THE RELATIONSHIP BETWEEN EXTRAVERSION-INTROVERSION AND ACADEMIC ACHIEVEMENT IN GRADE TWELVE PUPILS OF SELECTED SCHOOLS IN LUSAKA

BY

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DECLARATION

I, Chendela Prisca Simukonda do hereby declare that this dissertation represents my own work and that it has not been previously submitted for a degree at this or another university.

Chendela 17/12/02

APPROVAL

This dissertation of Chendela Prisca Simukonda has been approved as fulfilling part of the requirements for the award of the degree of Master of Education by The University of Zambia.

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ABSTRACT

Exploration of personality is important because academic achievement of the child cannot be understood from cognitive processes alone. Extraversion and introversion are important aspects of personality. Research studies (Riding, 1979; Open, 1976; Anthony, 1982; Elliot, 1972 and Finlayson, 1970) have indicated a relationship between extraversion-introversion and academic achievement. However in Zambia no studies have been done on the relationship between extraversion-introversion and academic achievement. It is in view of this, that this study investigated the relationship between extraversion-introversion and academic achievement.

The present method of assessment of pupils' academic achievement is based on pupils' perceptual and cognitive functioning that often ignore non-intellectual factors like extraversion and introversion. This has greatly contributed to poor assessment of pupils' academic achievement. This study therefore investigated the relationship between extraversion-introversion and academic achievement among grade twelve pupils of selected schools in Lusaka.

The study objectives were to determine whether introverts performed academically better than extraverts in secondary schools in Lusaka region, to determine the relationship between extraversion-introversion and academic achievement and to ascertain the extent to which the relationship between

extraversion-introversion and academic achievement established in America, Britain and South Africa is the same as that found in Zambia.

The three hypotheses of the study were that; introverts do not perform better than extraverts in selected secondary schools in Lusaka region, there is no significant relationship between extraversion-introversion and academic achievement and that, the relationship between extraversion-introversion and academic achievement in Zambia is the same as that found elsewhere. The sample consisted of 154 grade 12 boys and girls drawn from the four selected schools in Lusaka region. Two types of questionnaire were administered; one a self report measure on the seven factors of the extraversion trait and the other type for the teachers, which rated the same pupils on the same seven factors of the extraversion trait.

Analysis of data using a prepared scoring guide identified introverts and extraverts. The academic achievement of the pupils was obtained from the average of the test results in English, Mathematics and Biology. Data were further analysed using a Statistical Computer Package for Social Sciences (SPSS). Cross tabulations and the Person Chi-square test were used.

Results showed that introverts were better academic achievers than extraverts. A relationship was found to exist between the personality trait of extraversion-introversion and academic achievement. This relationship agreed with the

results of the researchers done elsewhere which indicated that introverts were better performers academically than extraverts.

Lastly, among the recommendations made for both teachers and policy makers includes training classroom teachers in a manner that would enable them gain skill to identify introverts and extraverts so as to be more effective and that curriculum planners should take into consideration the individual differences of the pupils in a class as they design the teaching styles.

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CHAPTER ONE

INTRODUCTION

Background

The last half-century has seen a wide spread application of intelligence tests to the selection of pupils for particular educational experiences. Pupils were streamed in homogeneous ability groups, which meant that teachers did not have to cope with wide individual differences in ability among pupils. It was hoped therefore, that educational goals required by a fixed curriculum could easily and economically be attained.

Research has shown that intelligence and academic achievement are positively related, though this is a tendency and not a one-to-one relation. Intelligence Quotient (IQ) only accounts for 20% of the pupils' success, and the rest goes for other factors (Goleman, 1995). The emotions, feelings and values are vital for a person's well being and achievement in life (Ediger, (1997). Quality emotions and feelings help students give their best potential in the classroom. The students who are aversive and think negatively cannot concentrate for a long time and have more difficulty in reaching their potential than others.

The implication of this is that a significant percentage of the variance in attainment must therefore be accounted for by qualities other than intelligence.

Understanding the cognitive processes of a child is far from understanding the academic achievement of the child. Explorations in personality are equally important because the learning process involves the child as a whole. Unfortunately, explorations in personality in relation to academic achievement have not received as much attention as intelligence studies.

Extraversion and introversion are important aspects of personality and research work done by Anthony (1982), Riding (1979), Orpen (1976), Elliot (1972) and Finlayson (1970) have indicated a relationship between extraversion-introversion and academic achievement. However, in Zambia no studies have been done on the relationship between extraversion-introversion and academic achievement. It is in view of this that this study investigated the relationship between extraversion-introversion and academic achievement.

Division of the Dissertation

The dissertation is divided into five chapters. Chapter one gives the introduction and the background to the study. Chapter two provides the theoretical framework and the review of relevant literature. Chapter three discusses methodology used in the study. Chapter four presents findings and analysis. The last chapter discusses findings, draws conclusions and makes some recommendations.

Statement of the Problem

The current method of assessment of pupils' academic achievement is based on pupils' perceptual and cognitive functioning, which often ignores non-intellectual factors like extraversion and introversion. Knowledge of facts on pupils' perceptual and cognitive functioning, is not enough in itself for making educational judgments. Non-intellectual factors like extraversion-introversion need to be considered if good educational judgment of the pupils is to be made. The learning and teaching styles employed need to take into consideration extraverts and introverts. This study therefore aimed at establishing the relationship between the extraversion trait and academic achievement.

Study Objectives

1. To determine whether introverts perform academically better than extraverts in selected secondary schools in Lusaka Region.

2. To establish the extent to which the relationship between extraversion-introversion and academic achievement established elsewhere is the same as that found in selected secondary school in Lusaka Region.

3. To determine the relationship between extraversion-introversion and academic achievement in Grade Twelve pupils of selected schools in Lusaka region.

Study Hypotheses

1. Introverts do not perform academically better than extraverts in secondary schools in Lusaka region.

2. There is no significant relationship between extraversion-introversion and academic achievement in Grade 12 pupils of Lusaka region.

3. The relationship between extraversion-introversion and academic achievement in Zambia is not the same as that established in South Africa, America and Britain.

Significance of the Study

It is the goal of every educational system to bring out, in terms of the academic achievement, the best in every pupil. Studies of extraversion-introversion in relation to academic achievement can help both educators and learners employ teaching and learning styles respectively that take into consideration both extraverts and introverts in order to bring out the best in them. The study findings can provide information on the relationship between extraversion-introversion and academic achievement, which may help teacher to understand their pupils better.

Assumptions of the Study

The main assumption taken in the study was that the pupils involved in the study were normal (with healthy personalities) because they were all enrolled in schools for pupils with healthy personalities.

Delimitations of the Study

In the study, personality structure and assessment were looked at from the aspect of the Trait Theory Model. The focus was also on structural or stable personality variables, specifically extraversion and introversion that are relatively permanent and enduring qualities of individuals.

Limitations of the Study

The study could have been extended to other provinces of the country, but due to the financial constraints and limited time, the study was restricted to Lusaka region. Due to the above limitation, life data that could have better been obtained from parents or guardians were obtained from teachers because they were easily accessible. However, teachers who had been with the pupils for a long time were a priority.

