group compared with the General Population

	<b>Number Pharmacy Students</b>	<b>% Pharmacy Students</b>	<b>% General Population</b>
<b>SJ</b>	350	71.7%	38%
<b>NF</b>	80	16.4%	12%
<b>NT</b>	40	8.2%	12%
<b>SP</b>	18	3.7%	38%
<b>Total</b>	488	100%	100%

In the table above it can be seen that the total number of students is lower than the original number of students in the sample. The reason for this lower number is the number of XX Personality Types, i.e. students with an equal tendency towards both sides of the Personality Type Preferences. From the above table one could deduce that there is a greater difference (33.7%) between the general population (38%) and the UWC Pharmacy students (12%) in the SJ Temperament category. In the NF Temperament

category the UWC Student Population also had a higher count (difference of 4.4%) than the general population. Both the NT and SP category were lower than the general population with a difference of 34.3% in the SP category.

The difference between the Pharmacy Students at the University of the Western Cape and the general population were compared by means of the Chi-squared test. The value of the Test statistic of SJ Temperament was 146.0 and that of the SP Temperament 151.2 with 3 degrees of freedom.



Table 3.1.1.8

Sample Distribution of Personality Temperament Types according to the Keirsey Bates Temperament Sorter of Pharmacy Student Study Group Compared to that of the General Population

	<b>Number of Students</b>	<b>% Students</b>	<b>% General Population</b>	<b>% Difference</b>
<b>ENFJ</b>	34	8.76%	5%	3.76%
<b>ENFP</b>	13	3.35%	5%	-1.65%
<b>ENTJ</b>	20	5.15%	5%	0.15%
<b>ENTP</b>	5	1.29%	5%	-3.71%
<b>ESFJ</b>	59	15.21%	13%	2.21%
<b>ESFP</b>	6	1.55%	13%	-11.45%
<b>ESTJ</b>	108	27.84%	13%	14.84%
<b>ESTP</b>	5	1.29%	13%	-11.71%
<b>INFJ</b>	14	3.61%	1%	2.61%
<b>INFP</b>	7	1.80%	1%	0.80%
<b>INTJ</b>	5	1.29%	1%	0.29%
<b>INTP</b>	0	0%	1%	-1.00%
<b>ISFJ</b>	52	13.40%	6%	7.40%
<b>ISFP</b>	1	0.26%	5%	-4.74%
<b>ISTJ</b>	57	14.69%	6%	8.69%
<b>ISTP</b>	2	0.51%	7%	-6.49%
<b>Total</b>	388	100%	100%	

The last column of the table above represents the difference between the percentage distribution of the Personality Temperament Types of the general population and that of the pharmacy student study group. The total number of students is lower than the original number of students in the sample. The reason for this lower number is the number of XX Personality Types, i.e. students with an equal tendency towards both sides of the Personality Type Preferences.

From the table above one could deduce the differences in the distribution of Type Preferences of the general population and that of the pharmacy student study group. There were particularly large differences between the distribution of the Temperament Types of the General population and that of the pharmacy students in the ESTP, ESFP, ESTJ, ISFJ, ISTP and ISTJ count.



The difference between the pharmacy student study group and the general population were compared by means of the Chi-squared test. The value of the Test statistics were as follows: ENFJ – 11.0, ENTP – 10.7, ESFP – 39.2, ESTJ – 65.7, ESTP – 40.9, INFJ – 26.4, ISFJ – 35.4, ISFP – 17.5, ISTJ – 48.8, ISTP – 23.3 with 15 degrees of freedom.

Table 3.1.1.9

The Gender Distribution of the Pharmacy Student Study Group over the Years

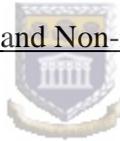
<b>Year</b>	<b>Number Female</b>	<b>% Female</b>	<b>Number Male</b>	<b>% Male</b>	<b>Total</b>
<b>1991</b>	13	32%	28	68%	41
<b>1992</b>	7	35%	13	65%	20
<b>1993</b>	13	43%	17	57%	30
<b>1994</b>	14	47%	16	53%	30
<b>1995</b>	3	43%	4	57%	7
<b>1996</b>	17	41%	24	59%	41
<b>1997</b>	19	45%	23	55%	42
<b>1998</b>	16	42%	22	58%	38
<b>1999</b>	15	62%	9	38%	24
<b>2000</b>	38	62%	23	38%	61
<b>2001</b>	25	56%	20	44%	45
<b>2002</b>	28	67%	14	33%	42
<b>2003</b>	23	66%	12	34%	35
<b>2004</b>	39	68%	18	32%	57
<b>2005</b>	48	56%	37	44%	85
<b>Total</b>	318	53.2%	280	46.8%	598

In the table above it can be seen that the proportion of females increased considerably over the fifteen years (Pearson Chi-Squared Test Statistic = 31.4, 14 degrees of freedom;  $p < 0.005$ ). The percentage of females increased from approximately 37% to 64% during the end of the period covered by the defined population (1991 to 2005). It is clear that the gender distribution changed from year to year over the period 1991 to 2005.

### 3.1.2 Pharmacists who responded to the request to complete the Job Satisfaction Questionnaire

Table 3.1.2.1

The Descriptive Statistics of the Personality Type Preference Scores of the Keirsey Bates Temperament Sorter of the Responders and Non-responders to the Job Satisfaction



Questionnaire Request

	<b>Mean of Non-Responders</b>	<b>Mean of Responders</b>	<b>Combined SD</b>	<b>Max Score</b>
<b>Extraversion</b>	5.68	5.74	2.44	10
<b>Introversion</b>	4.32	4.26		
<b>Sensing</b>	11.22	11.13	3.02	20
<b>Intuition</b>	8.78	8.87		
<b>Thinking</b>	9.87	10.22	3.42	20
<b>Feeling</b>	10.13	9.78		
<b>Judging</b>	14.19	14.32	3.10	20
<b>Perceiving</b>	5.81	5.68		

In the table above it can be seen that the largest difference between the means of the respondents and non-respondents occurred for the T-scale. However, none of these differences were statistically significant (in all cases  $p > 0.01$ ). This indicated that for the personality traits measured, the impulse to participate was not scientifically dependent thereon. To compare the Standard Deviations (or Dispersions) it was necessary to observe that the complementary constant in case of the E/I-scale was 10 opposed to 20 for the other three scales, and therefore the E-scale cannot be compared to the other three scales (S, T and J). The standard deviation of the T-scale was somewhat larger than that of the S- and J-scales.



Table 3.1.2.2

Summary of the Personality Type Preferences according to the Keirsey Bates

Temperament Sorter of Pharmacy Student study Group and Respondents to the Job

Satisfaction Questionnaire

	<b>Number of Students</b>	<b>% Students (S)</b>	<b>Number of Respondents</b>	<b>% Respondents (R)</b>	<b>% Difference between S and R</b>
<b>Extraversion</b>	362	61.7%	35	64.8%	3.1%
<b>Introversion</b>	225	38.3%	19	35.2%	
<b>Sensing</b>	381	71.05%	36	66.7%	4.35%
<b>Intuition</b>	152	28.95%	18	33.3%	
<b>Thinking</b>	265	50.2%	30	55.6%	5.4%
<b>Feeling</b>	269	49.8%	24	44.4%	
<b>Judging</b>	474	88.65%	45	83.4%	5.25%
<b>Perceiving</b>	57	11.35%	8	16.6%	

There were only slight differences between the percentage distributions of the Type Preferences of the Pharmacy Student Study Group and that of the Respondents.

Table 3.1.2.3

The Sample Distribution of the Personality Temperaments according to Keirsey Bates  
Temperament Sorter of Pharmacy Student Study Group and Respondents to the Job  
Satisfaction Questionnaire

	<b>Number of Students</b>	<b>% Students</b>	<b>Number of Respondents</b>	<b>% Respondents</b>	<b>% Difference</b>
<b>SJ</b>	350	71.7%	19	57.6%	14.1%
<b>NF</b>	80	16.4%	7	21.2%	4.8%
<b>NT</b>	40	8.2%	5	15.2%	7.0%
<b>SP</b>	18	3.7%	2	6.0%	2.3%
<b>Total</b>	488	100%	33	100%	

The total number of students is lower than the original number of students in the sample. The reason for this lower number is the number of XX Personality Types, i.e. students with an equal tendency towards both sides of the Personality Type Preferences. There were slight differences between the percentage distributions of the Temperament Types according to the Keirsey Bates Temperament Sorter of the pharmacy student study group and that of the Respondents.

Table 3.1.2.4

The Sample Distribution of the Personality Temperament Types of Pharmacy Student

Study Group and that of the Respondents to the Job Satisfaction Questionnaire

	Number of Students	% Students (S)	Number of Respondents	% Respondents (R)	Difference between (S) and (R)
ENFJ	34	8.76	4	11.76	-3.00
ENFP	13	3.35	2	5.88	-2.53
ENTJ	20	5.15	2	5.88	-0.73
ENTP	5	1.29	0	0.00	1.29
ESFJ	59	15.21	3	8.82	6.38
ESFP	6	1.55	1	2.94	-1.39
ESTJ	108	27.84	9	26.47	1.36
ESTP	5	1.29	0	0.00	1.29
INFJ	14	3.61	1	2.94	0.67
INFP	7	1.80	1	2.94	-1.14
INTJ	5	1.29	0	0.00	1.29
INTP	0	0.00	0	0.00	0.00
ISFJ	52	13.40	5	14.71	-1.30

ISFP	1	0.26	0	0.00	0.26
ISTJ	57	14.69	5	14.71	-0.02
ISTP	2	0.52	1	2.94	-2.43
Total	388	100	34	100	

The total number of students is lower than the original number of students in the sample.

The reason for this lower number is the number of XX Personality Types, i.e. students with an equal tendency towards both sides of the Personality Type Preferences. There were slight differences between the percentage distributions of the Types Preferences according to the Keirsey Bates Temperament Sorter of the pharmacy student study group and that of the respondents.



Table 3.1.2.5

The Gender Distribution for Pharmacy Student Study Group, the Responders and the

Non-responders to the Job Satisfaction Questionnaire Request.

	<b>Number Female</b>	<b>%Females</b>	<b>Number Males</b>	<b>% Males</b>	<b>Total</b>
<b>Students</b>	318	53.2%	280	46.8%	598
<b>Non- responders</b>	291	55%	242	45%	533
<b>Responders</b>	27	42%	38	58%	65

From the above Table it could be deduced that females responded to a lesser extent in the sub-sampling compared to the percentage within the non-responders; (42% of the responders and 55% of the non-responders were females). These two rates differed on the 5% level of significance.

Only a few missing values occurred in the measurement MBTI. It was, however, decided to analyse E/I, S/N, T/F and J/P separately.

Table 3.1.2.6

A Summary of Pharmacists in the different Sectors of Pharmacy Practice that Responded to the Request to Complete the Job Satisfaction Questionnaire.

	<b>Male respondents</b>	<b>Female respondents</b>	<b>Total respondents</b>	<b>% Respondents</b>
<b>Community</b>	12	3	15	21.7%
<b>Hospital</b>	14	13	27	39.3%
<b>Industrial</b>	7	5	12	17.3%
<b>Other</b>	6	9	15	21.7%
<b>Total</b>	39	30	69	100%



From the table above it could be deduced that most of the respondents were from the Hospital sector although all sectors of pharmacy practice were represented.

Table 3.1.2.7

The Count of Individuals who responded on the Six Facets of Job Satisfaction in the

Different Sectors of Pharmacy Practice

<b>Sector</b>	<b>Work Experience</b>	<b>Income</b>	<b>Patient Interaction</b>	<b>Promotion</b>	<b>Co-workers</b>	<b>Supervision</b>
<b>Community</b> 15 Individuals	15	15	15	15	14	9
<b>Hospital</b> 27 Individuals	27	26	22	27	27	25
<b>Industry</b> 12 Individuals	12	12	1	12	12	10
<b>Other</b> 15 Individuals	15	15	8	15	15	15
<b>Response Percentage</b>	100%	99%	67%	100%	99%	86%

From the above table it could be deduced that **all** sub-respondents replied to the questions on Work Experience and Promotion and **almost all** of the sub-respondents answered the

questions on Income and Co-workers. For Patient Interaction 67% of the 69 respondents replied to the questions on this item and for Supervision 86% responded. The Patient Interaction questions were not applicable for pharmacists in Industry and not completely applicable for those classified in the Other sector. Other sector is the collective name given for all the other areas where pharmacists work outside the Community, Hospital and Industrial sector of pharmacy practice, that is e.g. academic institutes and medical aid companies. With respect to Supervision more of the pharmacists from the Community than expected, did not respond.



Table 3.1.2.8

Descriptive Statistics of **Extraversion Personality Type** (Introversion is the inversion of Extraversion with a total count of 10) for the Respondents to the Job Satisfaction Questionnaire Request employed in Community, Hospital, Industry & Other sectors of Community Practice

	<b>Community</b>	<b>Hospital</b>	<b>Industrial</b>	<b>Other</b>
<b>Mean</b>	6.00	5.08	6.78	6.11
<b>Median</b>	6	5.5	7	7
<b>Standard Deviation</b>	2.30	1.93	2.17	2.52
<b>Sample Variance</b>	5.27	3.73	4.69	6.36
<b>Range</b>	7	7	6	7
<b>Minimum</b>	2	1	3	2
<b>Smallest (2)</b>	3	2	4	3
<b>Largest (2)</b>	9	8	9	9
<b>Maximum</b>	9	8	9	9
<b>Count</b>	12	24	9	9

The above table shows a tendency towards Extraversion in all the different sectors of Pharmacy Practice.

Table 3.1.2.9

Descriptive Statistics of **Sensing Personality Type** (Intuition is the inversion of Sensing with a total score of 20) for the Respondents to the Job Satisfaction Questionnaire Request employed in Community, Hospital, Industry & Other sectors of Community Practice

	<b>Community</b>	<b>Hospital</b>	<b>Industrial</b>	<b>Other</b>
<b>Mean</b>	10.58	12.04	9.89	10.67
<b>Median</b>	11	12	10	10
<b>Standard Deviation</b>	2.78	2.58	2.26	1.87
<b>Sample Variance</b>	7.72	6.65	5.11	3.50
<b>Range</b>	8	10	7	5
<b>Minimum</b>	7	7	6	8
<b>Smallest (2)</b>	7	8	7	9
<b>Largest (2)</b>	14	17	12	13
<b>Maximum</b>	15	17	13	13
<b>Count</b>	12	24	9	9

From the table above one could deduce that there is a tendency towards Sensing in both the Community and Hospital Sector although the count for the Hospital sector was the highest.

Table 3.1.2.10

Descriptive Statistics of the **Thinking Personality Type** (Feeling is the inversion of Thinking with a total count of 20) for the Respondents to the Job Satisfaction Questionnaire Request employed in Community, Hospital, Industry & Other sectors of Community Practice

	<b>Community</b>	<b>Hospital</b>	<b>Industrial</b>	<b>Other</b>
<b>Mean</b>	11.00	11.21	7.78	9.00
<b>Median</b>	11	11	6	8
<b>Standard Deviation</b>	3.79	2.54	3.42	4.12
<b>Sample Variance</b>	14.36	 6.43	11.69	17.00
<b>Range</b>	14	9	11	11
<b>Minimum</b>	4	7	4	4
<b>Smallest (2)</b>	7	8	5	5
<b>Largest (2)</b>	15	15	10	14
<b>Maximum</b>	18	16	15	15
<b>Count</b>	12	24	9	9

From the table above one could see that there is a tendency towards the Thinking Personality Type in both the Community and Hospital sectors of Pharmacy Practice. On the other hand there is a tendency towards the Feeling Personality Type in the Industry

and Other sector (all sectors except Community, Hospital and Industry) of Pharmacy Practice.