Definition of Operational Terms

Academic achievement/performance

This refers to the pupil's score in basic subjects of English, Mathematics and Biology.

Trait

Is a relatively permanent and broad reaction tendency, a unitary configuration in behaviour such that when one part is present in a certain degree, it can be inferred that the person will show the other parts in another degree, for example extraversion.

Temperament

The person's nature as it affects his/her way of thinking, feeling and behaving. It simply refers to the raw material of personality.

Extraversion

State of being outward and interested in what goes on around an individual than, in one's own thoughts and feeling.

Introversion

State of being inward and more interested in one's thoughts and feelings than in things outside the individual.

Ambivalence

State of being in between extraversion and introversion.

Neuroticism

A condition of relatively mild form of mental disorder in which the sense of reality is maintained inspite of excessive anxiety.

Psychotism

A condition of abnormal or diseased mental state characterized by loss of contact with reality.

CHAPTER TWO

Review of Related Literature

Theoretical Framework:

Personality is a complex phenomenon. It is a product of many factors that are genetic, cultural and social. It seems to be in a complex relationship with a number of other variables. This has led a number of personality theorists to look at personality in different ways. It is as an abstraction and therefore there is a tendency to conceptualize it in different ways according to the kinds of qualities a theorist abstracts.

Church & Lonner (1998) have defined personality as, the relatively stable individual differences in thoughts, feelings and actions.

Handley looks at personality as being an attribute of being a person.

> *"One's personality is that particular cluster of characteristics Making one different from all others" (Handley, 1973:8).*

Personality originates both from heredity and environmental factors. The raw material of the personality is called temperament. It is seen as the beginning of personality. As the child grows, the temperament interacts with environmental,

cognitive factors and other maturational variable like physical appearance. All these play their part in determining personalities and giving them their rich complexities.

The Trait Theory Model: Some aspects of personality are fixed while others are not. Personality traits are fixed while states are not. David (1988) has looked at traits as being relatively fixed and enduring and that may be linked to temperamental factors, while he has seen states as fluctuating and to do with moods and moment by moment way in which individuals experiences themselves and others. In the trait model, personality theorists have typically assumed that an individual gradually forms certain characteristics that become progressively resistant to change with passage of time. The patterns are usually regarded as reflections of inner traits, cognitive structures, dispositions, habits or needs. The assumption made in the assessment of personality is that the individual has stable traits. The trait theory model delineates basic human traits, but the extent that behaviour is determined by internal disposition and hence the importance of the trait concept itself may vary across cultures (Shweder, 1991). However, a number of research studies have addressed the cross-cultural universality or equivalence of such theoretical concepts.

Eysenck (1969) points out that one arrives at the trait by observing constancies in behaviour. For example, an individual to whom the trait persistently applies is one who in a variety of specific situations, always responds in the same way, without being either distracted by other activities or put off by boredom or fatigue.

This means that a trait is deducted from behaviour in a large number of different situations made up of habitual responses from the individual.

Three types of personality traits namely, extraversion, neuoticism, and pychotism, have been identified. The trait extraversion is the focus of this study. This trait has three aspects namely, extraversion, introversion and ambivalence. However, this should not give the implication that everybody is either an extravert or an introvert. It should be realized that there is a continuum with a normal distribution, with extreme introvert and extravert at the ends and ambivalents at the midpoint.

Personality variables should and do predict important life criteria and such evidence can be used to substantiate claims for the construct validity of the measures (Mershan & Gorsuch, 1988). For example, certain personality traits have been shown to predict the classroom participation of Canadian graduate students (Rothstein, Paunonen, Rush, & King, 1994). This prediction can be seen to be very useful in education in regard to the personality and academic achievement.

In theoretical literature a number of personality and value tendencies have been associated with individualism and collectivism. For example, individualism is associated with being independent, pleasure seeking, assertive, creative, competitive, self-assured, efficient, and direct; collectivism is associated with being attentive, respectful, dependent, empathic, self-control, dutiful, self-sacrificing, conforming and cooperative, (Markus & Kitayan, 1991, and Triandis, 1989 & 19930).

Empirical studies have generally supported these personality implications of individualism – collectivism between or within cultures (Chiu, 1990: Ho & Chiu, 1994).

At the same time that individualism – Collectivism, at individual level, has been treated as a personality trait or type, the behaviour of collectivists as compared to individualists, has been described as being "traited" or dispositional, and more situational or contextual (Triandis, 1995). Traindis (1995) concluded that personality is less evident in collectivist cultures than it is in individualist cultures because the situation is such a powerful determinant of social behaviour. Furthermore, individuals in collectivists' cultures as compared to those in individualistic cultures, appear to describe themselves less in terms of traits and attribute behaviour less to internal attribute or traits (Lee et al, 1996).

However this view does not refute the existence of traits or their probabilistic prediction of behaviour across a range of situations but leads to the testable hypothesis that the correlations, across different situational contexts, between personality trait scores and behavioural measures will be generally lower and move variable in collectivistic cultures than in individualistic cultures.

Factors of Extraversion Trait: The trait extraversion can be broken into at least seven-component characteristic or 'sub-factors'. According to Eysenck (1991), seven related components that give rise to the trait extraversion have been

identified. These are activity, sociability, risk-taking, impulsiveness, expressiveness, practicability and irresponsibility.

Activitity.

Eynseck (1991) points out that people scoring high on this factor are generally active or energetic. They enjoy all kinds of physical activity like hard work and exercise. They tend to wake up early in the morning and quickly, move up rapidly from one activity to the other and they pursue a wide variety of different interests. Those who score low on this trait are inclined to be physically inactive, lethargic and easily tired. They move about the world at a leisurely pace and prefer quite restful holidays. High activity is an extravert characteristic while low activity is an introvert characteristic.

Sociability.

A sociable person is one who seeks the company of other people and likes social functions such as parties and dances. This person generally meets people freely and is comfortable in sociable situations. An unsociable person is one who prefers to have only a few special friends, enjoys solo activity like reading and has difficulty in trying to talk to other people. Such a person is inclined to withdraw from oppressive social contacts. Eysenck associated high sociability with extraversion and low sociability with introversion.

Risk-taking.

An individual who scores high on this trait lives dangerously and seeks reward with little concern for the possible adverse consequences. As Eysneck observes:

> *Characteristically they are gamblers who believe that an element of risk adds spice to life. Low scores indicate a preference for familiarity, safety and security even if this means sacrificing some degree of excitement in life, (Eysneck 1991:60).*

Impulsiveness.

Impulsiveness is the fourth factor of extraversion. Those who score high on this trait are inclined to act on the spur of the moment, make hurriedly, often-premature decisions and are usually care free, changeable and unpredictable. Those who score low on this factor consider matters very carefully before making a decision. They are systematic, orderly and cautious and plan out their life in advance. They think before they speak and look before they leap.

Expressiveness.

Expressiveness refers to the general tendency to express one's emotions outward and openly, where sorrow, anger, fear, love or hate are other primary factors that make up extraversion. According to Eysenck,

High scorers tend to be sentimental, sympathetic, volatile and demonstrative, low scorers are reserved, even tempered, cool, detached and generally controlled as regards their expressions of their thoughts and their feelings (Eysenck 1991: 62).

High scores go toward extraversion and low scorers go towards introversion. Unlike other factors, the individual who scores high on this factor moves towards the introversion end and the one who scores low on this factor moves towards extraversion. This factor is also referred to as thinking introversion. This indicates the direction of the association with extraversion –introversion but it also distinguishes the trait of social introversion from emotional introversion. Those who score high on this factor are inclined to be interested in ideas, abstractions, philosophical questions, discussion, speculations, and 'knowledge for the sake of knowledge'. They are generally thoughtful and introspective. Those who score low have a practical bent, are interested in doing things rather than thinking about them. They also tend to be patient with high tower theorizing.

Responsibility.

This factor is characteristic of introversion rather than extraversion. High scorers are likely to be conscientious, reliable, trust-worthy and serious minded with a little bit of compulsiveness. Low scorers on the other hand are inclined to be casual, careless of protocol, late with commitments, unpredictable and perhaps socially irresponsible.

Eysneck (1969) has also tried to offer a biological explanation of the differences in behaviour between an extravert and an introvert. He points out that an introvert shows this pattern of behaviour because of the functioning of the ascending reticular formation of the brain stem. The latter either excites or inhibits the activity of the cortex in dealing with incoming sensory impulses. Where the level of stimulation getting through to the cortex is depressed or is inhibited, the individual will be stimulated to seek more stimulation from the external world, and the behaviour will be extraverted. Conversely where the incoming stimulation is amplified, over bombardment of the cortex will lead to introverted behaviour patterns.

From this, it is realized that where the stimulation is insufficient the individual will tend to look for the supplement from the external world hence the, extravert. For an individual where the stimulation is sufficient, he/she will be contended and will not be interested in seeking external stimulation and hence the introvert. The more introspective person needs less stimulation from the outside world, is less ambitious and less interested in material things.

Education and Personality

As far back as the 14th Century, Chaucer (Coghill, 1951) recognized the importance of happiness as the pre-requisite of successful learning. He pointed out that a happy child would always learn and hear. The 20th Century psychiatrists have also pointed out that prolonged unhappiness is a key symptom of the maladjusted personality that is linked to failure to make progress in school. This makes the study

of personality inseparable from the learning and teaching process as Handley points out:

> *The teaching process and the learning process cannot be looked at in isolation from personality (Handley, 1973:5).*

Teachers have admitted that there are some classes with which they feel less successful than others regardless of the independence of age and abilities. Furthermore, questions have been posed concerning pupils with roughly equivalent intelligence quotient (IQ) scores, ages and socio-economic backgrounds, yet may be so different in their academic achievement. Recent interests in creativity have indicated that, personality factors are important for one to be successful in a particular field. Handley states this:

> *It seems probable that if a person has the minimum of intelligence required for success in a particular field, then whether he performs well or badly in that field will crucially be affected by non-intellective factors (Handley, 1973:3).*

In the same regard, the academically successful child is distinguished by the use he/she sees fit to make of his/her intellectual apparatus rather than simply by its possession. Failure to achieve in accordance with expectations especially when expectations exceed the actual achievement is usually attributed to aspects of

personality believed to be important in performance (Naylor, 1972). It is this that aroused interest in researchers who wanted to find out what other factors affected performance other than intellectual factors. It became evident that, apart from differences in ability, there are real and pervasive differences between people. The implication of this is that, intellectual ability, though a necessary condition for success in learning is not a sufficient condition. Academic achievement seems to be the result of the interaction of intelligence, personality and motivation.

Much recent discourse on teaching and learning has concerned matters such as responding to individual need and interests and catering for the individual differences of students. Teachers will often claim that their teaching is aimed at developing the individual potential of the students they teach (Yaxley, 1993). Educators recognized the importance of considering the individual differences in education around the 1960s. This 'tyranny of the individual' as it became known, influenced the education systems of that time and still does today in some places. Slogans such a 'catering for individual differences, achieving full potential, attending to the needs and interests of the students' for example, all placed the individual and their different needs, interests, potentials, abilities and capacities, for instances, at the centre of curriculum planning and practices. However, the other school of thought argues that individual differences need not be taken into consideration in curriculum planning and practices, instead the individual similarities are considered in preference of the other. Yaxley (1993) points out that, in considering theories of teaching, emphasizing on either similarity or difference to the exclusion of the other

does not lead anywhere because both differences and similarities become exclusionary rather complimentary.

In the schools, the teaching and learning methods have assumed too much of the sameness in the pupils being taught. The methods have assumed that the pupils have the same personalities because usually instructions are given to them as a class and not as individuals with unique personalities, and yet no group of individuals can have the same personality. It is in view of this that Bassett et al (1978) suggested that:

> *Teachers should have a sincere and sensitive regard for personal characteristics of their students, particularly in ways that increase the students feeling of self-worth. This attitude of acceptance of students is likely to increase effectiveness of teaching by creating a favourable climate for learning (Bassett et al, 1978:221).*

A teacher who considers the aspect of personality in the learning and teaching process, tries to equip individual children with the necessary skills for dealing competently with most of the problems they are likely to meet and help them build their confidence by giving them the experience of success which is essential if children are to make satisfactory progress. This does not necessarily mean teachers changing pupils' personalities but helping pupils cope more effectively with

the kind of people they are. This calls for teachers to operate as their own researchers sensitive to the individual personalities of each pupil.

Research Studies done elsewhere

A number of researchers have done studies on the relationship between personality and scholastic achievement.

A study conducted by Johnson (1996) to examine the relationship between specific personality traits and learning styles and academic achievement in gifted students to determine whether or not these factors resulted in their becoming 'at risk' in the educational system because of their divergence, showed that there was a significant correlations between ten personality traits and academic achievement. These findings were consistent with the literature reviewed that suggested that personality factors may be related to academic achievement.

Bong & Shapiro (1996) and Ziegert (2000) examined students' learning from a different perspective. Personality type was correlated with students' academic achievement in several principles of economics courses. The research showed significant correlations between personality type and academic achievement.

Mevarech (1985) did a study that investigated the relations among pupils' temperament, intellectual ability, Time on Task (TOT) and mathematics achievement. The sample consisted of 87 male and female second grade and 104

male and female fourth grade children. In the study, the Israel Board of Education Arithmetic Achievement Test measured the academic progress of each subject. In addition, the teachers rated the child's level of arithmetic achievement on a 5-point scale ranging from very poor to excellent. The advanced progressive matrices measured intelligence. The Shortened Teacher Temperament Questionnaire (STTQ), consisting of nine items, assessed the children's temperament. The pupils were only assessed on eight items because the teachers were not familiar with the ninth item. The pupils were also observed by trained observers on the on and off tasks. Data were basically analyzed by multiple regression analysis.