Table 3.1.2.11

Descriptive Statistics of the **Judging Personality Type** (Perception is the inversion of Judging with a total count of 20) for the Respondents to the Job Satisfaction Questionnaire Request employed in Community, Hospital, Industry & Other sectors of Community Practice

	<b>Community</b>	<b>Hospital</b>	<b>Industrial</b>	<b>Other</b>
<b>Mean</b>	15.75	14.43	12.78	13.67
<b>Median</b>	16	15	13	15
<b>Standard Deviation</b>	2.22	3.53	4.55	4.24
<b>Sample Variance</b>	4.93	12.44	20.69	18.00
<b>Range</b>	7	11	15	14
<b>Minimum</b>	12	8	4	5
<b>Smallest (2)</b>	13	9	9	10
<b>Largest (2)</b>	18	19	17	17
<b>Maximum</b>	19	19	19	19
<b>Count</b>	12	23	9	9

From the table above one could deduce that there is a strong tendency towards the Judging Personality Type in all sectors of Pharmacy Practice.

### 3.2 Job Satisfaction

Table 3.2.1

The Descriptive Statistics for the Data from the Job Satisfaction Questionnaire completed by Pharmacists in the different Sectors of Pharmacy Practice.

	Community		Hospital		Industry		Other		Max Score
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
<b>Work Experience</b>	15	12.3	26	17.2	34	11.8	33	7.6	14 x 4 = 56
<b>Income</b>	-5	17	1	16.1	4	12.9	7	15.8	8 x 4 = 32
<b>Patient Interaction</b>	9	10.6	11	11.9	-	-	10	17.2	8 x 4 = 32
<b>Promotion</b>	-1	16.7	1	10.3	10	15.9	3	16.0	8 x 4 = 32
<b>Co-workers</b>	13	15.4	15	16.5	18	9.76	17	16.9	10 x 4 = 40
<b>Supervision</b>	9	10.3	14	12.4	12	15.6	17	4.9	8 x 4 = 32
<b>Total</b>	34	50.5	66	46.5	74	53.1	83	47.0	56 x 4 = 224

The last column represents the amount of questions asked in the Job Satisfaction questionnaire multiplied by the maximum score per question. This score could have been either positive or negative (indicating pharmacist is unsatisfied with that particular facet).

From the table above one could see that all the scores for the different facets of job satisfaction in the different sectors of Pharmacy Practice, with the exception of two, i.e. Income and Promotion in the Community sector, were positive. This means there is a tendency towards job satisfaction. The Work Experience facet of job satisfaction had the highest scores in the Industry and Other sector of Pharmacy Practice. For Income the highest score was in the Other sector of Pharmacy Practice with a negative score in the Community sector of Pharmacy Practice. For Patient Interaction the highest score was in the Hospital sector of Pharmacy Practice with the lowest in the Community sector. The pharmacists in the Industrial sector, by choice, did not complete this facet of job satisfaction because it was not relevant to them. The highest score in the Promotion facet of job satisfaction was in the Industry sector. All the Other sectors had a very low score in this facet with a negative score in the Community sector for Pharmacy Practice. In all the sectors of Pharmacy Practice the Co-workers facet had high positive scores. The same counts for the Supervision facet of job satisfaction with the highest score in the Other sector of Pharmacy Practice. The total scores for job satisfaction were the highest for the Other sector with Industry sector following closely.

Table 3.2.2

The Count of People in the **Community sector** that were either Very Satisfied, Slightly Satisfied, Slightly Unsatisfied or Very Unsatisfied in the different Facets of Job Satisfaction.

Level of Satisfaction	Work Experience		Income		Patient Interaction		Promotion		Co-workers		Supervision	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Very Satisfied</b>	7	46.7	3	20	2	13.3	5	33.3	6	42.9	5	55.6
<b>Slightly Satisfied</b>	7	46.7	4	26.7	8	53.3	2	13.3	5	35.7	1	11.1
<b>Slightly Unsatisfied</b>	1	6.6	3	20	3	20	3	20	3	21.4	3	33.3
<b>Very Unsatisfied</b>	0	0	5	33.3	2	13.4	5	33.4	0	0	0	0
<b>Total</b>	15	100	15	100	15	100	15	100	14	100	9	100

From the Table above one could deduce that most Pharmacists in the Community Sector were either slightly satisfied or very satisfied in their Work Experience, whereas most of them were very unsatisfied with their Income. Most pharmacists in the Community sector that responded were slightly satisfied with their Patient Interaction. Most of the pharmacists were very satisfied with their Promotion, Co-workers and Supervision.



Table 3.2.3

The Count of Pharmacists in the Hospital Sector that were either Very Satisfied, Slightly Satisfied, Slightly Unsatisfied and Very Unsatisfied in die different Facets of Job Satisfaction.

	Work Experience		Income		Patient Interaction		Promotion		Co-workers		Supervision	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Very Satisfied</b>	17	62.9	9	33.3	7	31.8	6	22.2	16	59.3	12	48
<b>Slightly Satisfied</b>	3	11.1	4	14.8	8	36.4	8	29.6	5	18.5	8	21
<b>Slightly Unsatisfied</b>	5	18.5	11	40.7	7	31.8	10	37.0	5	18.5	5	20
<b>Very Unsatisfied</b>	2	7.4	3	11.1	0	0	3	11.1	1	3.7	0	0
<b>Total</b>	27	100	27	100	22	100	27	100	27	100	25	100

Most pharmacists in the Hospital sector that responded were very satisfied with their Work Experience, but slightly unsatisfied with their Income. Most of these pharmacists were slightly satisfied in their Patient Interaction, slightly unsatisfied in the Promotion and very satisfied in the Co-workers and Supervision facets of Job Satisfaction.

Table 3.2.4

The Count of People in the **Industrial Sector** that were either Very Satisfied, Slightly Satisfied, Slightly Unsatisfied and Very Unsatisfied in die Different Facets of Job Satisfaction.

	Work Experience		Income		Patient Interaction		Promotion		Co-workers		Supervision	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Very Satisfied</b>	9	75	5	42.7	-		6	50	7	58.3	5	42.7
<b>Slightly Satisfied</b>	1	8.3	1	8.3	-		2	16.7	4	33.3	2	16.6
<b>Slightly Unsatisfied</b>	2	16.6	6	50	-		3	25			5	42.7
<b>Very Unsatisfied</b>	0	0	0	0	-		1	8.3	1	8.3	0	0
<b>Total</b>	12	100	12	100	-		12	100	12	100	12	100

Pharmacists from the Industrial sector that responded were very satisfied with their Work Experience but slightly unsatisfied with their Income. No Patient Interaction is involved. Most of these pharmacists were very satisfied with their Promotion and Co-workers. There was an equal count of people that were either very satisfied or slightly unsatisfied with their Supervision.

Table 3.2.5

**The Count of Pharmacists in Sectors Other than the Community, Hospital or**

**Industrial Sector** that were either Very Satisfied, Slightly Satisfied, Slightly Unsatisfied and Very Unsatisfied in die Different Facets of Job Satisfaction.

	Work Experience		Income		Patient Interaction		Promotion		Co-workers		Supervision	
	No	%	No	%	No	%	No	%	No	%	No	%
<b>Very Satisfied</b>	14	93.3%	4	26.7%	6	75	1	6.7	10	66.7	9	60
<b>Slightly Satisfied</b>	0	0	5	33.3	0	0	3	20	2	13.3	5	33.3
<b>Slightly Unsatisfied</b>	0	0	3	20	2	25	6	40	2	13.3	0	0
<b>Very Unsatisfied</b>	1	6.7	3	20	0	0	5	33.3	1	6.7	1	6.7
<b>Total</b>	15	100	15	100	8	100	15	100	15	100	15	100

Most of the pharmacists from sectors other than the Community, Hospital or Industrial sector were very satisfied with their Work Experience and slightly satisfied with their Income. Most of these pharmacists were very satisfied with their Patient Interaction but slightly unsatisfied in their Promotion. They were also very satisfied in their Co-workers and Supervision.

**3.3 Correlations of the Group measurements of the Keirsey Bates Temperament Sorter and that of the Job Satisfaction Questionnaire.**

Table 3.3.1

The Spearman Correlation Matrix of the Female Group Measurements: Year and Extraversion, Sensing, Thinking and Judging.

<b>Females</b>	<b>Year</b>	<b>E</b>	<b>S</b>	<b>T</b>	<b>J</b>
<b>Year</b>	1 0 321				
<b>E</b>	0.12 0.0350 312	1 0 312			
<b>S</b>	0.04 0.5228 311	-0.13 0.0235 310	1 0 311		
<b>T</b>	0.02 0.6751 310	-0.07 0.2212 309	0.30 0.0000 309	1 0 310	
<b>J</b>	0.10 0.0810 313	-0.16 0.0049 312	0.31 0.0000 311	0.21 0.0002 310	1 0 313

The first entry referred to the Spearman Correlation followed by the significance level (p value) and the total number of valid pairs (n) from which the correlation was calculated.

It was of importance whether the calendar year was related to the four personality traits recorded over the years. Only weak relationships occurred between year and the Extraversion and Judging scale (0.12 and 0.10). Due to the extensive sample size that caused a higher statistical power to detect the relationships present, it was decided to emphasise only the correlations that were more significant than 0.009. The first relationship indicated that the mean of the Extraversion score increased slightly as the calendar year increased. The relationship between the Judging score and the calendar year was still weaker. The Judging score showed an exceptionally strong positive relationship with Extraversion, Sensing and Thinking. The weakest relationship of this group was between Judging and Extraversion (-0.16). Thinking had strong positive relationships with Sensing (0.30) and Judging (0.21). Sensing and Thinking also had a strong positive relationship of 0.30.



Table 3.3.2

The Spearman Correlation Matrix of the Group Measurements taken on the 30 Female

Respondents with respect to their Job Satisfaction.

Females	Work Experience	Income	Patient Interaction	Promotion	Co-workers	Supervision	Total
<b>Work Experience</b>	1 0 30						
<b>Income</b>	0.29 0.1301 29	1 0 29					
<b>Patient Interaction</b>	0.37 0.1456 17	-0.1131 0.665592 17	1.00 0.0000 17				
<b>Promotion</b>	0.33 0.0788 30	0.508488 0.004854 29	-0.07 0.8014 17	1 0 30			
<b>Co-workers</b>	0.68 0.0000 30	0.341909 0.069462 29	0.53 0.0281 17	0.50 0.0053 30	1 0 30		
<b>Supervision</b>	0.71 0.0000 28	0.374597 0.054214 27	0.03 0.9088 16	0.50 0.0068 28	0.58 0.0014 28	1 0 28	
<b>Total</b>	0.83 0.0000 30	0.59 0.0008 29	0.58 0.0140 17	0.64 0.0002 30	0.85 0.0000 30	0.74 0.0000 28	1 0 28

The first entry referred to the Spearman Correlation followed by the significance level (p value) and the total number of valid pairs (n) from which the correlation was calculated.

The total score of Job Satisfaction was calculated by summing the six specific scales and most of these were positively related to the Total. Most of the mutual correlations between the six Job Satisfaction scales were positively related showing that they measure the same virtual quantity represented by Job Satisfaction. Co-workers, Supervision and Work-experience displayed the strongest mutual correlations with the six Job Satisfaction scales.



Table 3.3.3

The Spearman Correlation Matrix of the Female Group Measurements taken on the 30

Female Respondents with respect to their Job Satisfaction.

<b>Females</b>	<b>Work Experience</b>	<b>Income</b>	<b>Patient Interaction</b>	<b>Promotion</b>	<b>Co-workers</b>	<b>Supervision</b>
<b>Year</b>	0.15 0.4334 30	0.25 0.1961 29	-0.08 0.7645 17	-0.07 0.7295 30	0.07 0.7111 30	0.00 0.9978 28
<b>E</b>	0.24 0.2840 22	0.01 0.9819 21	0.28 0.3368 14	-0.20 0.3839 22	0.35 0.1082 22	-0.08 0.7466 20
<b>S</b>	0.41 0.0561 22	0.11 0.6238 21	0.44 0.1113 14	-0.21 0.3377 22	0.38 0.0839 22	0.34 0.1376 20
<b>T</b>	-0.07 0.7585 22	-0.33 0.1426 21	-0.11 0.7202 14	-0.41 0.0604 22	-0.25 0.2717 22	0.07 0.7769 20
<b>J</b>	-0.12 0.5913 22	0.26 0.2609 21	-0.51 0.0655 14	-0.06 0.7836 22	-0.15 0.5173 22	0.13 0.5856 20

The first entry referred to the Spearman Correlation followed by the significance level (p value) and the total number of valid pairs (n) from which the correlation was calculated.

Due to the sampling procedure that was followed, it was possible that some of the significant relationships found in the above matrix could be due to other reasons than the

measured scales. People Interaction displayed a strong negative correlation with Judging (-0.51) and Promotion also had a negative correlation with Thinking (-0.41). Work Experience had a strong positive correlation with Sensing (0.41).

Table 3.3.4

The Spearman Correlation Matrix of the Male Group Measurements: Year and Extraversion, Sensing, Thinking and Judging.

<b>Males</b>	<b>Year</b>	<b>E</b>	<b>S</b>	<b>T</b>	<b>J</b>
<b>Year</b>	1 0 281				
<b>E</b>	0.08 0.1623 274	1 0 274			
<b>S</b>	0.03 0.6609 274	-0.08 0.1874 274	1 0 274		
<b>T</b>	0.10 0.0851 274	0.09 0.1359 274	0.26 0.0000 274	1 0 274	
<b>J</b>	0.04 0.5312 272	-0.11 0.0662 272	0.35 0.0000 272	0.25 0.0000 272	1 0 272

The first entry referred to the Spearman Correlation followed by the significance level

(p value) and the total number of valid pairs (n) from which the correlation was calculated.

There were only a few inter-relationships between the four personal traits. Judging displayed positive relationships with Sensing (0.35) and Thinking (0.25). Furthermore, there was also a positive relationship between Thinking and Sensing (0.26).



Table 3.3.5

The Spearman Correlation Matrix of the Group Measurements taken on the 39 male respondents with respect to their Job Satisfaction.

Males	Work Experience	Income	Patient Interaction	Promotion	Co-workers	Supervision	Total
<b>Work Experience</b>	1 0 39						
<b>Income</b>	0.41 0.0090 39	1 0 39					
<b>Patient Interaction</b>	0.04 0.8181 29	0.29 0.1334 29	1.00  0 29				
<b>Promotion</b>	0.36 0.0232 39	0.58 0.0001 39	0.54 0.0025 29	1 0 39			
<b>Co-workers</b>	0.39 0.0146 38	0.23 0.1706 38	0.11 0.5936 28	0.17 0.2940 38	1 0 38		
<b>Supervision</b>	0.27 0.1431 31	0.21 0.2605 31	0.11 0.6214 23	0.19 0.3045 31	0.15 0.4068 31	1 0 31	
<b>Total</b>	0.65 0.0000 39	0.78 0.0000 39	0.51 0.0043 29	0.73 0.0000 39	0.50 0.0013 38	0.45 0.0119 31	1 0 31

The first entry referred to the Spearman Correlation followed by the significance level (p value) and the total number of valid pairs (n) from which the correlation was calculated.