The most important finding was the strong and consistent relationship between the pupils' temperament characteristics and academic achievement. The final multiple R between temperament, intelligence, Time-on-Task and Mathematics achievement was 0.68 for second graders and 0.56 for fourth graders. The interesting finding was that the second grade temperament characteristics contributed to the prediction of mathematics achievement more than intellectual skills. As the findings of this study are highly appreciated, the researcher did not point out how subjectivity in the assessing of children's characteristics of temperament was avoided in the teachers.

Riding (1979) studied the effect of extraversion and detail content-on the recall of prose by eleven-year-old children from urban primary schools. The children were divided into extraverts, ambivalents and introverts using the Junior Eysenck Personality Inventory (JEPI). The children listened to the 230-word passage and

were tested for recall after one hour. Half of each extraversion division was given a free-recall test while the rest answered questions. The findings of the study were that there was a significant interaction between extraversion and detail content in their effect on recall. Abstracts were best recalled by extraverts, time intervals and quantities were best recalled by ambivalents and directions by introverts. There was little difference between the groups in their recall of action and appearance details. The results were considered in terms of a possible relationship between extraversion and the mode in which information was represented in memory. A secondary finding was of a significant interaction between extraversion and recall test type in their effect on recall. According to the results of this study, the relationship of the extraversion and recall implies also a relationship with the performance because recall is an inseparable factor in the learning process of the child. However, though the JEPI is fitted with a lie scale, this may not be the guarantee that the inventory is free of fakery. A consideration of other precautions would have proved worthwhile.

The study by Orpen (1976) on personality and academic achievement examined the 'age effect' hypothesis from British and American studies, that academic success at primary school is linked to stable extraversion while success at universities is associated with introversion. The sample consisted of 151 Xhosa-speaking Blacks attending rural schools and tribal colleges or universities according to age and 169 Afrikaans speaking whites attending rural secondary schools and Afrikaans medium universities. In the study, the extraversion and neuroticism scores of the subjects on the JEPI or the Eysenck Personality Inventory (EPI) were compared to the academic

success, given by the performance in school or university examinations. The findings offer cross-cultural support for the view that extraversion is more important for success at school and introversion for university success. The change over was more marked for the black samples than for the white samples.

Anthony (1982) did a re-analysis of the data of Crooks et al on Extraversion and intelligence. Crooks et al (1981) reported a positive correlation between Eysenckian extraversion and Raven matrices, among 802 children aged 15-16, which they interpreted as inconsistent with Anthony's (1973) theory of the development of extraversion. His theory supposes that earliness of development of intellectual ability is correlated with earliness of development of extraversion. Data of Crooks et al were examined for non-linearity, mean extraversion being expected to be an increasing function of intelligence at low levels of intelligence and a decreasing function of intelligence at high levels of intelligence. In their study, using the F-test, there was no suggestion of non-linearity in the extraversion-intelligence relation, however they had tested how intelligence varied for different levels of extraversion. Anthony's purpose was to test how extraversion varied for different levels of intelligence using the method of Guilford and Fruchter (1978).

The findings were that extraversion was non-linearly related to ability, being related positively to intelligence among the less intelligent and negatively among the more intelligent.

According to Eysenckian norms, that extraversion normally peaks at 13-14 years. It can be supposed that later developers eventually reach about the same level of extraversion as earlier developers have done. Then by the time the later developers get there the earlier developers have come down and this explains why extraversion-ability correlations should change from positive to negative. However, Crookes et al (1981) found a positive correlation at 15-16 years when according to Eysenckian norms the child has just passed peak extraversion.

Eysenck (1965) warns that the JEPI norms, which were used at 15 and 16, may not be representative at that age, and so finding of a positive extraversion-intelligence correlation at 15-16 years is therefore not crucial in itself. Though a decline in extraversion in adulthood has been reported, the norms in year-by-year from after 15 hasn't been done, so the normal peak age cannot be inferred precisely. Since intellectual ability is positively related to academic achievement one concludes from the study findings that there is a significant correlation between extraversion and academic achievement.

The study done in Manchester (Rushton, 1966) looked at the relationship between personality characteristics and scholastic success in eleven-year-old children. The sample comprised 458 boys and girls aged 10-11 years and were drawn from fourteen country primary schools approximately representing the different socio-economic strata and school size. They also had without exception the verbal reasoning coefficient of 105 and above.

The children were tested on each of the following tests:

1. Children's personality questionnaire (Cattel)
2. *Moray House verbal reasoning Test number 63*
3. Moray House arithmetic test number 30
4. Moray House English test number 30
5. Moray House Spatial test number 2
6. A teacher's rating scale of fourteen personality and ability traits

The findings were that extraverted children were scholastically more able than the others. The method used seems to bring out more of the relationship between personality characteristics and the children's ability or intelligence than the scholastic attainment or academic achievement. The method may have some shortcomings in that children's intellectual abilities may not really reflect the children's academic achievement; rather they measure more of the children's potential.

Savage (1962) did a study on Personality Factors and Academic Performance. The sample consisted of 168 male and female students entering the Arts faculty of the University of New England. The subjects were given the Maudley Personality Inventory (MPI). Neuroticism and extraversion characteristics were related to the results obtained in the annual examinations. The study duration was three years. Results of the investigation showed that neuroticism and extraversion are significantly related to academic performance. The most successful group was one

with the most extraversion scores and high scores on neuroticism. This affected academic achievement in the negatively way.

The MPI is a self-report measure, which is susceptible to faking and distortion. Subjects responding to the items might lie about item applicability to them or they might distort their responses owing to the operation of response sets stimulated either by social desirability of an item or the tendency to agree with what an item proposes. There is also a possibility of the interaction effects of extraversion and neuroticism that affect academic performance and hence could affect the research findings. This calls for further refinement of the methods used in personality. The study of personality traits in isolation may, to some degree help control for the interaction effects especially in correlation study.

Finlayson (1970) did a follow up study of school achievement in relation to personality. The sample comprised 128 boys at the ages 12, 13 and 14 years at a grammar school. The study employed the method of zone analysis where by subjects were put into four zones depending on their scores on the Junior Eysenck Personality Inventory (JEPI). Two measures of the school achievement were used; the AQ and EQ obtained in the 11+ examination and scores in the four internal academic subject's examinations, English, Mathematics, Science and a Foreign Language. The findings of the study were that introversion showed a significant relationship with achievement when the boys were between 12 and 13 in the second year and the degree of confidence in the relationship was increased in the following

year. As with neuroticism the relationship with achievement also became closer as the boys became older and reached the significant levels when they were 13 and 14. This study took three years.

Elliot (1972), found out that there is an interesting relationship between educational achievement and personality that changes with time. Reviewing earlier research work, his findings were that by the age of eight there is a statistically positive relationship in children between extraversion and academic achievement. Ten years later the relationship is reversed so that achievement is positively related to introversion. This seems to suggest that either extraverts are better workers than introverts in the primary school and that introverts are better workers in secondary and higher schools or that some factors in the primary schools favour extraverts while other factors in higher education favour introverts. David also points out that,

> *There is known evidence that in most people, extraversion increased up to about the age of 14, and then shows a steady decline towards introversion, throughout the rest of life (David, 1988:176).*

However, this is debatable because personality traits are seen to be enduring and stable.

The fact that introverts seem to do better in higher education than extraverts may not mean that they are more capable scholarly than the extraverts, but could be the way in which teaching and examinations are organized in these institutions. The implication of this is that teachers need to understand the personalities of the pupils if they have to understand their learning patterns.

Establishment of the relationship between academic achievement and introversion-extraversion is important in attaining educational goals. This relationship has been established elsewhere. In Zambia, the relationship has not been established as evidenced by little or no studies done on this aspect, hence the need for this study. Personality is an inseparable aspect of academic assessment of pupils. This is important because, for example, the eating habits of an individual cannot be fairly assessed if food is always served in an environment where the pupil finds it difficult or rather impossible to eat. In a similar manner, assessment of academic achievement without consideration of the part played by personality is unfair to the learner. This study therefore investigated the relationship between extraversion-introversion and academic achievement.

The trait approach model presents personality with clearly defined factors making it possible for the complex personality to be understood easily without dilution of the phenomenon. Studying personality using the situation approach posses some problems in that it becomes quite difficult to identify characteristics because in this approach personality is looked at as a whole and a continuous process that cannot

be studied in fragments. This approach increases the possibility of role fusion with behaviour. However, recent studies have shown that the trait approach is gaining more ground on the justification of its use. Weighing the advantages and disadvantages, the trait approach was used in the study because above all, it makes it possible to clearly pick out the area of interest to the study without problems.

CHAPTER THREE

Methodology

Population

The population for the study comprised all grade twelve pupils in day, co-education government secondary schools in Lusaka Region. There were five such schools in the region. Boarding schools and single sex secondary schools were excluded from the target population. The pupils under study were all considered to be without special needs, with health personalities because they were all enrolled in regular schools. None came from special schools. Grade 12 pupils were selected for the study because it was possible to give the same revision exam to all the schools because at the time the study was done it was assumed that all grade 12 pupils could have completed the senior secondary course. The other factor was that the extraversion-introversion trait seems to be age dependent and picking on the grade 12 pupils only was intended to look at pupils of more or less the same age. The target population was estimated to be around 1000 pupils.

Sample and Sampling

The sample was selected from four secondary schools. The schools were randomly sampled from the defined population using simple random sampling. The lottery technique was used in picking the four schools, Naboye, Kamwala, Libala and

Munali. Then in each of the schools, the pupils were selected by cluster sampling from classes of those taking, Mathematics, Biology and English.

Finally, the sample consisted of 154 grade 12 pupils (47 girls and 107 boys). There was no preference for either boys or girls.

Pilot Study

A pilot study was done at Naboye Secondary School. 20 pupils from one grade 12 class were sampled. The self-report measure set of the questionnaire was administered. Four teachers who had been with the pupils for a long time were selected by simple random sampling and the second set of questionnaires was administered. The pilot study was chiefly aimed at testing the internal consistency of the questionnaires. Clarity was sort for some items and rephrasing became evident to achieve this. Overall, the questionnaires were fairly all right because analysis still showed that they could still identify introverts, ambivalents and extraverts. The researcher did not see any need of testing the examinations before hand because these were revision examinations based on what pupils had earlier done in their senior secondary course, and so pre-testing them would affect their validity for the pupils would have the questions before hand.

Construction of Research Instruments and Data Collection

The study utilized two types of instruments namely, the questionnaire and revision examinations. There were two sets of questionnaires as shown in the appendix.

One set, for the pupils, was a self-report measure questionnaire on the seven factors of the extraversion trait, and the other for teachers that rated the same pupils on the same seven factors of the extraversion trait. Both sets of questionnaires were adapted from Eysenck and Wilson (1991). Eight questions on each of the seven factors were carefully selected and each set of questionnaire consisted of 56 close-ended questions. Three responses were given and the respondent ticked the answer of his/her choice.

The questionnaire technique was chosen in this study because these are easily administered in fairly short time and the objective scoring method used generally minimizes interpreter biases in assigning scores. However, self-report measures are susceptible of faking and distortion. Subjects responding to the items might lie about an item's applicability to them or they might distort their responses owing to the operation of responses set stimulated by either the social desirability of an item or the tendency to agree with what an item proposes. In this study, this was taken care of by the teachers' questionnaires that functioned as a check on the pupils' questionnaires. Three revision examinations were given in English, Mathematics and Biology. The exams were prepared by experienced teachers in the subjects who were also examiners of grade 12s in their final year in their respective subjects under the Examinations Council of Zambia.

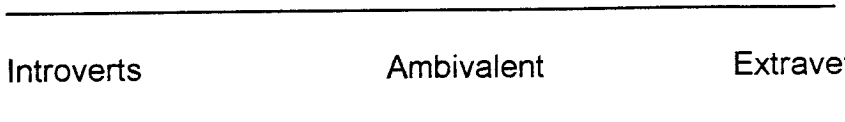
Data were collected over a period of one month. The researcher administered the pupils' questionnaires set on her own in two schools. The researcher was given

time to be with the classes the time they were filling in the questionnaires. For the third and fourth school, the grade teachers administered the questionnaires. However, though the sample was expected to be bigger, absenteeism of the pupils in the various schools affected the sample size. Due to circumstances beyond the researcher's control, the research was conducted at the time when grade twelve were just about to go on study leave to prepare for their examinations. However, those who were not present on the days when the questionnaires were administered were given another chance to fill in the questionnaire but very few responded to the second chance and usually the same pupils were consistently absent from the classes from each school.

On academic achievement, the researcher administered all the three examinations in three subjects to two schools and in the other schools the grade teachers administered them. The examiners for all the four schools then marked the written examinations.

Identification of Personality Trait

The personality trait, Extraversion is like the continuum on which there are the introverts on one hand, and the extraverts on the other and the ambivalents in the middle as shown in the diagram.



The focus of the study was on the comparisons between introverts and extraverts. However, ambivalents could not be done away with since they are along the continuum. Ambivalents were part of result analysis only and not part of the final conclusions.

Type of Data and Scoring Procedure

The type of data collected were both ordinal and nominal. The questionnaires categorized the pupils into extraverts, ambivalents and introverts. A prepared scoring guide also adapted from Eysenck and Wilson (1991) categorized the pupils. The scoring guide (appendix) did not give a clear-cut picture of who was an introvert or extravert but showed who was more of an introvert than an extravert and who was more of an extravert than an introvert on the continuum of the extraversion trait. Those found to be intermediate according to the scores of the factors were classified as ambivalents.

Academic achievement

Three very experienced teachers who were also grade 12 examiners under the Examination Council of Zambia prepared and marked the revision examination in the subjects, Mathematics, English and Biology for all the four schools. The scoring of the pupils indicated their academic achievement in three subjects. (Mathematics, Biology and English) and the general academic achievement was indicated by the average of these three subjects. The marks were out of 100 and therefore the academic achievement is shown as a percentage. Segmenting the marks in

Mathematics, English and Biology according to the pupils' performance created low, medium and high academic achievers. The average performance of the pupils in these subjects was then considered for the three categories of performance.