As was the case with the female part of the sample the male's Job Satisfaction measurements also displayed strong positive correlations with the Total. Promotion was positively related with Work Experience (0.36), Income (0.58) and Personal Interaction (0.54). Work Experience had a positive relationship with Income (0.41) and Co-workers (0.39).



Table 3.3.6

The Spearman Correlation Matrix of the Group Measurements taken on the 39 Male respondents with respect to their Job Satisfaction.

<b>Males</b>	<b>Work Experience</b>	<b>Income</b>	<b>Patient Interaction</b>	<b>Promotion</b>	<b>Co-workers</b>	<b>Supervision</b>
<b>Year</b>	-0.09 0.5953 39	-0.07 0.6800 39	0.01 0.9566 29	0.00 0.9907 39	0.02 0.9200 38	0.05 0.7780 31
<b>E</b>	-0.44 0.0125 32	-0.13 0.4737 32	-0.01 0.9526 24	-0.10 0.5874 32	-0.07 0.6889 31	-0.16 0.4362 26
<b>S</b>	0.00 0.9880 32	-0.10 0.5919 32	0.15 0.4750 24	0.07 0.7053 32	0.12 0.5073 31	0.11 0.5994 26
<b>T</b>	-0.28 0.1160 32	-0.36 0.0431 32	0.23 0.2760 24	0.00 0.9892 32	0.05 0.7853 31	0.17 0.4194 26
<b>J</b>	-0.14 0.4529 31	-0.37 0.0414 31	0.10 0.6661 23	0.08 0.6713 31	-0.09 0.6297 30	-0.27 0.1990 25

The first entry referred to the Spearman Correlation followed by the significance level (p value) and the total number of valid pairs (n) from which the correlation was calculated.

Due to the sampling procedure followed it was possible that some of the significant relationships found in the above matrix could be due to other reasons than the measured scales. Work Experience displayed a strong negative correlation with Extraversion (-0.44) and Income also had a negative correlation with Thinking (-0.36). Income had a negative correlation with Judging (-0.37).



Table 3.3.7

The Descriptive Statistics of the Personality Temperament Measurements taken on the 69

Respondents with respect to their Job Satisfaction.

	<b>Work Experience</b>	<b>Income</b>	<b>Patient Interaction</b>	<b>Promotion</b>	<b>Co- workers</b>	<b>Super- vision</b>	<b>Total</b>
<b><u>SJ</u></b>							
<b>Count</b>	27	26	18	27	26	20	27
<b>Average</b>	25.85	-3.54	9.56	-2.44	16.15	12.80	51.40
<b>Median</b>	24	-6	11	-4	16	17	44
<b>SD</b>	18.14	17.85	11.93	14.74	17.35	13.88	53.38
<b><u>NF</u></b>							
<b>Count</b>	10	10	5	10	10	10	10
<b>Average</b>	19.8	-0.4	-0.4	2.4	13.8	13.4	48.8
<b>Median</b>	22	-3	-4	-1	13	13	61
<b>SD</b>	14.83	13.49	18.24	16.49	12.73	12.79	44.33
<b><u>NT</u></b>							
<b>Count</b>	3	3	3	3	3	3	3
<b>Average</b>	20.00	4.67	16.67	10.00	20.67	15.33	87.33
<b>Median</b>	26	10	12	16	18	18	112
<b>SD</b>	12.17	16.65	11.72	21.63	18.15	14.19	70.32
<b><u>SP</u></b>							
<b>Count</b>	3	3	3	3	3	3	3
<b>Average</b>	40	8	8	4	21.33	26.67	108
<b>Median</b>	42	6	6	4	32	30	92
<b>SD</b>	7.21	15.10	9.16	6.00	18.47	7.57	48.04

The first entry refers to the count of pharmacists that completed that specific facet of job satisfaction of the job satisfaction questionnaire. The total therefore refers to the total number of pharmacists that completed the job satisfaction questionnaire. The second, third and fourth entries refer to the average, median and standard deviation of the scores of the different facets of job satisfaction. Because the total score is representative of total job satisfaction, the sum of the facets of job satisfaction is indicated in the total column.

The SP and NT category groups were exceptionally small and are therefore not discussed. The count of the SJ and NF category groups were respectively 27 and 10. The difference between the medians of these two groups on the Work Experience facet of job satisfaction was 2 (SJ = 24, NF = 22). A negative factor in these comparisons is the extensive standard deviation between 14 and 18 for these two groups. Both these two groups had a negative median on the Income facet of job satisfaction (SP = -6, NF = -3). The SP group had a positive median (11) on their Patient Interactions whereas the NF group had a negative median (-4) on this facet of job satisfaction. Both these groups had a negative median on the Promotion facet of job satisfaction and a positive median on the Co-worker and Supervision facet of job satisfaction. In the total count for the facets of job satisfaction, the SP group had a higher count than that of the NF group.

## CHAPTER FOUR

### DISCUSSION

The primary purpose of the study was to investigate the relationship between Personality Types, as measured by the Keirsey Bates Temperament Sorter, choice of practice setting and job satisfaction of pharmacists who graduated from the University of the Western Cape over the period 1990-2005. The Job Satisfaction Questionnaire measured Job satisfaction, which was a modified version of the Job Descriptive Index (Smith, Kendall & Hulin, 1969). The modification was done in order to create a questionnaire specific for the pharmacy environment. Six facets of job satisfaction were measured namely Work Experience, Income, Patient Interaction, Promotion Co-Workers and Supervision.



The purpose of this chapter is to discuss the findings as they pertained to the purpose of the study. The research questions will guide the discussions of the results. Figures of the data presented in the tables in Chapter 3 are added in this chapter to facilitate the discussion.

## **4.1 Personality Types**

### **4.1.1 Pharmacy Students who studied at UWC from 1990 to 2005**

#### **4.1.1.1 What were the dominant Personality Preferences of the pharmacy student study group?**

The Keirsey Bates Temperament Sorter was the instrument used to measure the Personality Type Preferences. It is based on work done by Jung (1923) and is a 70-item, forced choice questionnaire, designed to elicit an individual's four basic Personality Preferences namely Extraversion (E) – Introversion (I), Sensing (S) – Intuition (N), Thinking (T) – Feeling (F), and Judging (J) – Perceiving (P). The pharmacy student study group completed this instrument. The data were analysed and calculated on the four bipolar constructs. It is important to know that the Extraversion scale is complementary to the Introversion scale, the Sensing scale to Intuition, the Thinking scale to Feeling and the Judging scale to the Perception scale.

In Table 3.1.1.1 the Personality Preferences were arranged in such a fashion that the two complementary measurements are in the same block, e.g. Extraversion and Introversion. The midpoint for the pair Extraversion – Introversion scale was 5 and the pairs Sensing - Intuition, Thinking - Feeling and Judging - Perception, which had a maximum score of 20, had a midpoint of 10.

The results showed that the pharmacy students had a tendency towards the Extraversion, Sensing, and Feeling and Judging Personality Type Preferences. Three out of the four Personality Preferences were distributed near to the midpoint of the scale. However, the means for Judging and Perceiving were 14.19 and 5.81 respectively. The sample respondents therefore were much stronger Judging in nature than Perceiving.

Rothman *et al.* (2000) previously found that Sensing Thinking and Judging were the most prevalent Personality Type Preferences at a Pharmacy School in South Africa. Their results on Sensing and Judgment were therefore confirmed by our research. On the other hand, we found that the Feeling Personality Type were more prevalent than the Thinking Personality Type Preference. This difference in results can be explained by the fact that the median of Thinking-Feeling Personality Type Preference was near to the midpoint of the scale.



In this study the Judging score was especially high. This result is not unexpected as Judgers are people who prefer a planned and organized approach to life as well as an orderly and structured environment. The pharmacy can provide an environment to the Judger where he can feel safe and at ease. By completing the KBTS the pharmacist can be advised in this regard.

#### **4.1.1.2 Did the Personality Type Preferences of the pharmacy student study group differ from that of the general population?**

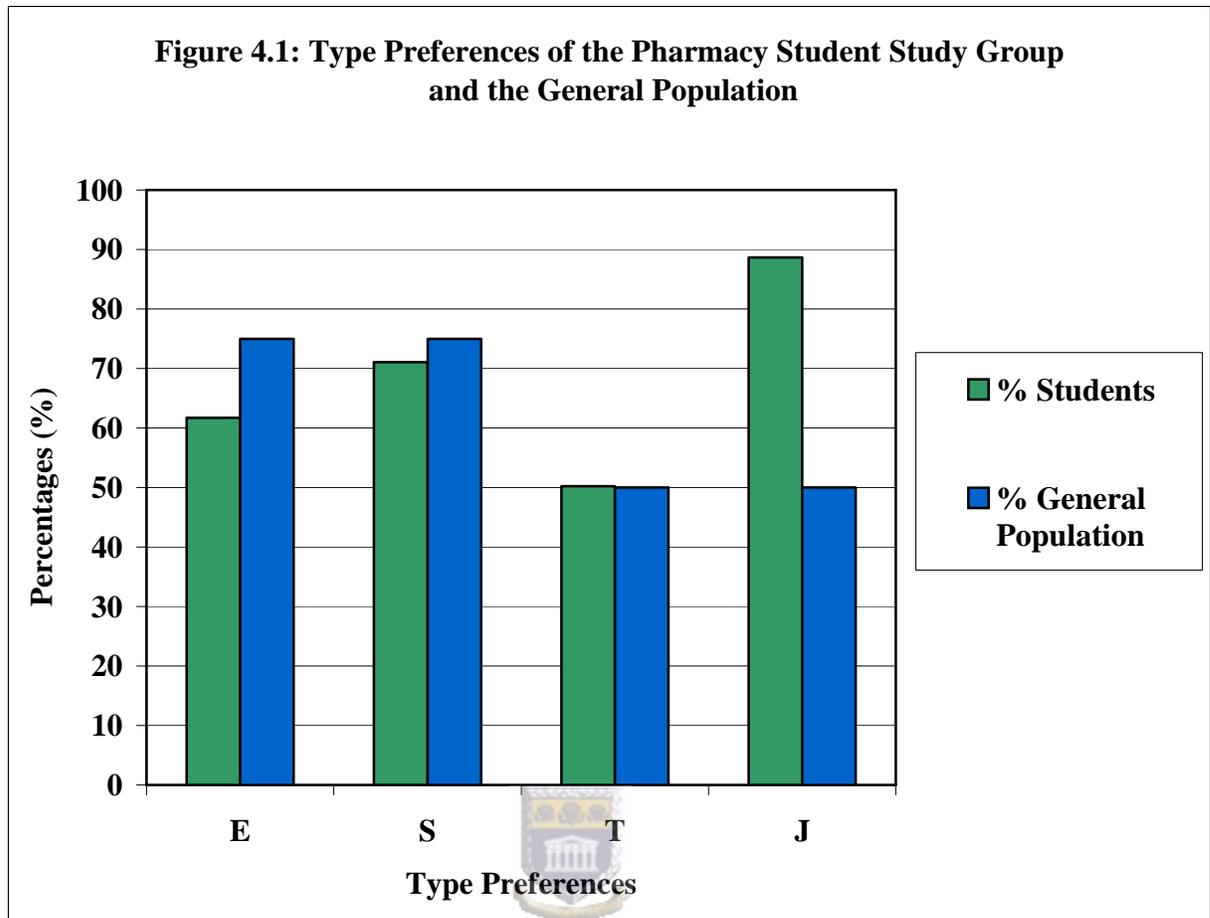
Keirsey and Bates (1984) found that seventy-five percent of the general population report a preference to Extraversion (E) as opposed to Introversion (I) and Sensing (S) opposed Intuition (N), while there was an even distribution between the Thinkers (T) and Feelers (F) and the Judgers (J) and Perceivers (P). When the data from the completed Keirsey Bates Temperament Sorter questionnaires were analysed, it was found that 61.7% of the pharmacy student study group had a preference to Extraversion. That represents a difference of 13.3 % between the general population and that of the pharmacy students. There were also 3.95% less Sensors in the pharmacy student population than in the general population. The difference between the general population (50%) and the pharmacy student study group (50.2%) with regards to the distribution of Thinkers and Feelers, were only 0.2%. On the other hand, the general population consists of 50% Judgers while the pharmacy student study group consists of 88.65% Judgers, giving a major difference of 38.65 % between the two groups.

Although most of the pharmacy students had a tendency towards Extraversion, there were still 13.3% less Extraversion Personality Type Preferences in the pharmacy student population than in the general population. The most noticeable difference however, is the difference between the percentage distribution of the Judgers in the general population and in the pharmacy student population (see Figure 4.1).

The percentage distribution of the Personality Preferences of the pharmacy student study group was also compared with the general population by means of the Chi –squared test. The value of the test statistic of Extraversion and Introversion were 55.5, and that of Judging and Perceiving were 327.1 with 1 degree of freedom (see Table 3.1.1.2). This means that there was a significant statistical difference between the distribution of these two Personality Preferences (Extraversion - Introversion and Judging - Perceiving) between the pharmacy student population and that of the general population ( $p < 0.001$ ): Extraversion were significantly less while Judging were significantly more.

The data therefore suggest that it is not a *random* sample of people that choose pharmacy as a career, but rather people with needs for a specific working environment. This has the implication that the Keirsey Bates Temperament Sorter can therefore be used as a tool to advise prospective students on the suitability of pharmacy as a career choice.





**4.1.1.3 Did the Personality Preferences of the pharmacy students change over the years since 1990?**

In tables 3.1.1.3 to 3.1.1.6 the frequency distribution of the Personality Type Preferences, i.e. Extraversion (E) – Introversion (I), Sensing (S) – Intuition (N), Thinking (T) - Feeling (F) and Judging (J) – Perception (P) were compared over the years. Not one of these distributions differed significantly over the years ( $p > 0.1$ ) and after eliminating the level scores (X), the results stayed the same.

It can therefore be concluded that the Personality Type Preferences of the pharmacy students is a constant phenomena and not time dependent. The pharmacy environment

has not changed since 1990 and the constancy in the Personality Type Preferences reflects that similar people are still attracted to pharmacy as a career, independent of the calendar year. It also confirms the validity of the results of this study as it shows that the results on the dominant Personality Type Preferences do not fluctuate from year to year.

#### **4.1.1.4 What were the Personality Temperaments of the pharmacy student study group from the period 1990 to 2005?**

Keirsey and Bates (1984) have described four mutually exclusive Personality Temperaments based on the Personality Type Preferences. The four temperament groups are Sensing-Judging (SJ), Sensing-Perceiving (SP), Intuitive-Thinking (NT) and Intuitive-Feeling (NF).



The data collected from the pharmacy student study group was analysed according to the Keirsey Bates Temperament Type groupings (see Table 3.1.1.7). Overall the largest represented Personality Temperament was that of Sensing - Judging (SJ = 71.7%) followed by the Intuitive - Feeling temperament (NF = 16.4%), Intuitive - Thinking (NT = 8.2%) and lastly the Sensing - Perception Personality Temperament (SP = 3.7%). It can therefore be deduced that nearly three-quarters of the pharmacy student population was of the SJ Temperament Type.