Data Analysis

Analysis of data was done both manually and with the assistance of the computer using the Statistical Package for Social Sciences (SPSS). Trait identification was done manually. The questionnaires were used to identify the extraverts, introverts and ambivalents. Each item on the scoring guide had a score as shown in the appendix, and each of the seven factors of the extraversion trait had eight items allocated to it. Therefore the score range of each of the factors was 0-8. The score indicated whether the pupil showed more of the introversion characteristics or more of the extraversion characteristics. Then finally deductions were made depending on the scores on all the seven factors. Three of the extraversion factors and four of the introversion factors implied an ambivalent. Three of the introversion factors and four of the extraversion factors implied an ambivalent also. Two, one or none of the introversion factors and five, six, or seven of the extraversion factors implied an extravert. Two, one or none of the extraversion factors and five, six or seven of the introversion factors implied an introvert.

The teachers' questionnaire was used as a check since the pupils' questionnaire was a self-report measure, which was susceptible to faking. The teachers' questionnaire more or less agreed with the pupils' questionnaires, but where there

was a big difference the pupils' questionnaire was considered for the final analysis and the teachers' questionnaire ignored assuming that the pupil knew him/herself much better than the teacher did. This assumption was made because in as much as the teachers can reliably rate their pupils on academic achievement, it may not be so with personality traits. The classroom situation calls for conformity to the set rules and regulations, so it is an introverted society (Eysenck and Wilson, 1991). An extravert may behave more like an introvert in class in order to conform to the set rules and regulations. Research studies (Esnor, 1993; Larkin, 1994; Orenstein, 1994 and Sebakwane, 1993) have also shown that in classrooms, most girls assume introverted behaviors in order to survive from boys' harassment and gender bias practices. They exhibit some kind of hesitance to speak out relative to boys but outside the classroom or school environment, these girls come out of their shells and are free to express themselves. The teachers' ratings of the pupils mostly depend on how they have seen the pupils behave within the school environment. However, overall analysis of both sets of the questionnaires yielded more or less similar results in the identification of the personality traits.

A comparison of the academic achievement of the introverts with that of the extraverts was done by cross tabulation. The aim here was to see how much congruence existed between extraversion trait and performance categories. To determine whether there was a relationship between extraversion-introversion and academic achievement, the Pearson chi-square test was used. Determination of the

nature of the relationship was then done by cross tabulation and finally a comparison of the relationship found in the study with that found elsewhere was done.

CHAPTER FOUR

Findings

The presentation of findings was done according to the research objectives. The pupil respondents were first grouped into three categories, extraverts, ambivalents and introverts according to the identification of the trait. The test for significance of the relationship between academic achievement and the trait was first done at subject level considering three aspects of extraversion (introversion, ambivalence and extraversion) in case (i) and considering two aspects of the extraversion trait (introversion and extraversion) in case (ii). The test for the significance of the relationship between the general academic achievement (which was obtained by the average score in the three subjects, Mathematics, English and Biology) and the personality trait was also done considering three aspects of the trait (extraversion, introversion and ambivalence) in the first case and considering only two aspects of the trait (introversion and extraversion) in the second case. Finally the nature of the relationship was determined using cross tabulations. This was done at subject level first and then general academic achievement was considered.

164 respondents returned the questionnaire. Thus representing 100% return rate, of which 10 were counted out because they were either incomplete or had no responses to some items. The scoring guide did not include a 'no' response item, and so the sample was reduced to 154 pupils.

The table below shows the demographic characteristics and personality traits of pupils.

Table 4:1 Demographic characteristics and personality traits of pupils.

School	**Number of Participants**	**Trait**			**Sex**		**Age range (Years)**	
		Ambivalent	Extravert	Introvert	Male	Female	16-19	20-24
Kamwala	29	14	3	12	18	11	21	8
Libala	42	19	9	14	38	4	31	11
Munali	45	22	5	18	26	19	32	13
Naboye	38	16	6	16	25	13	25	13
Totals	154	71	23	60	107	47	109	45
% of total number of participants	100%	46.1	14.9	30.0	69.5	30.5	70.8	29.2

Identification of the personality traits of the pupils using the teachers' questionnaires showed similar results with those obtained from the pupils' questionnaires was preferred for final analysis because it was assumed that the pupil knew him/herself much better than the teacher. However such cases were very few and so

discrepancies could be ignored especially that the teachers' questionnaire was just used as a check.

The following table shows the number of questionnaires each teacher responded to in each school.

Table 4:2 Number of teachers Questionnaires responded to per school

SCHOOL	NUMBER OF QUESTIONNAIRES EACH TEACHER RESPONDED TO ON THE FACTORS OF THE EXTRAVERSION TRAIT FOR THEIR PUPILS
Kamwala	41
Munali teacher	44
Libala teacher	42
Naboye teacher	36
Total	163

For the teachers questionnaire there were only four respondents; one from each school. To all the four teachers, the researcher administered the questionnaires on her own. All the questionnaires were returned thus representing a 100% return rate.

All the returned questionnaires were valid because all the items had been responded to.

The following table shows the number of introverts, extraverts and ambivalents out of the total sample of 154 male and female pupils.

Table 4:3 Classification of Respondents by Trait

Trait	Extraverts	Introverts	Ambivalents
Number	23	60	71

The pupils were then grouped into low, average and high academic achievers per subject and then per average performance in all the three subjects. The grouping into the three categories depended upon the average score in that subject.

Test of a Significant Relationship

The Pearson Chi-square was used to test for any relationship between academic achievement and the personality trait revealed some significant relationship at 0.05 level of significance.

Nature of the Relationship

The cross tabulations of the academic achievement and the two aspects of the trait (introverts and extraversion) were used in determining the relationship between

extraversion-introversion and academic achievement where it existed. This was done at subject level first, then the general academic achievement was considered.

Relationship between Performance in English and Personality Trait

In English the average score was 42%. The lowest score was 8% and the highest score was 70%. The pupils were grouped as follows: -

8% - 13% - Low academic achievers

32% - 51% - Average academic achievers

52% - 70% - High academic achievers

The following table shows the category of performance in English and the number of pupils according to each trait.

Table 4:4 Number of pupils distributed according to performance category in English and personality trait

Category of Performance	Number			
	Introvert	**Extravert**	**Ambivalent**	**Total**
Low achiever	4	4	16	9
Average achiever	42	13	37	92
Higher achiever	8	4	14	26
Total	54	21	67	142

In the test of significance between academic achievement and all the three aspects of extraversion trait (introverts, extraverts and ambivalent) the following was obtained:

$$\chi^2 \ (4, N = 142) = 7.858, \underline{p} < 0.097$$

In the test of significance between academic achievement and only two aspects of the trait (introverts and extraverts) the following was obtained:

$$\chi^2 \ (2, N = 142) = 2.609, p < 0.27$$

The levels of significance for the obtained chi-square values in both cases were greater than the a-level of 0.05.

Therefore, this suggested that the relationship between academic achievement in English and introversion, ambivalence and extraversion (case (i)) was not significant and that the relationship between academic achievement in English and introversion and extraversion (case (ii)) was also not significant.