This is not a surprising finding as SJ's are people who need to be responsible to serve and to deal with the status quo. SJ's want to deal with facts, want to be efficient and will only react to changes if it makes sense to them. Pharmacy provides an environment where

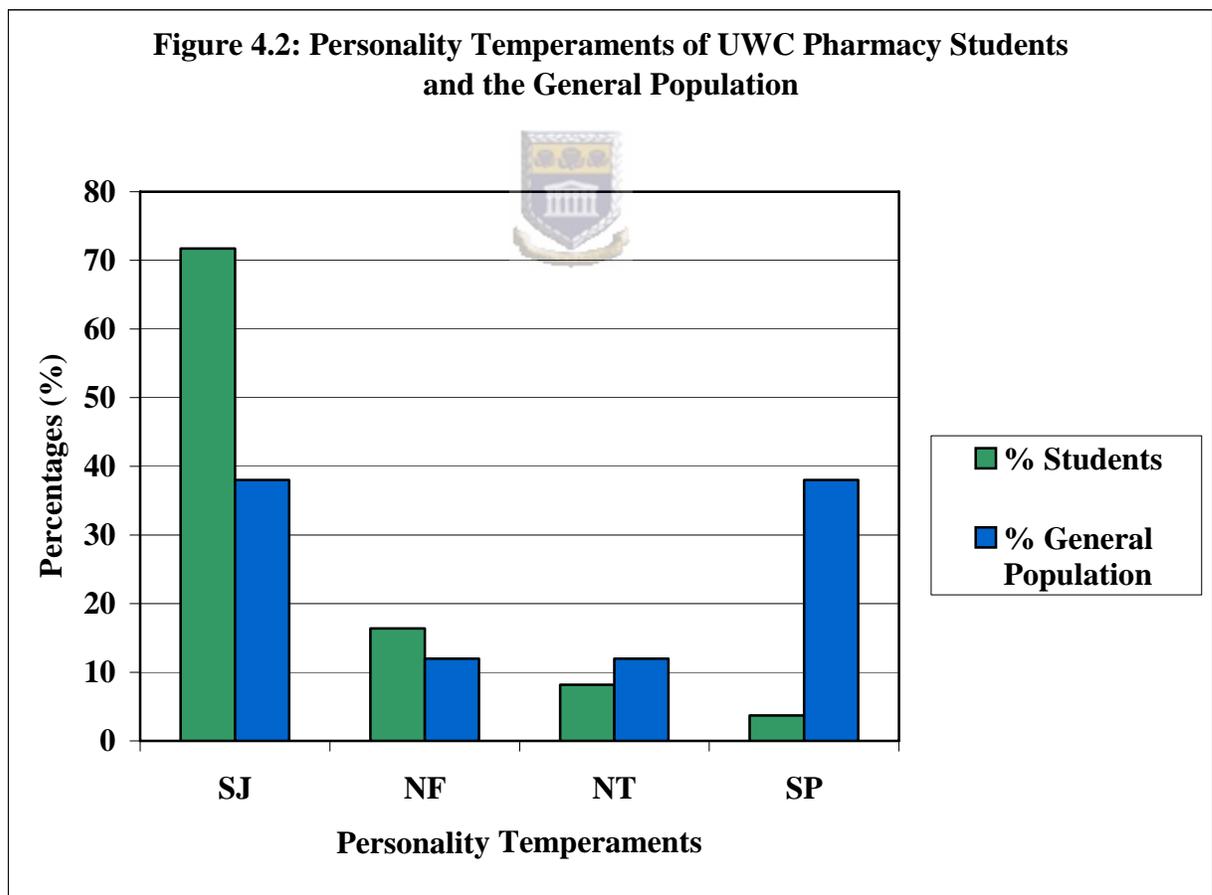
people with this Personality Temperament can feel comfortable. Again this confirms that pharmacists are not a *random* group of people but rather a self-selected group with specific personality characteristics. This has the implication that the Keirsey Bates Temperament Sorter can be used as a tool to advise prospective students on the suitability of pharmacy as a career.

#### **4.1.1.5 Did the Personality Temperaments of the pharmacy student study group differ from that of the general population?**

Previous research has shown that the SP and SJ Personality Temperaments each represents approximately 38% of the general population while the NT and NF Temperament Types each represents roughly 12% of the general population (Keirsey & Bates, 1984). When the Personality Temperaments of the pharmacy student study group were compared with the general population by means of Chi-squared test, the value of the Test statistic of the SJ Temperament was 146.0 and that of the SP Temperament was 151.2, with 3 degrees of freedom. This means that the distribution of Temperaments of both the SJ and the SP Temperaments of the pharmacy student study group differed significantly from that of the general population ( $p < 0.001$ ) (see Table 3.1.1.7): the SJ Personality Temperament were significantly more and the SP Personality Temperament were significantly less (see Figure 4.2).

People with the SJ Personality Temperament are people that love rules, regulations, duty and honour. They have a strong working ethic and will therefore adapt well in a pharmacy environment.

These results confirmed the previous findings i.e. the pharmacy student population is not a *random* sample of the general population but rather a group of self-selected persons, according to the structured environment of the pharmacy. The Keirsey Bates Temperament Sorter can therefore be used as a possible tool to advise prospective students on the suitability of pharmacy as a career. For example, a prospective student with SJ Personality Temperament will most probably be comfortable in the pharmacy environment.



#### **4.1.1.6 What were the Personality Temperament Types of the pharmacy student study group?**

The four bipolar constructs can be combined into a profile of which 16 possibilities exist, each with a unique pattern of preferences. These profiles are named Personality Temperament Types (Keirsey & Bates, 1984). The data collected from the pharmacy student study group through the Keirsey Bates Temperament Sorter were analysed and the Personality Temperament Types determined according to Keirsey and Bates (1984). From Table 3.1.1.8 it can be deduced that the Temperament Types of the pharmacy student study group with the highest count were that of ESTJ (108), ESFJ (59), ISTJ (57) and ISFJ (52). Although there are 16 Personality Temperament Types, the ESTJ group in the pharmacy student population made out 27.8%, almost one-third of the total student population.



According to Keirsey and Bates (1984) the ESTJ Personality Temperament Type consists of people who are outstanding at organizing orderly procedures, detailing rules and are very responsible. They are realistic, matter-of-fact and will get the job done right. The result of the study is therefore not unexpected and it is easy to see why an ESTJ Personality Temperament Type will be comfortable in the pharmacy environment and therefore more likely to choose pharmacy as a career.

As previously stated, Hardigan and Cohen (2003) found in his studies that the most dominant Personality Temperament Types of pharmacy students are ISTJ ( $p < 0.05$ ), ISFJ ( $p < 0.1$ ) ESTJ and ESFJ. When the result of this research project was compared with that

previously done by Hardigan and Cohen (2003), it was found that the only difference between the two datasets is in the dominance of Extraversion and Introversion. Except for this difference, the results of these research projects confirm each other. The reason for this difference in the dominance of Extraversion or Introversion is unclear. In this study the distributions did not differ significantly over the years ( $p>0.1$ ) indicating reliability of the results. Further research therefore needs to be done to investigate the inconsistency between the two studies.

#### **4.1.1.7 Did the Personality Temperament Types of the pharmacy student study group differ from that of the general population?**

The distribution of the Personality Temperament Types in the general population was determined previously (Wicklein, 1995). From Table 3.1.1.8 it can be deduced that the distribution of Personality Temperament Types of the general population is not the same as that of the pharmacy student study group. In the general population the ESTJ Temperament Type make up 13% of the total population, leaving a difference of 14.8% between the pharmacy student population (27.8%) and the general population, when compared on a linear scale. There were therefore 14.8% more ESTJ in the pharmacy student study group than in the general population.

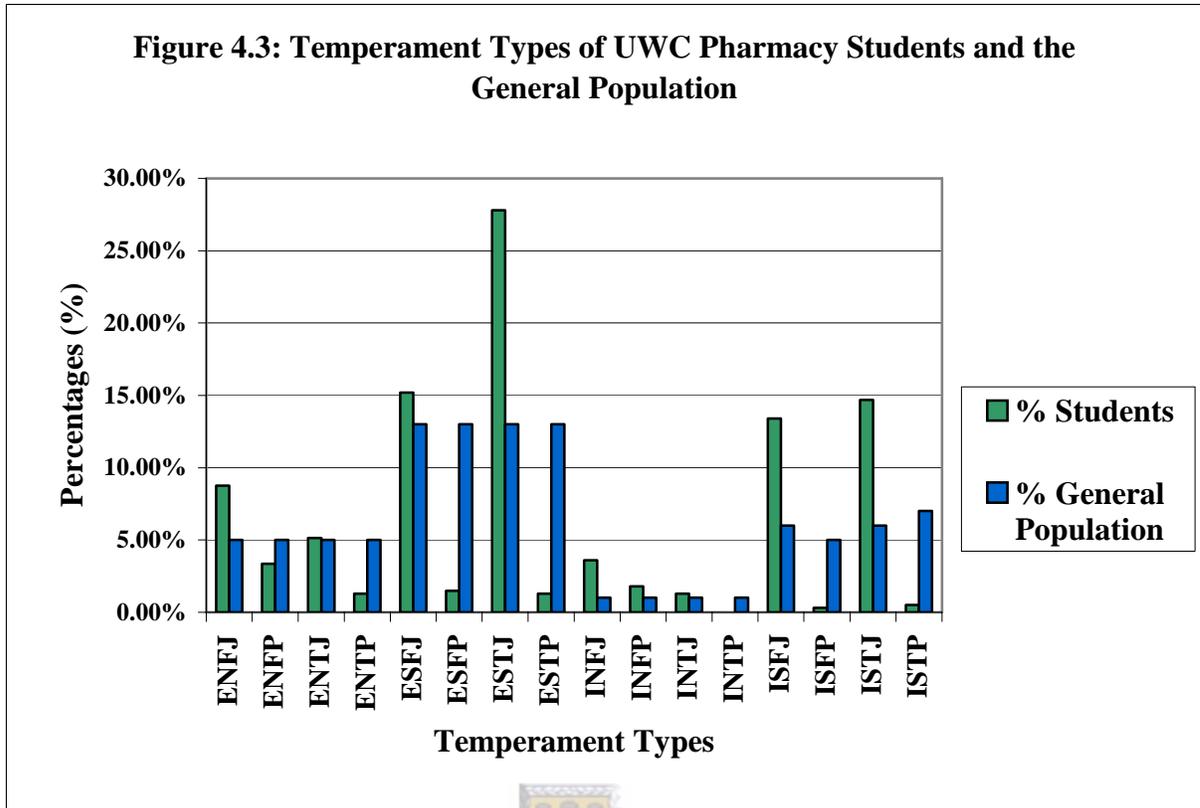
Other important differences were the following: The proportion of the ISFJ (7.4% difference) and ISTJ (8.7% difference) Temperament Types were more prevalent in the pharmacy student study group than in the general population, while the ESFP (11.5%

difference), ESTP (11.71% difference), and ISTP (6.5% difference) Temperament Types were less prevalent than in the general population (see Figure 4.3).

The distribution of the Personality Temperament Types of the pharmacy student study group and that of the general population were also compared by means of the Chi-squared test. The values of the Test statistic were among others: ESFP – 39.2, ESTJ – 65.7, ESTP – 40.9, ISFJ – 35.4, ISTJ – 48.8 with 15 degrees of freedom. This means that the distribution of the INFJ Temperament Type differed on the 5% level, ISFJ differed on the 1% level whereas the ESFP, ESTJ, ESTP and ISTJ Temperament Types differed on the 0.1 % level. These results imply, once more, that the pharmacy student population is not a *random* sample of the general population, but rather a self-selected group of persons who choose pharmacy according to their personality's specific needs.



From this one can therefore conclude that the Personality Temperament Types, as described by Keirsey and Bates (1984), can be used as a tool to advise prospective students on the suitability of pharmacy as a career.



**4.1.1.8 Did the gender distribution of the pharmacy students change over the years?**

The gender distribution of the pharmacy student study group was set out in Table 3.1.1.9.

When the gender distribution of the pharmacy student study group was analysed by means of a Chi-squared Test, it was found that the value of the Test statistic was 31.4 with 14 degrees of freedom. This means that the proportion of females increased considerably over the study period ( $p < 0.005$ ).

It can therefore be concluded that the gender distribution of the pharmacy student study group has changed. It seems as if a decreasing number of males choose pharmacy as a career and one could only speculate on the reason for this. In 1959 Herzberg stated that one of the most important human needs is the physiological need for food and shelter,

which can be fulfilled by money (Finley, 1991). Traditionally males are the providers of their families. One of the possible reasons for the change of the gender distribution in the pharmacy student population could be due to the perception that, in the light of the changing pricing legislations, pharmacy is no longer a financial viable career. Further research needs to be done to investigate this phenomenon.

#### **4.1.2 Pharmacists who responded to the request to complete the Job Satisfaction Questionnaire.**

##### **4.1.2.1 What were the Personality Preferences of the respondents to the Job Satisfaction Questionnaire request?**

The Keirsey Bates Temperament Sorter data of the responders were selected from the original data set of the Personality Preferences of the UWC pharmacy student population.



This subset of data were analysed and calculated on the four bipolar constructs.

From Table 3.1.2.1 one can deduce that the Personality Type Preferences did not differ significantly between the pharmacy student study group and that of the respondents to the Job Satisfaction Questionnaire request ( $p > 0.1$  in all cases). The responders to the request to complete the Job Satisfaction Questionnaire also showed a tendency towards Extraversion, Sensing, Feeling and Judging. The percentage distribution of the Personality Type Preferences between the two groups therefore also only differed minimally (see Table 3.1.2.1 and Table 3.1.2.2).

The small difference indicated that for the personality traits measured, the impulse to participate was not driven by Personality Type. It could therefore be concluded that the Personality Types of the respondents was representative of the Personality Types of the larger pharmacy student group. The results deduced from the completed Job Satisfaction Questionnaires could therefore be seen as representative of the larger pharmacy student study group.

#### **4.1.2.2 What were the Personality Temperaments of the respondents of the Job Satisfaction Questionnaire?**

The two largest Personality Temperament groups of the respondents to the Job Satisfaction Questionnaire request were SJ (57.58%) and NF (21.2 %). There were only slight differences between the percentages of the Personality Temperaments of the pharmacy student study group and that of the respondents to the questionnaire (see Table 3.1.2.3).

These results confirmed the results from the previous section namely that the smaller group of respondents were representative of the larger group of pharmacy students (now practising pharmacists) and that self-selection to participate in the research on job satisfaction did not take place. It also confirmed that for the Personality Types measured, the impulse to participate was not driven by Personality Temperament.

#### **4.1.2.3 What were the Personality Temperament Types of the respondents of the Job Satisfaction Questionnaire request?**

The Personality Temperament Types of the respondents to the Job Satisfaction questionnaire were determined and compared with that of the pharmacy student study group. Only small differences were found between the two groups (see Table 3.1.2.4). This result confirmed the previous results namely that the group of pharmacists that responded to the request to complete the Job Satisfaction Questionnaire were representative of the larger pharmacy student study group and that Personality Temperament Type did not influence the impulse to participate in the research.

#### **4.1.2.4 What was the gender distribution of the respondents to the Job Satisfaction Questionnaire request?**



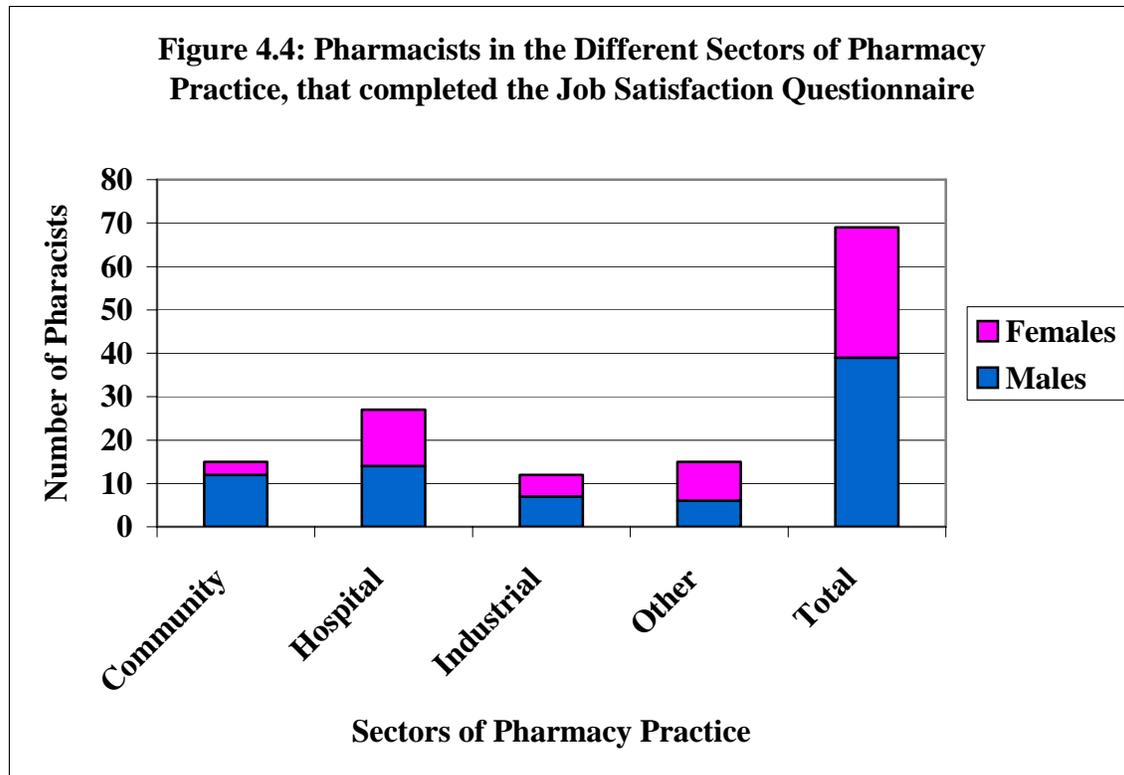
When the response rate to the request to complete the Job Satisfaction Questionnaire of the male and female groups were compared, it was found that the females responded to a lesser extent than the males (42% females and 58% males responded). These two rates differed on the 5% level of significance (see Table 3.1.2.5 and Table 3.1.2.6).

It could therefore be concluded that males responded better to the request to complete the Job Satisfaction Questionnaire. One could speculate that the reason for this phenomenon could be that the researcher was female and generally males respond better to females than females to females.

#### **4.1.2.5 What was the distribution of pharmacists that responded to the Job Satisfaction Questionnaire request within the different sectors of Pharmacy Practice?**

From Table 3.1.2.6 it can be deduced that most respondents to the Job Satisfaction Questionnaire request were from the Hospital sector. On the other hand, the smallest groups of respondents came from the Industrial sector of pharmacy practice (see Figure 4.4).

This result is not unexpected as the Industrial sector is the smallest sector of pharmacy practice in South Africa. According to Bester (2007) approximately 7% of all pharmacists in South Africa are currently actively working in the Industry. The question on why most of the respondents to the Job Satisfaction Questionnaire were from the Hospital sector is unanswered, as only 24% of the total pharmacists population in South Africa is actively working in the Hospital sector (Bester, 2007). One could speculate that most pharmacists who studied at the University of the Western Cape work in the Hospital sector but this speculation needs further investigation to be confirmed. Alternatively it is highly likely that the Hospital pharmacists who are salaried employees did not consider the completion of a questionnaire as intrusive or time-wasting as would those Community pharmacists who owned their pharmacies and thus generated their own income.



**4.1.2.6 Was there any difference in the response to the six facets of job satisfaction between the pharmacists from the different sectors of pharmacy practice?**

From Table 3.1.2.7 it can be seen that fifteen Community pharmacists completed the Job Satisfaction Questionnaire but only nine completed the Supervision facet of job satisfaction. Twelve pharmacists working in the Industry completed the questionnaire but only one completed the section on Patient Interaction. The same tendency was found in the response of the pharmacists from the Other sector of pharmacy practice because out of a total of fifteen pharmacists, only eight completed the Patient Interaction facet of job satisfaction.

To conclude, 40% of pharmacists working in the Community sector of pharmacy practice did not complete the Supervision facet of job satisfaction whereas only 8.3 % of the pharmacists from the Industry sector and 53% of pharmacists from the Other sector of pharmacy practice completed the section on the Patient Interaction facet of job satisfaction.

The reason that the pharmacists in the Community sector did not complete the Supervision facet of job satisfaction can be explained by the large number of pharmacists that own their own pharmacies and therefore have no supervision. Pharmacists that act as managers also do not have supervision. This phenomenon is therefore not unexpected.

The large percentage of pharmacists that did not complete the Patient Interaction facet of job satisfaction is also not unexpected, as these two groups of pharmacists, i.e. from the Industry and Other sector of pharmacy practice, only have minimal interaction with patients.

#### **4.1.2.7 Did the Personality Preferences of the pharmacists differ within the different sectors of pharmacy practice?**

From Table 3.1.2.8 one could deduce that the respondents to the Job Satisfaction Questionnaire from all the different sectors of pharmacy practice, showed a tendency towards the Extraversion (E) Personality Type Preference (also see Figure 4.5). This was an unexpected result as both Hardigan and Cohen (2003) and Rothman *et al.* (2000) found the Introversion Personality Preference to be dominant in the pharmacy

environment. One could only speculate on the reason for this inconsistency. This area therefore needs further investigation.

Looking at Table 3.1.2.9 and Figure 4.6 one can come to the conclusion that the respondents from both the Hospital and Community sector of pharmacy practice had a tendency towards the Sensing Personality Preference. Sensors are people who prefer to observe information by way of their senses. This finding is consistent with findings from other authors, e.g. Rothman *et al.* (2000) and Hardigan and Cohen (2003) and was therefore not unexpected.

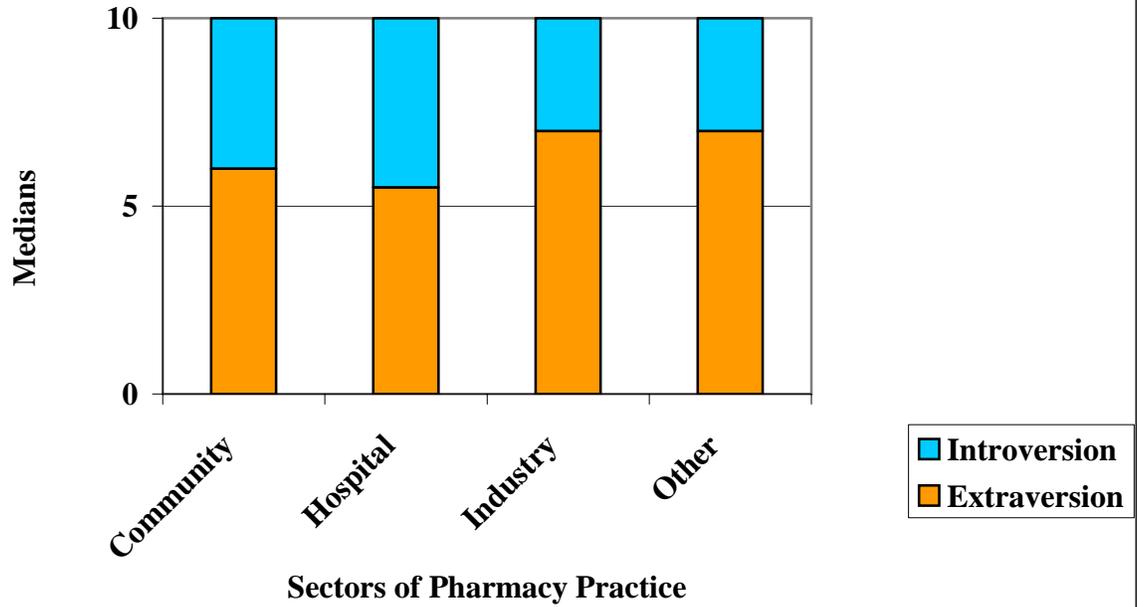
From Table 3.1.2.10 and Figure 4.7 it can be deduced that the respondents from the Hospital and Community sector of pharmacy practice showed a tendency towards the Thinking Personality Preferences. The respondents from the Industrial and Other sector of pharmacy practice showed a tendency towards the Feeling Personality Type Preference. The Thinking and Feeling Personality Preferences refer to the way in which people make judgments or decisions. The Thinkers are people who rely on a logical, objective decision-making process and Feelers are people that make judgments based on a system of subjective and personal values. The result therefore has the implication that people, who prefer a logical and objective decision-making process, prefer the hospital and Community environment. People who prefer to make judgments based on subjective and personal values prefer the Industrial and Other sector of pharmacy practice. This was a surprising result, which could also lead to further investigation. These results can also

be used as a possible tool to guide the pharmacy student in his or her choice of practice setting.

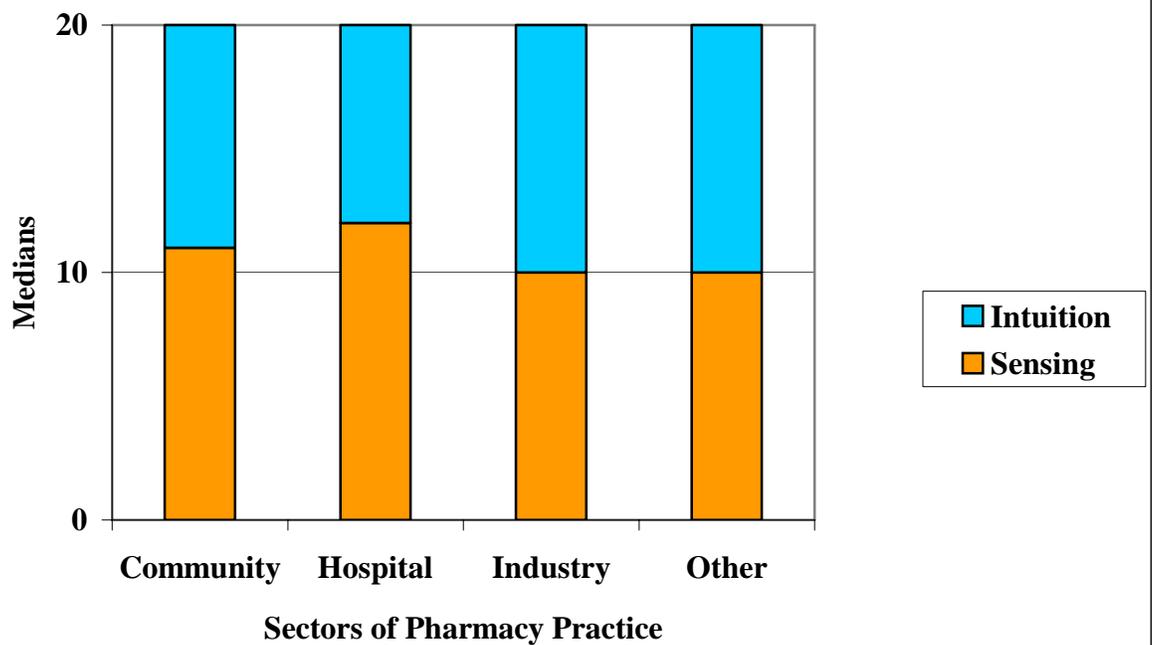
All the respondents from all the different sectors of pharmacy practice showed a tendency towards the Judging Personality Type Preference and high scores were calculated for this Personality Type Preference (see Table 3.1.2.11 and Figure 4.8). This finding is consistent with findings from other authors, e.g. Rothman *et al.* (2000) and Hardigan and Cohen (2003) and was therefore not unexpected. Judging people are people who prefer to live in a decisive, planned and orderly way, aiming to regulate and control events (Lawrence, 1987) and a Pharmacy can provide such an orderly and controllable environment.



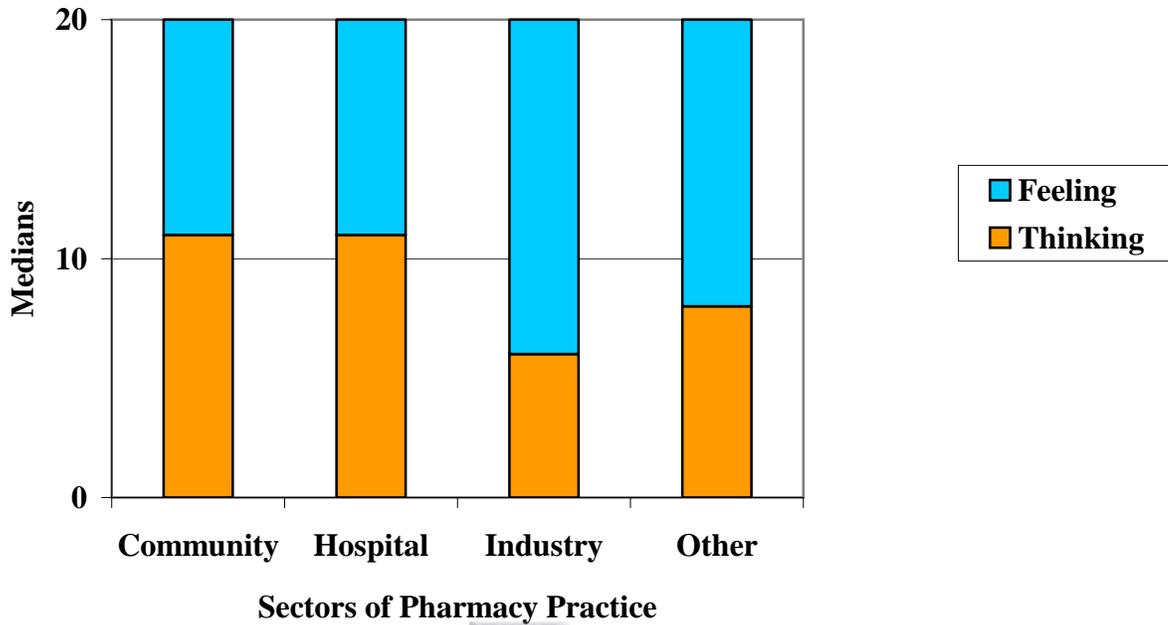
**Figure 4.5: Extraversion and Introversion Personality Preferences in the Different Sectors of Pharmacy Practice**



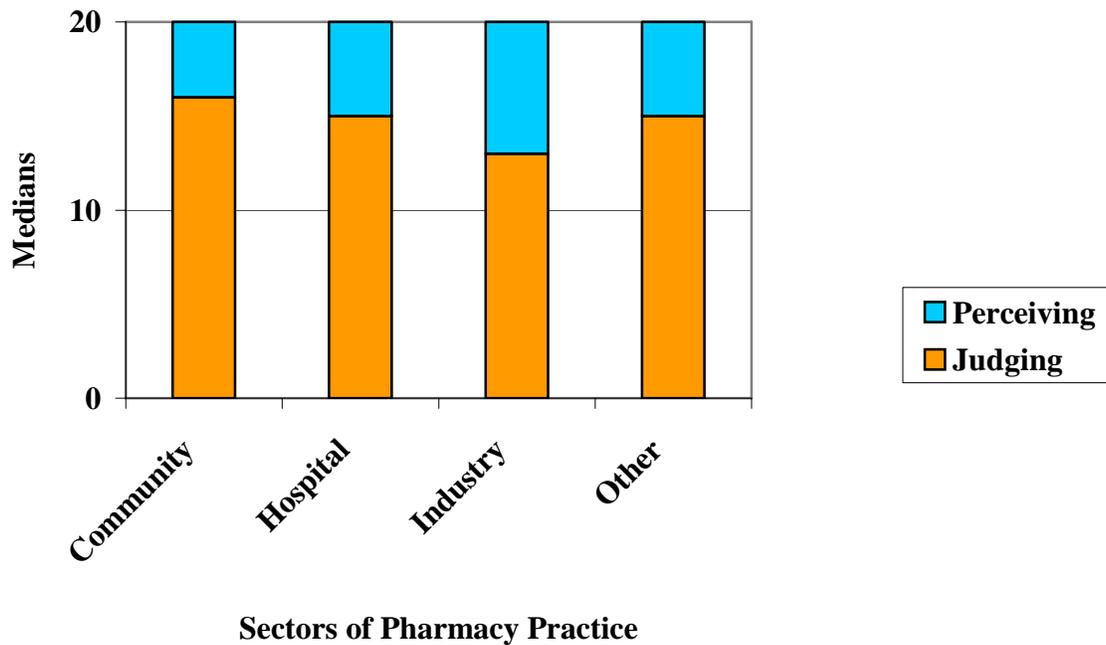
**Figure 4.6: Sensing and Intuition Personality Preferences in the Different Sectors of Pharmacy Practice**



**Figure 4.7: Thinking and Feeling Personality Preferences in the Different Sectors of Pharmacy Practice**



**Figure 4.8: Judging and Perceiving Personality Preferences in the Different Sectors of Pharmacy Practice**



## 4.2 Job Satisfaction

### 4.2.1 Did the responses to the different facets of job satisfaction differ within the different sectors of pharmacy practice?