The table below is the cross tabulation of the academic achievement in English and the two aspects of the trait.

Table 4:5 Academic achievement categories in English by introverts and extraverts cross tabulation.

Academic Achievement in English	**Introvert**	**Extravert**	**% ofTotal**
Low achievers	7.4%	19.1%	10.7%
Average achievers	77.8%	61.9%	73.3%
Higher achievers	14.8%	19.0%	16.0%
TOTAL	100.0%	100.0%	100.0%

The cross tabulations did not show any relationship between academic achievement in English and the two aspects of the extraversion trait, introversion and extraversion.

Relationship between Performance in Mathematics and Personality Trait

The average score in mathematics was 45%. The lowest score was 3% and the highest score was 90%. The pupils were grouped as follows:-

3% - 34% - Low academic achievers

35% - 59% - Average academic achievers

60% - 90% - Highest academic achievers

The following table shows the distribution of pupils in Mathematics by category of performance and personality traits.

Table 4:6 Number of pupils distributed according to performance category in Mathematics and personality trait

Category of Performance	**Personality Trait**			
Low achievers	Introvert	Extravert	Ambivalent	Total
Average achievers	11	7	27	45
Higher achievers	20	9	21	50
Total	20	7	13	40
	51	*23*	*61*	*135*

In the test of significance of the relationship between academic achievement and the three aspects of the extraversion trait (introverts, extraverts and ambivalent) the following was obtained:

$$\chi^2 (4, N=135) = 7.57, \underline{p} < 0.11$$

In the second case, considering only two aspects of the extraversion trait (extraversion and introversion) the following was obtained:

$$\chi^2 (2, N=135) = 0.847, \underline{p} < 0.66$$

The levels of significance for the obtained chi-square values in both cases were greater than 0.05.

Therefore, this suggested that the relationship between academic achievement in Mathematics and extraversion, ambivalence and introversion (case (i) was not significant and that the relationship between academic achievement in Mathematics and extraversion and introversion (case (ii)) was also not significant.

The following table is the cross tabulation of the academic achievement in Mathematics and extraversion-introversion.

Table 4:7 Academic achievement categories in Mathematics by introverts and extraverts cross tabulation

Academic Achievement in Mathematics	Introvert	Extravert	% of Total
Low achievers	21.6%	30.4%	24.3%
Average achievers	39.2%	39.2%	39.2%
Higher achievers	39.2%	30.4%	36.5%
Total	100.0%	100.0%	100.0%

The cross tabulations did not indicate any relationship between academic achievement in Mathematics and the two aspects of the extraversion trait, introversion and extraversion.

Relationship between Performance in Biology and Personality Traits

The average score in Biology was 42%. The lowest score was 14% and the highest score was 75%. The pupils were grouped as follows:-

14% - 31% - Low achievers

32% - 51% - Average achievers

52% - 75% - Higher achievers

The following table shows the distribution of pupils in Biology by category of performance and personality traits.

Table 4:8 Number of pupils distributed according to the performance category in Biology and personality traits.

Category performance	**Personality Trait**			
	Introvert	Extravert	Ambivalent	Total
Low achiever	9	7	18	34
Average achiever	25	8	30	63
Higher achiever	21	7	13	41
Total	55	22	61	138

In the test of significance of relationship between the academic achievement and the three aspects of the extraversion trait (introverts, extraverts and ambivalents), the following was obtained:

$$\chi^2 \ (4, N=138) = 5.968, \ \underline{p} < 0.20$$

In the second case, considering only two aspects of the extraversion trait that is, introverts and extraverts, the following was obtained:

$$\chi^2 \ (2, N=138) = 2.284, \underline{p} < 0.32$$

The level of significance in both cases were greater than 0.05. Therefore, this suggested that the relationship between academic achievement in Biology and extraversion, ambivalence and introversion (case (i)) was not significant and that the relationship between academic achievement in Biology and extraversion and introversion (case (ii)) was also not significant.

The table below shows the cross tabulation of the academic achievement in Biology and introversion-extraversion.

Table 4:9 Academic Achievement Category in Biology by introverts and extraverts cross tabulation

Academic achievement in Biology	**Introverts**	**Extraverts**	**Total**
Low achievers	16.4%	31.8%	20.8%
Average achievers	45.4%	36.4%	42.8%
Higher achievers	38.2%	31.8%	36.4%
Total	100.0%	100.0%	100.0%

The cross tabulations did not indicate any relationship between academic achievement in Biology and the two aspects of the extraversion trait, extraversion and introversion.

Relationship between General Academic Achievement and Personality Trait

The average score of the average was 43%. The lowest score was 14% and the highest score was 72%. The pupils were grouped into the three categories as follows:

14% - 32% - Low academic achievers

33% - 52% - Average academic achievers

53% - 72% - Highest academic achievers

The following table shows distribution of pupils in general academic achievement by category of personality trait.

Table 4:10 Number of pupils distributed according to General Academic Achievement and Personality Trait

Category	Number			
	Introvert	Extravert	Ambivalent	Total
Low achievers	4	6	23	33
Average achievers	38	13	32	83
Higher achievers	18	4	16	38
Total	60	23	71	154

General Academic Achievement

The general academic achievement in the study was the average of the three subjects namely; English, Mathematics and Biology. Testing for the significance of *the relationship in case (i), which was the relationship between academic* achievement and introversion, ambivalence and extraversion gave the following:

$$\chi^2 (4, N= 154) = 13.681, \underline{p} > 0.008$$

The level of significance for this value was 0.008, which was less than 0.05 the chosen value for this study. This suggested a significant relationship between the variables, academic achievement and three aspects of the extraversion trait (introversion, ambivalence and extraversion).

Testing for the significance of the relationship in case (ii), which was the relationship between academic achievement and introversion and extraversion only, gave the following:

$$\chi^2 (2, N= 154) = 6.327, \underline{p} > 0.042$$

The level of significance for this value was 0.042, which was less than the 0.05. This suggested that the null hypothesis;

There is no significant relationship extraversion-introversion and academic Achievement

was rejected implying that, there is a significant relationship between extraversion-introversion and academic achievement.

The following table shows the cross tabulation of general academic achievement which was obtained by the average score in the three subjects; Mathematics, Biology and English, and the two aspects of the trait, introversion and extraversion.

Table 4:11 General Academic Achievement Category by Introvert and Extravert

General academic achievement	Introverts	Extraverts	Total
Low achievers	6.7%	26.1%	12.0%
Average achievers	63.3%	56.5%	61.4%
Higher achievers	30.0%	17.4%	26.6%
Total	100.0%	100.0%	100/0%

These cross tabulations suggested that at every category of the general academic achievement that is, low, average and high achievers, the introverts performed better than extraverts.

The Chi-square test indicated a significant relationship between the general academic achievement and introversion-extraversion as already shown. Therefore it holds that introverts perform academically better than extraverts in selected schools in Lusaka region. The implication of this was that the null hypothesis:

Introverts do not perform academically better than extraverts in selected Secondary schools in Lusaka region.

was rejected. These cross tabulations showed that introversion is positively related to academic achievement.