Job satisfaction can be defined as a pleasurable, emotional state resulting from the appraisal of one's job achieving or facilitating one's values (Lock, 1969). Lock also claimed that job satisfaction was a function of what a person wanted from a job and what he perceives it is offering him.

The Job Descriptive Index was developed by Smith, Kendall and Hulin (1969) to measure job satisfaction. It measures five facets of job satisfaction and the total score is representative of total job satisfaction. The Job Descriptive Index was modified for the pharmacy environment, to create the Job Satisfaction Questionnaire.



From Table 3.2.1 and Figure 4.9 it can be deduced that all medians of the pharmacists in all the sectors of pharmacy practice responded positively to the Work Experience facet of job satisfaction. If the responses were ranked, the pharmacists from the Industry sector would have the highest score (34) whereas the pharmacists in the Community sector, would have the lowest score (15). The fact that the medians of all sectors were positive means that as a group they were satisfied with the Work Experience facet of job satisfaction (a negative mean would indicate dissatisfaction.) The pharmacists from the Industry sector had the highest score (were the most satisfied) and the pharmacists from the Community sector were the least satisfied. A possible explanation for this

phenomenon could be that the pharmacists in the Industry sector were affected to a lesser extent by the changing price legislations. This needs further investigation.

With regards to the Income facet of job satisfaction, the medians of all the sectors of pharmacy practice were positive except that of pharmacists working in the Community sector (-5). The median of the pharmacists in the Other sector of pharmacy practice were the highest namely 7. This result means that all the pharmacists from the different sectors of pharmacy practice were slightly satisfied with the Income facet of job satisfaction with the exception of the pharmacists from the Community sector. One could speculate that these pharmacists feel that their income is not enough considering the long hours they are working in the Community pharmacy, but this speculation needs further investigation for confirmation.



The response to the Patient Interaction facet of job satisfaction was also the highest for the Other group of pharmacy practice but all the medians were very close to each other. No significant differences were found amongst these groups. One could therefore deduce that all pharmacists that had Patient Interaction (the exception is the Industry sector of pharmacy practice) were satisfied with this facet of job satisfaction.

The median of the Promotion facet of job satisfaction for the pharmacists working in the Community was -1 with a positive 10 for the pharmacists working in the Industry. All the medians for the Co-worker facet of job satisfaction were between 13 and 18 and that of the Supervision facet of job satisfaction between 9 and 17. All the medians for these

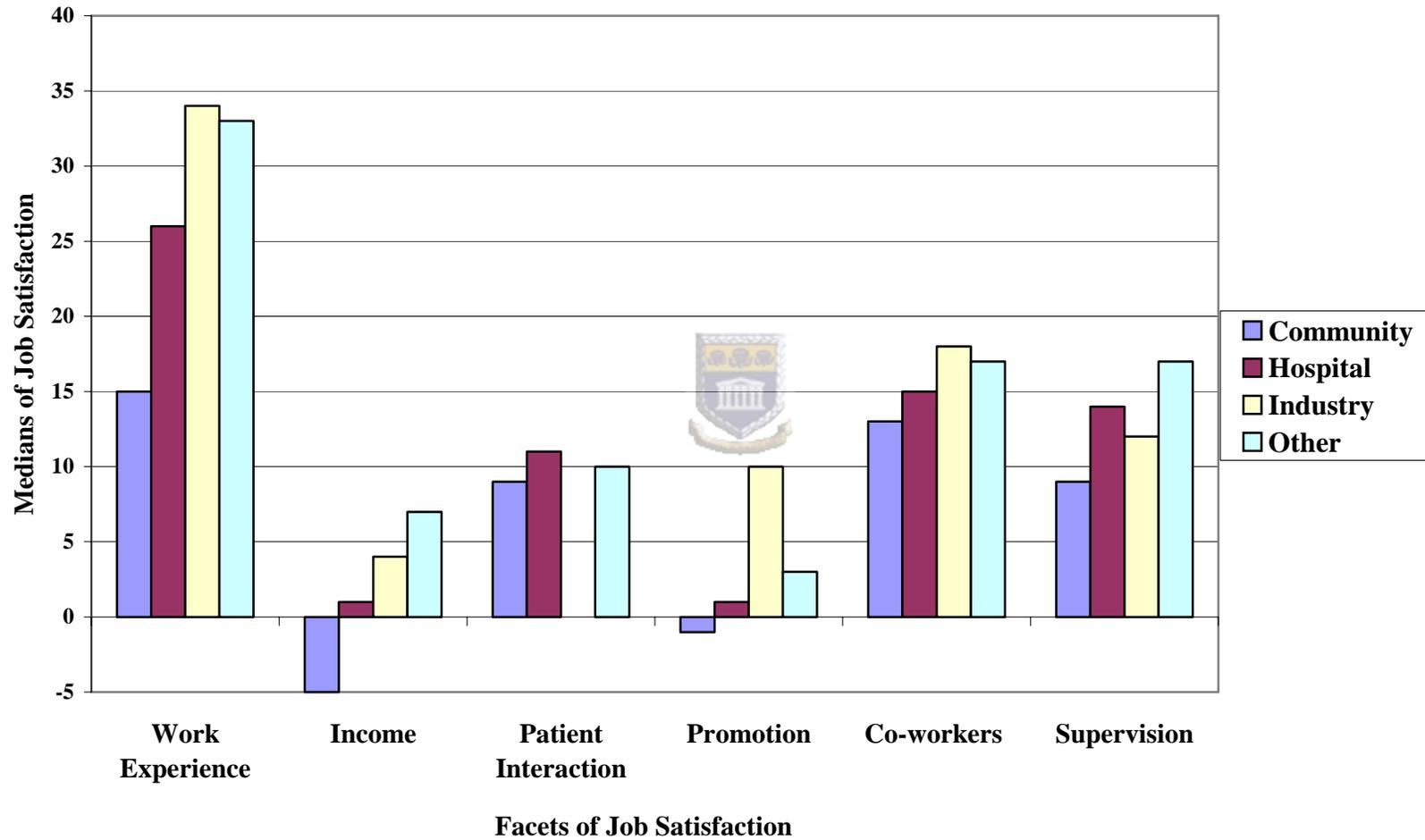
two facets were therefore positive. When the total of all the facets of job satisfaction were summed, they ranked between 34 and 83.

One could therefore conclude that with two exceptions (i.e. the Income and Promotion facet of job satisfaction in the Community pharmacy) these medians were positive for all the different facets of job satisfaction in all the different sectors of pharmacy practice.

This indicates job satisfaction to different degrees.



**Figure 4.9: Facets of Job Satisfaction in the different Sectors of Pharmacy Practice**



**4.2.2 What were the numbers of people in the different sectors, i.e. Hospital, Community, Industrial and Other, that were either very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied in the different facets of job satisfaction?**

An equal number of pharmacists in the Community sector of pharmacy practice (46.7%) were either very satisfied or slightly satisfied with their Work Experience (Table 3.2.2). This means that a total of 93.4% of the pharmacists from this group responded positively to this facet of job satisfaction and are therefore satisfied with this facet of job satisfaction. The same pharmacists' responses (from Community sector) to the Income facet of job satisfaction were more equally distributed between the four categories namely very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied. There is therefore no definite trend on their attitude to Income. On the other hand, most of the pharmacists from this sector were slightly satisfied (53.3%) with the Patient Interaction facet of job satisfaction. From this it could be deduced that for most of the pharmacists from this sector, the Patient Interaction facet of job satisfaction did not play a big role in their total experience of job satisfaction. Further studies are needed to investigate this phenomenon, especially since Patient Interaction forms a large part of their daily activities.

An equal proportion of these pharmacists (33.3%) were at the two far opposites of the scale when they responded to the Promotion facet of job satisfaction. Forty-three percent of the pharmacists that responded were very satisfied with their Co-workers whereas thirty-seven percent were slightly satisfied with this facet of job satisfaction. Most of

these pharmacists (55.5%) were slightly satisfied with the Supervision facet of job satisfaction.

If one can therefore summarize the job satisfaction of the Community pharmacist, it can be said that with the exception of the Income and Promotion facets of job satisfaction, the pharmacists working here are satisfied with their job (see Table 3.2.2).

In the Hospital sector of pharmacy practice, most pharmacists were very satisfied with their Work Experience. On the other hand most pharmacists were slightly unsatisfied with their Income. These pharmacists' responses to the Patient Interaction were equally distributed between very satisfied, slightly satisfied and slightly unsatisfied. Most of these pharmacists were slightly unsatisfied with the Promotion (37%) facet of job satisfaction and very satisfied with the Co-worker (59.3%) and Supervision (48%) facet of job satisfaction (see Table 3.2.3).

Once again it can be concluded that pharmacists working in the Hospital sector of pharmacy practice are satisfied with their work, with the exception of the Income and the Promotion facet of job satisfaction.

In the Industrial sector of pharmacy practice most pharmacists were very satisfied in the Work Experience (75%), Promotion (50%) and Co-worker (58.3%) facets of job satisfaction. An equal proportion (42.7%) was either very satisfied or slightly unsatisfied with the Supervision facet of job satisfaction. Most of these pharmacists were unsatisfied

with their Income. These pharmacists did not complete the Patient Interaction section of the Job Satisfaction Questionnaire (see Table 3.2.4).

It can therefore be concluded that pharmacists working in the Industrial sector of pharmacy practice are satisfied with their work, with the exception of the Income facet of job satisfaction.

In the Other sector of pharmacy practice ninety-three percent of the pharmacists were very satisfied with the Work Experience facet of job satisfaction. Most of these pharmacists were either very satisfied (26.7%) or slightly satisfied (33.3%) with their Income where as three-quarters of them were very satisfied with the Patient Interaction facet of job satisfaction. Most of them were also very satisfied with the Co-worker (66.7%) and Supervision (60%) facet of job satisfaction. In contrast with this, most of them were either slightly unsatisfied (40%) or very unsatisfied (33.3%) in the Promotion facet of job satisfaction (see Table 3.2.5).

It can therefore be concluded that pharmacists working in the Other sector of pharmacy practice, with the exception of the Promotion facet of job satisfaction, are satisfied with their work.

If the count of pharmacists who were either very satisfied, slightly satisfied, slightly unsatisfied and very unsatisfied were compared across the different sectors of pharmacy practice, one could conclude that all these pharmacists were, generally speaking, satisfied

with the different facets of job satisfaction, with the exception of the Income and Promotion facets of job satisfaction in the Community and Hospital sectors. On the other hand, pharmacists from the Other sector of pharmacy practice were satisfied with their Income but unsatisfied with the Promotion facet of job satisfaction.

In the Motivation-Hygiene Theory that was developed by Herzberg in 1959, it is stated that factors causing job satisfaction are different from those causing job dissatisfaction (Finley, 1991). According to this theory, pharmacists from the Hospital and Community sectors of pharmacy practice feel that they are not receiving enough income to provide in their physiological needs. They also feel that their work does not provide in their psychological need to achieve and grow. Pharmacists in the Other sector of pharmacy practice do feel that their income is sufficient to provide in their physiological need but that the psychological need to grow is not fulfilled.



### **4.3 Correlations of the Group measurements of the Keirsey Bates Temperament Sorter and that of the Job Satisfaction Questionnaire**

#### **4.3.1 Was there a correlation between the different Personality Preferences of the female students?**

In order to do in-depth analysis on the respondents to the Job Satisfaction Questionnaire, it was decided to divide them into male and female groups. A Spearman Correlation Matrix was done on the four Personality Preference scales for the 321 female pharmacy

student study group and because there were only a few missing values, the correlation matrix was well defined (Table 3.3.1).

The Judging Personality Preference showed an exceptionally strong positive relationship with the Sensing (0.31) and Thinking (0.21) Personality Preferences. The Sensing and Thinking Personality Type Preferences also had a strong positive relationship of 0.30 with each other.

This implies that female individuals with a high score in the Judging Personality Preference will also have a high score in Sensing and Thinking. An individual with a high score in Sensing will also have a high score in Thinking.



The weakest relationship of this group was between Judging and Extraversion but it was of great importance that the correlation was negative (-0.16) in a correlation environment that was mainly positive. This implies that female individuals with a high score in Extraversion (and low in Introversion) will have a low score in Judging.

From these correlation matrixes it can therefore be concluded that the Personality Type Preferences in females are not separate personality characteristics but rather a complex combination of linked preferences.

#### **4.3.2 Was there a correlation between the responses of the female pharmacists to the different facets of job satisfaction?**

A Spearman Correlation Matrix of the 30 female respondents with respect to their job satisfaction was done (Table 3.3.2). The sample size that was used to construct the correlation matrix between the facets of job satisfaction was much smaller than the original sample size of 321 female students. This adversely affects the level of significance.

The different facets of job satisfaction strongly related to the total of these facets. This could be seen in the strong relationships in the last row of the table. The strongest relationship between the facets itself were between the Co-workers facet and the Work Experience facet namely 0.68 ( $p < 0.01$ ). This indicated that if the female pharmacist has a good internal relationship with her Co-workers, it is to be expected that she will have a high score in Work Experience. Other high positive correlations were found between Promotion and Income, Co-workers and Patient Interaction, Supervision and Work Experience, Promotion and Co-workers and lastly Supervision and Work Experience.

It could therefore be concluded that there are strong inter-relationships between the different facets of job satisfaction in females and also specifically between the facets of job satisfaction and the total of these facets of job satisfaction. If a female individual therefore is unsatisfied in one facet of job satisfaction, this negative attitude will not be isolated but will rather filter through into other facets of job satisfaction.

### **4.3.3 Was there a correlation between the Personality Preferences of the female pharmacists and their response to the different facets of job satisfaction?**

One of the primary purposes of this study was to investigate the relationship between the Personality Type, as Measured by the Keirsey Bates Temperament Sorter and job satisfaction. This was done separately for males and females. Table 3.3.3 shows the Spearman Correlation Matrix of the female respondents with respect to their Personality Type Preferences and their job satisfaction. Only a few of these relationships were significant and this could be attributed to the small sample size of the responders to the Job Satisfaction Questionnaire.

The Patient Interaction facet of job satisfaction displayed a strong negative correlation with the Judging Personality Type Preference (-0.51). Promotion also had a negative correlation with Thinking (-0.41) whereas Work Experience had a strong positive correlation with Sensing (0.41).

This all implies that female individuals with a high score in the Judging Personality Type Preference would have a low score in the Patient Interaction facet of job satisfaction. Also, female individuals with a high score in the Thinking Personality Type would have a low score in the Promotion facet of job satisfaction. On the other hand, a female individual with a high score in the Sensing Personality Type Preference would have a high score in the Working Experience facet of job satisfaction.

One can come to the conclusion that the Keirsey Bates Temperament Sorter can possibly be used as a tool to advise prospective female students on the suitability of pharmacy as a career. If a female individual, e.g. have a Sensing Personality Type Preference, the possibility is high that such an individual will be satisfied in the Work Experience and Co-workers facet of Job Satisfaction. On the other hand, if a female individual has a Thinking Personality Type Preference it is likely that such female individual will be unsatisfied with the Promotion facet of Job Satisfaction. The same would count for an individual with a Judging Personality Preference. It is likely for such an individual to be unsatisfied in the Patient interaction facet of Job Satisfaction and this individual should then rather choose a practice setting were Patient Interaction does not play an important role.



#### **4.3.4 Was there a correlation between the different Personality Preferences of the male students?**

As previously stated, it was decided to separate the male and the female groups before investigating the different correlations involved in their personalities and the different facets of job satisfaction. This was done in order to produce a more in-depth study.

A Spearman Correlation Matrix was done on the four Personality Preference scales for the 281 male pharmacy student study group and because there were only a few missing values, the correlation matrix was well defined (Table 3.3.4).

The Judging Personality Type Preference displayed positive relationships with the Sensing (0.35) and Thinking (0.25) Personality Type Preferences. Furthermore, there was also a positive relationship between Thinking and Sensing (0.26) Personality Types but the negative correlation (-0.11) between Extraversion and Judging Personality Types was only significant on the 5% level (less than the female group).

This implies that male individuals with a high score in the Judging Personality Preference will have a high score in Sensing and Thinking. The same would also count for the relationship between Sensing and Thinking. It also implies that male individuals with a high score in Extraversion (and low in Introversion) will have a low score in Judging. It is therefore clear that the Personality Type Preferences in males are not isolated personality characteristics but rather a complex combination of linked preferences.



If the Spearman Correlation matrix of the male and female groups, with regards to the Personality Type Preferences were compared, one could deduce that the same correlations were present in both female and male groups, although the correlation between the Extraversion and the Judging Personality Type Preferences were weaker in the male group. This weaker correlation could be attributed to the smaller sample size of the male group ( $n = 272$ ).

#### **4.3.5 Is there a correlation between the responses of the male pharmacists to the different facets of job satisfaction?**

A Spearman Correlation Matrix of the 39 male respondents with respect to their job satisfaction was done (Table 3.3.5). The sample size that was used to construct the correlation matrix between the facets of job satisfaction was much smaller than the original sample size of 281 male students. This affected the significant levels adversely.

The different facets of job satisfaction strongly related to the total of these facets. This could be seen in the strong relationships in the last row of the table. Other positive relations were between Work Experience and Income (0.41), Work Experience and Promotion (0.36), Work Experience and Co-workers (0.39), Income and Promotion (0.58) and lastly between Patient Interaction and Promotion (0.54).



It could therefore be concluded that there are strong inter-relationships between the different facets of job satisfaction in males and also specifically between the facets of job satisfaction and the total of these facets of job satisfaction.

The Spearman Correlation Matrix of the different facets of job satisfaction of the female group was compared to that of the male group. Although there was a significant correlation between Work Experience and Income in the male groups, this same relationship was not statistically significant in the female group. Other differences between the male and the female groups can be seen in the significant relationship between the Co-workers and Income, Co-workers and Patient Interaction, Co-workers

and Promotion, Supervision and Work Experience, Supervision and Income, Supervision and Promotion and Supervision and Co-worker in the female group. All these relationships were not statistically significant in the male group.

One can therefore come to the conclusion that Income plays an overwhelmingly important role in males and that this facet of job satisfaction can influence the other facets of job satisfaction. The importance of Income is not to the same extent for females.

According to Herzberg (1959) there are two distinct human needs. Firstly the physiological need that can be fulfilled by money in order to purchase food and shelter. The second need is the psychological need to achieve and grow (Finley, 1991). As stated before, it was found in this study that Income plays an overwhelmingly important role in males. One can therefore deduce that the need to provide food and shelter for his family is an overwhelmingly important need for males, but not to the same extent for females.

#### **4.3.6 Is there a correlation between the Personality Preferences of the male pharmacists and their response to the different facets of job satisfaction?**

As previously stated, one of the primary purposes of this study was to investigate the relationship between the Personality type, as measured by the Keirsey Bates Temperament Sorter and job satisfaction. This was done separately for the male and female group.

A Spearman Correlation Matrix of the 39 male respondents with respect to their Personality Type Preferences and their job satisfaction was done (Table 3.3.6). The sample size that was used to construct the correlation matrix between the facets of job satisfaction was much smaller than the original sample size of 281 male students. This affected the significance level adversely.

A strong negative relationship occurred between the Extraversion Personality Type Preference and Work Experience (-0.44), the Thinking Personality Type Preference and Income (-0.36) and the Judging Personality Type Preference and Income (-0.37) (see Table 3.3.6).

This all implies that male individuals with a high score in the Judging Personality Type Preference would have a low score in the Patient Interaction facet of job satisfaction. Also, male individuals with a high score in the Thinking Personality Type would have a low score in the Promotion facet of job satisfaction. On the other hand, a male individual with a high score in the Sensing Personality Type Preference would have a high score in the Working Experience facet of job satisfaction.

This all has the implication that the Keirsey Bates Temperament Sorter can possibly be used as a tool not only to advise prospective male students on the suitability of pharmacy as a career but also to advise male pharmacists on their choice of practice setting. If an individual for example has a Judging Personality Type he is likely to be unsatisfied in the

Patient Interaction facet of job satisfaction and therefore should rather choose a practice setting where Patient Interaction does not play an important role.

If the Spearman Correlation matrix of the male and female groups, with regards to the Personality Type Preferences and the different facets of job satisfaction were compared, it was found that the same correlations were present in both female and male groups.

#### **4.3.7 Was there a correlation between the Personality Temperament of the pharmacists and their responses in the Job Satisfaction Questionnaire?**

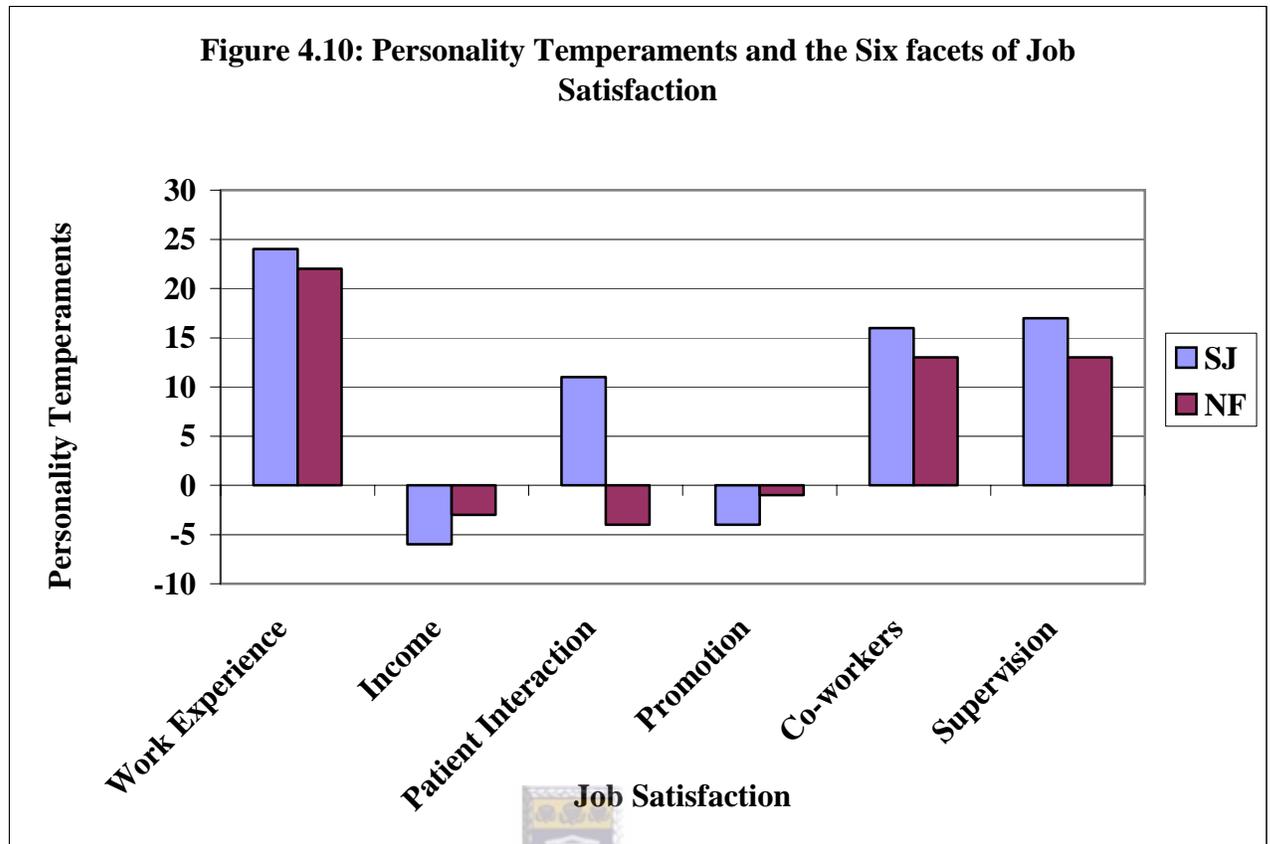
The count of pharmacists that responded to the Job Satisfaction Questionnaire request with SP or NT Personality Temperaments were exceptionally small and are therefore not discussed. The count of the SJ and NF Personality Temperaments were respectively 27 and 10. Both the medians for the SJ and NF Personality Temperaments were positive for the Work Experience facet (SJ=24 and NF=22) of job satisfaction. This was also true for the Co-worker (SJ=16 and NF=13) and Supervision (SJ=17 and NF=13) facet of job satisfaction. Both of these Personality Temperament groups had a negative median for the Promotion (SJ=-4 and NF=-1) and Income (SJ=-6 and NF=-3) facet of job satisfaction. On the other hand the median of the SJ Personality Temperament group for the Patient Interaction facet of job satisfaction were positive (11) while that of the NF Personality Temperament were negative (-4) (see Figure 4.10).

One can therefore deduce that, for all the facets of job satisfaction, the responses from the SJ and NF Personality Temperaments were either both positive or both negative, except

for the Patient Interaction facet of job satisfaction. For this facet of job satisfaction the response from the SJ Personality Temperament were positive (11) while the response for the same facet from the NF Personality Temperament were negative (-4). The response to this facet of job satisfaction could therefore be linked to personality characteristics, because this was the only difference between the two groups.

The Personality Temperaments could possibly be used as a tool to advise pharmacy students on a practice setting. If, for example, an individual has a NF Personality Temperament, he/she most likely would be dissatisfied with the Patient Interaction facet of Job Satisfaction. The opposite would be true for an individual with a SJ Personality Temperament, namely, he/she would most likely be satisfied with this facet of patient interaction and should therefore choose a practice setting where Patient Interaction does play an important role.





#### 4.4 Study Limitations

As previously mentioned, a large percentage of the pharmacy student study group could not be contacted by telephone or e-mail, to request participation in the job satisfaction research. This was due to the fact that they were not listed in the telephone directory. The response rate of the pharmacists that were listed was very low although they were contacted on more than one occasion. The sample of pharmacists therefore was not *random* but rather largely self-selected. The low response rate, and therefore sample size from each sector of pharmacy practice, also had the implication that the choice of practice setting could not be investigated to its fullest extent. In retrospect, the researcher should have contacted all pharmacists who had studied at UWC during the period 1990-

2005 by mail and not by e-mail. This was unfortunately not possible as mailing is an expensive process and funding was very limited. More effort should have gone into obtaining more funding.



## CHAPTER FIVE

### CONCLUSIONS

The primary purpose of this study was to investigate the relationship between Personality Type, as measured by the Keirsey Bates Temperament Sorter, choice of practice setting and job satisfaction of pharmacists who graduated from the University of the Western Cape over the period 1990-2005. The Keirsey Bates Temperament Sorter was completed by the pharmacy students during their study period at the University of the Western Cape. A total of 602 pharmacy students completed this questionnaire but due to missing values for some ancillary measurements or attributes the population size varied between 520 and 602. The Job Satisfaction Questionnaire, a modified version of the Job Descriptive index, was either e-mailed or faxed to the same persons, now practising as pharmacists. Due to the fact that most pharmacists are not listed in the telephone directory and a low response rate, only 69 completed Job Satisfaction Questionnaires were received. From these two data bases, the following conclusions were drawn:

The results show that the pharmacy students had a tendency towards the Extraversion, Sensing, Feeling and Judging Personality Type Preferences. The medians of the first three Personality Type Preferences were near the midpoint of the scale. On the other hand, the score of the Judging Personality Type Preference was exceptionally high. This means that there was a natural selection of people that preferred to live in a structured, orderly and planned environment. This was not an unexpected finding as pharmacies provide an environment where these people can feel comfortable.

It was also found that there was a significant statistical difference between the distribution of the Extraversion-Introversion and Judging-Perceiving Personality Type Preferences of the pharmacy student study group and that of the general population. It was found that, although there was a tendency towards Extraversion in total, there were more Introverts and more Judgers in this pharmacy population than in the general population. One can therefore deduce that it is not a *random* group of people that choose pharmacy as a career, but rather people with needs for a specific working environment. Working in a pharmacy will fulfil this need. This also has the implication that the Keirsey Bates Temperament Sorter can be used as a possible tool to advise prospective students on the suitability of pharmacy as a career.



When the Personality Type Preferences of the pharmacy student study group were compared over the years 1990 to 2005, it was found that none of the frequency distributions of the four Personality Type Preferences differed significantly over the years. This indicated that the same Personality Type Preferences were attracted to pharmacy as a career, independent of the calendar year. It also confirms the validity of the study as it shows that the results of the dominant Personality Type preference did not fluctuate from year to year.

Personality Temperaments of the pharmacy student study group were also compared with the general population and it was found that there were statistically, significantly more students with the SJ Personality Temperaments and statistically, significantly fewer

students with the SP Personality Temperaments in the pharmacy population than in the general population. According to Keirsey and Bates (1984) people with SJ Temperaments love rules, regulations, duty and honour. They have a strong work ethic and a parental outlook. It is therefore easy to see why these people will flourish in a pharmacy environment and are therefore attracted to this working environment. Again, these results confirm that pharmacists are not a *random* sample of people from the general population but rather a self-selected group of people with specific personality characteristics. This also confirms that the Keirsey Bates Temperament Sorter can be used as a possible tool to advise prospective students on the suitability of pharmacy as a career.

The data collected through the Keirsey –Bates Temperament Sorter was also used to determine the Personality Temperament Types of the pharmacy student study group. It was found that most dominant Personality Temperament Types were ESTJ ( $p < 0.1$ ). The ESTJ's made out almost one-third of the pharmacy student study group. According to Keirsey and Bates (1984) the ESTJ Personality Temperament Type are people who are outstanding at organizing orderly procedures, detailing rules and are very responsible. They are realistic, matter-of-fact and will get the job done right. The result of the study is therefore not unexpected and it is easy to see why an ESTJ Personality Temperament Type will be comfortable in the pharmacy environment and therefore more likely to choose pharmacy as a career.

An investigation was done on the gender distribution of the pharmacy student study group and whether it changed over the years 1990 – 2005. It was found that in total there

were more female students who studied pharmacy in this period. When the gender distribution of the students of each calendar year were compared with each other, it was found that the gender distribution changed over the years and that although more males studied pharmacy during the period 1990 – 1998, this ratio changed to a female dominant group in 1999. It seems that more females are choosing pharmacy as a career than previously. The reason for this is unclear and could lead to further investigation in order to establish whether this is in line with global and/or national trends.

A Spearman Correlation Matrix was done on the four Personality Preferences for both the female and the male groups. It was found that the same relationships were present for both these groups. Personality Type Preferences for the pharmacy student study group did not differ between the male and female groups. One could therefore come to the conclusion that Personality Preferences are not gender- based and therefore recruitment for pharmacists should not be gender- based either.

When the completed Job Satisfaction Questionnaires were received, their Personality Type Preferences were selected from the original data set and compared with each other to determine whether certain Personality Temperament Types were more prone to participate in the research on job satisfaction. It was found that there were no statistically, significant differences between the original dataset and the subset. Personality Preferences therefore did not influence the response to the request to complete the Job Satisfaction Questionnaire. The same was found with regards to the Personality Temperaments, i.e. there was no statistically, significant difference between the

Personality Temperaments of the pharmacy students and that of the subset, namely the respondents to the Job Satisfaction Questionnaire. These results confirmed the validity of the study on job satisfaction.

When the gender distribution of the respondents was investigated, it was found that females responded to the Job Satisfaction Questionnaire to a lesser extent than the males. It was also found that the gender distribution of the respondents to the Job Satisfaction Questionnaire request differed on the 5% level of significance with that of the pharmacy student study group. This means that although there were more females contacted in total, more males responded to the request to complete the Job Satisfaction Questionnaire. This phenomenon could be explained by the general perception that males respond better to females. Because the researcher was female, this was not surprising. In the future it would be advisable to obscure the gender of the researcher in order to have a higher response rate. Realistically this is not always possible in a field like pharmacy where the researchers are often known or recognised by potential respondents.

When the researcher looked at the Personality Type Preferences of the pharmacists that work at the different sectors of pharmacy practice, it was found that all groups (Community, Hospital, Industry and Other) had the same tendency towards Extraversion, Sensing, Feeling and Judging; only the Hospital and Community pharmacists, however, had a tendency towards the Thinking Personality Type Preference. This could be an indication that the Personality Type Preference can be used as a possible tool to advise

pharmacy students on choice of practice setting. Because the sample size was smaller than expected, further investigation is needed to confirm this result.

When the responses to the six facets of job satisfaction were compared across the different sectors of practice setting, it was found that as a group no statistical differences occurred. Job satisfaction therefore did not differ between the different sectors of pharmacy practice. It was interesting to note that the only negative medians, indicating dissatisfaction, were in the Income and Promotion facet of job satisfaction in the Community sector of pharmacy practice. In the context of the recent controversial pricing legislation changes, this negative response to the Income and Promotion facet of job satisfaction was not a surprising finding, but further studies need to be done to investigate this speculation.



Relationships were found between the Judging and Sensing, Judging and Thinking, Thinking and Sensing and Introversion and Judging. This implies that individuals with a high score in the Judging Personality Preference will have a high score in Sensing and Thinking. The same would also count for the relationship between Sensing and Thinking. It also implies that individuals with a high score in Extraversion (and low in Introversion) will have a low score in Judging. It is therefore clear that the Personality Type Preferences in individuals are not isolated personality characteristics but rather a complex combination of linked preferences.

When the Spearman Correlation Matrix was done on the male and female responses to the different facets of job satisfaction, it was found that the relationships between the different facets of job satisfaction were not the same for the two groups. It was found that, although there was a significant correlation between Work Experience and Income in the male groups, this same relationship was not statistically significant in the female group. Other differences between the male and the female groups can be seen in the significant relationship between the Co-workers and Income, Co-workers and Patient Interaction, Co-workers and Promotion, Supervision and Work Experience, Supervision and Income, Supervision and Promotion and Supervision and Co-worker in the female group. All these relationships were not statistically significant in the male group. The correlations that were found in the male groups were between Work Experience and Income, Work Experience and Promotion, Work Experience and Co-workers, Income and Promotion and lastly between Patient Interaction and Promotion. It was interesting to note how important the Income facet of job satisfaction was to males and how this facet of job satisfaction influenced the other facets of job satisfaction. In 1959 Herzberg stated that there are two distinct human needs portrayed namely the physiological needs, e.g. food and shelter, which can be fulfilled by money, and secondly the psychological need to achieve and grow (Finley, 1991). It seems therefore as if the need to provide in the physiological needs for himself and his family plays an overwhelmingly important role in males. On the other hand, Income was not as important for females. One can come to the conclusion that males and females are experiencing their working environment differently. These findings open up a whole new set of questions and should be further investigated.

When a Spearman Correlation Matrix was done of the relationship between Personality Preferences and the different facets of job satisfaction, it was found that these relationships differ in the female and male groups. In the female group there was a statistically, significant positive correlation between the Sensing Personality Type and Working Experience and the Sensing Personality Type and Co-workers. There was also a statistically, significant relationship between the Thinking Personality Type and Promotion and the Judging Personality Type and Patient Interaction. It could therefore be concluded that female individuals with a high score in the Judging Personality Type Preference would have a low score in the Patient Interaction facet of job satisfaction. Also, female individuals with a high score in the Thinking Personality Type would have a low score in the Promotion facet of job satisfaction. On the other hand, a female individual with a high score in the Sensing Personality Type Preference would have a high score in the Working Experience and Co-worker facets of job satisfaction.

One can come to the conclusion that the Keirsey Bates Temperament Sorter can possibly be used as a tool to advise prospective female students on the suitability of pharmacy as a career. If a female individual e.g. has a Sensing Personality Type Preference, the possibility is high for that individual to be satisfied in her Work Experience and Co-workers facets of job satisfaction. On the other hand, if a female individual has a Thinking Personality Type Preference it is likely that that individual will be unsatisfied with the Promotion facet of Job Satisfaction. The same would count for a female individual with a Judging Personality Preference. It is likely for such an individual to be

dissatisfied in the Patient Interaction facet of Job Satisfaction and this individual should rather choose a practice setting where Patient Interaction does not play an important role.

In males the correlations were different. Statistically, significant negative relationships occurred between the Extraversion Personality Type Preference and Work Experience, the Thinking Personality Type Preference and Income and the Judging Personality Type Preference and Income. This implies that male individuals with a high score in the Judging Personality Type Preference would have a low score in the Income facet of job satisfaction. Also, male individuals with a high score in the Thinking Personality Type would have a low score in the Income facet of job satisfaction. The same applies for a male individual with a high score in the Extraversion Personality Type Preference who would have a low score in the Working Experience facet of job satisfaction.



This again has the implication that the Keirsey Bates Temperament Sorter can possibly be used as a tool not only to advise prospective students on the suitability of pharmacy as a career but also to advise pharmacists in their choice of practice setting.

In the case of Personality Temperaments, for all the facets of job satisfaction, the responses from the SJ and NF Personality Temperaments were either both positive or both negative, except for the Patient Interaction facet of job satisfaction. For this facet of job satisfaction the response from the SJ Personality Temperament was positive while the response for the same facet from the NF Personality Temperament was negative. The

response to this facet of job satisfaction could therefore be linked to personality Temperaments.

This implies that the Personality Temperaments could therefore possibly be used as a tool to advise pharmacy students on a practice setting. If, for example, an individual has an NF Personality Temperament, he/she would most likely be dissatisfied with the Patient Interaction facet of Job Satisfaction. The opposite would be true for an individual with an SJ Personality Temperament, namely he would most likely be satisfied with this facet of job satisfaction and should therefore choose a practice setting where Patient Interaction does play an important role.

School leavers are faced with a bewildering array of possible career choices. The implications of incorrect choices are obviously far-reaching and the realisation after graduation that one has perhaps chosen a career field, which does not suit one's personality, can be devastating. This study very clearly points to the value of using a personality score tool like the Keirsey Bates Temperament Sorter as an aid in the process of career choice. Pharmacy is by its very nature a complex and dynamic profession with many options of practice setting available to pharmacists. The majority of pharmacists in South Africa enter the workplace with a basic B. Pharm degree, which allows entry into all of the practice sectors. The choice of practice setting could be a difficult one particularly to the newly qualified pharmacist, and the significance of this study is that it also highlights the possible utility value of the Keirsey Bates Temperament Sorter in facilitating this kind of decision-making.

Due to the study limitations, as discussed previously, more research should be conducted to confirm these results and also to investigate the relationship between personality type, as measured by the Keirsey Bates Temperament Sorter and job satisfaction within each sector of pharmacy practice. It is also recommended that further studies should be done to investigate whether the trends found in this study apply to the general population of pharmacists.



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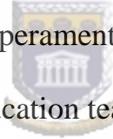
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# **Appendix A:**

## **Keirsey Bates Temperament Sorter**



# **Appendix B:**

## **Job Descriptive Index**



# **Appendix C:**

## **Job Satisfaction Questionnaire**



**Attention: Susan (021- 873 3120)**

**Survey of pharmacists who graduated at the University of the Western Cape in the period of 1990 to 2005.**

1. Name as reflected in the UWC records. \_\_\_\_\_
2. What year did you complete your pharmacy studies at UWC? \_\_\_\_\_
3. Please indicate your gender. \_\_\_\_\_
4. How many years have you been in pharmacy practice since you have registered as a pharmacist with the SAPC?  
\_\_\_\_\_
5. Please indicate in which sector of pharmacy practice you have chosen to work since your registration as a pharmacist with the SAPC.

	Sector (Hospital / Community / Industry / Other)	Years		Reason for changing working environment e.g. better salary, hope for better job satisfaction etc.
		From	To	
1				
2				
3				

**6. Job Satisfaction Questionnaire**

For each question, please make a cross in the block that comes closest to reflecting your opinion about your current job.

**a Working experience in present job.**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
I find my job fascinating				
Some times I feel my job is meaningless				
When I do a good job, I do <b>not</b> receive the recognition for it that I should receive				
The rules and procedures make doing a good job difficult				
I find my job satisfying				

I find my job boring				
I do feel that the work I do is appreciated				
I like doing the things I do at work				



Name as reflected in the UWC records.

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
I feel respected at work				
I find my job tiresome				
I find my job frustrating				
I find my job gives me a sense of accomplishment				
I feel my job is meaningful				
The system makes doing a good job difficult				

**b Present income as a pharmacist**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
My income is adequate for normal expenses				
I have satisfactory profit sharing				
I can barely live on my income				
My income can provide luxuries				
Raises are too few and far between				
My income is less than I deserve				
I am not satisfied with the benefits I receive				
I feel I am being paid a fair amount for the work I do				

**c. Patient interaction (answer if appropriate to your practice setting)**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
The clients asks my advice				
The clients are hard to please				
The clients are impolite				
The clients are ungrateful				
The clients are tactful				
The clients are grateful				
The clients are quick tempered				
The clients respect me				

**d Opportunities for promotion and/or advancement in present job**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much

There is too little chance for promotion in my job				
Those who do well in the job stand a fair chance of being promoted				
Opportunities for promotion are limited				

Name as reflected in the UWC records, \_\_\_\_\_

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
I am in a dead-end job				
My chances for promotion are good.				
The promotion policy is fair				
I stand a good chance for promotion				
I do not agree with the promotion policy				

**e My co-workers in present job**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
My co-workers are lazy				
My co-workers are smart				
My co-workers are unpleasant				
I like the people I work with				
My co-workers are loyal				
My co-workers talk too much				
My co-workers are responsible				
My co-workers are always complaining about something				
My co-workers feels like family				
I do not trust my co-workers				

**f. Supervision in present job (answer if appropriate to your practice setting)**

	Agree very much	Agree slightly	Disagree slightly	Disagree very much
My supervisor is unfair to me				
My supervisor shows little interest in the feelings of the subordinates				
I like my supervisor				
My supervisor is around when needed				
My supervisor is annoying				
My supervisor is tactful				

My supervisor praises good work				
My supervisor is hard to please				

**Thank you very much!!!!**



# **Appendix D:**

## **Cover letter of Job Satisfaction Questionnaire**

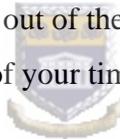


**June 2005**

**Dear [Name]**

**REQUESTING PARTICIPATION IN A RESEACH STUDY**

I am a postgraduate academic intern, registered for an M Pharm. degree in the School of Pharmacy at the University of the Western Cape working under the supervision of Prof Nadine Butler (she gave me your name). I am doing research on the relationship between personality type, as measured by the Keirsey-Bates Temperament Sorter, and choice of practice setting as well as job satisfaction of the pharmacist. In order to conduct the research, I need information regarding job satisfaction from pharmacists who graduated from the University of the Western Cape in the period from 1990 to 2004. Since you have graduated in this period, your participation in this study will be greatly appreciated. Your participation will entail the filling out of the attached questionnaire, which should not require more than 10 – 15 minutes of your time.



Privacy and confidentiality will be maintained at all times and therefore identifying information (such as pharmacist name, pharmacy name or any other information) will not be included in the publication or made available to anybody at any time.

The results of this study will have potential predictive value, in terms of advising prospective students on the suitability of pharmacy as a career choice, as well as advising newly trained pharmacists in their choice of practice setting (hospital pharmacy / community pharmacy / industry).

The first section of the questionnaire consists of demographic information such as gender, age, years of pharmacy practice and practice setting. The second section consists of a modified version of the Job Descriptive Index to determine job satisfaction.

In the light of all the above, I would sincerely appreciate your participation in this research survey. In order to complete my academic internship at the end of 2005, I would need this information at your earliest convenience.

The completed questionnaire, can be returned via e-mail to me at [lerouxp@telkomsa.net](mailto:lerouxp@telkomsa.net) (**please remember to save and attach the file before sending it back**), but if you preferred to complete the survey on paper, you can either fax the completed pages to 021 873 3120 or mail it to the School of Pharmacy at the address below (for attention Susan le Roux).

I hope that you would look favourably on my request, especially since the results of this study can benefit prospective pharmacy students and all newly trained pharmacists.

I thank you sincerely, in anticipation, for the speedy return of the survey.

Susan M le Roux  
Tel: 082 926 3912



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IF YOU ARE RETURNING THE QUESTIONNAIRE EITHER BY FAX OR MAIL,  
PLEASE SIGN BELOW AS AN INDICATION OF YOUR WILLINGNESS TO  
PARTICIPATE IN THIS STUDY

Pharmacist's signature .....