CHAPTER FIVE

Discussions, Conclusions and Recommendations

Discussion of Findings

It is interesting to note that at subject level there was no relationship between academic achievement and extraversion-introversion. One could suppose that the academic achievement per subject could be too narrow to give any valuable conclusions on the relationship between academic achievement and the personality trait of extraversion. However on the other hand, at subject level, Riding (1979) observed a significant interaction between extraversion and detail content. He looked at the effect of extraversion and detail content on the recall of prose by eleven-year-old children from urban primary schools. What he found was that there was a possible relationship between extraversion and the mode in which information was represented in the memory.

The tests given to pupils in the three subjects (English, Mathematics and Biology) in this study were revision tests of what had earlier been covered in the course of senior secondary. Since the tests required mainly recalling what had earlier been learnt, the mode in which this information had earlier been represented could affect its recall. The inconsistence in the findings of this study with that of Riding could be attributed to this.

One other factor considered was that the questionnaires were self-report measures implying that, though precautions were taken by using the teachers' questionnaires as a check, there was still a possibility of the pupils' faking according to the applicability of the question to them.

A significant relationship was observed between introversion-extraversion trait and general academic achievement and the nature of this relationship was that achievement was positively related to introversion. These findings conform to the findings of Elliot (1972). Elliot found that by the age of eight there is a statistically positive relationship in children between extraversion and academic achievement, which is reversed about 10 years later such that achievement is positively related to introversion.

Lynn and Gordon (1961) also found a positive relationship between introversion and academic success when they did a study with 60 male university students aged between 18-23 years. Consistency of the study findings with the findings of studies done elsewhere indicate that the nature of the relationship found elsewhere is the same as that found in Zambia.

However on the other hand, the findings of this study were inconsistent with the findings of Orpen (1976). His findings were that extraversion was more important for success at school and introversion for university success. Still considering the age affect of the trait, it could still be observed that the age range of the sample for this

study, 16-24 years fell in the tertiary level of the education, especially because the pupils were in their final year of the secondary education. According to Eysenckian norms, at this stage the child had just passed peak extraversion and so the age-effect on the trait is no longer applicable after the age of 16 years and so it would be expected that introversion at this stage would still be positively related to academic achievement.

The study revealed that the expected normal distribution of the three aspects of extraversion trait did not seem to occur in the study population. The trait extraversion is a continuum with a normal distribution, with introverts at one end, the extraverts at the other end and the ambivalents in the middle. The observation in the study was that there were more of introverts than extraverts. Usually it is only people who are thought of being introverted or extraverted, but this can also be extended to societies. According to Eysenck, H J (1977) societies can also be introverted; opposed to smoking and drinking, wrenching and dancing, intent on moral and religious question, on serious behaviour and deep thought. On the other hand, extraverted societies would be fond of materialistic belongings, sensually appealing trappings, music, dancing, smoking and drinking. It is characteristic of such societies also to have no thought for the morrow.

The school can be classified as an introverted society especially at senior secondary level. In such an environment it is expected that the introverted person will be favoured and be advantaged while an extraverted person will require making a lot of

adjustments in order to fit into such an environment. The school system does call for conformity to the set up rules and regulations. While an introvert can do this with little or no problems, it may not be that easy for the extravert. This may result in the extraverted person having and facing more problems in school and this may have an adverse effect on academic achievement of that individual. The school environment becomes more introverted as one goes up higher the education level and because of this, it is more likely to happen that as the pupils proceed higher up the education level more and more of the extraverts drop out because the educational system favours introverts, such that by the time the pupils are in grade 12 there are more of introverts than extraverts, as was observed from the study. According to the biological explanation of an introverts and an extravert (Eysenck and Eysenck, 1969), the extravert has insufficient stimulation from within and so this type of the individual will tend to look for the supplement from the external world. On the other hand, the introvert has sufficient, stimulation from within and so he/she is contended and not interested in seeking external stimulation.

Our Zambian educational system appears to be one that favours an introvert more than an extravert especially at the senior secondary level. The system offers very little room for exploration and very little chance is given to the extravert to seek stimulation from the outside. Most of the teaching styles employed in classrooms are routine work with emphasis on concentration on individual work and theory. Practical work, group work, group discussions and peer teaching are rarely done if done at all. Ultimately the system favours more an introverted person than an

extraverted person. It is like the introvert learns in a situation convenient to him/her while the extravert learns in an environment inconvenient to him/her. All these are possible factors that could contribute to extraverts lagging behind the introverts in academic achievement.

Curriculum planners seem to have ignored the individual differences in the classroom at the hand of the teacher when they plan for the curriculum. Giving chance and opportunities to the extravert to seek for the shortfall of the stimulation from outside may not be quite easy. This may require employment of a lot of teaching and learning materials, outings, practicals etc. This could be expensive and hence where the economic limitation is prominent, it is quite easy and more convenient to employ teaching and learning styles that favour the introvert because these could be cheaper.

The other aspect is the teachers' motivation to teach. It requires a highly motivated teacher to plan for teaching and learning styles that take into consideration of individual differences. A motivated teacher always tries to get the best out of his/her pupils' abilities. Conversely, a de-motivated teacher does not care and always wants to use the simple and less involving teaching and learning styles, those that are less time consuming and require less supervision and monitoring from the teacher.

The Zambian educational system does not seem to motivate teachers. Most of the teachers are frustrated, and are busy doing other things to earn extra income for their living. Understaffing in schools is another aspect that hinders full commitment to duties on the side of the teacher, as he/she is always too busy. This has been a result of the exodus of teachers to neighbouring countries and other companies and even private schools in search of greener pasture. Teachers in Zambia have always complained of poor conditions of service. The nature of an introvert is such that he/she can enjoy working alone for long periods of time while for an extravert this may be very difficult because he/she require some external stimulation. So in the long run where the educational system faces problems in different aspects, an extravert is more disadvantaged than an introvert. In the long run this would have an adverse effect on academic achievement for both groups of learners.

Another factor of consideration is that an introvert conforms to the school rules and regulations without much difficulty while it is not so easy for an extravert. Teachers naturally have a liking for disciplined pupils than those who usually break the rules. This would affect teachers' attitude towards the pupils which would in turn affect the pupils' responses in class and ultimately affect academic achievement. This needs to be checked. The individual's perception of one's reaction to situations is to quite a large extent a function of his/her personal characteristics. Teachers therefore, require skills to identify extraverts and introverts so that they understand their pupils better.

One would expect the number of male and of female pupils to be the same considering the fact that the schools sampled were co-education secondary schools. Unfortunately, the observations were that there were more male and female pupils. Out of the total of 154 pupils, only 47 were female pupils and the rest, that is 107 are male pupils. This could be attributed to gender differences. Considering the subjects that were looked at in the study, (English, Mathematics and Biology) not many female students are very comfortable with Science and Mathematics because these are believed to be "male subjects". The Zambian society has had a big influence on the future career of both male and female pupils because of the gender biases. Certain subjects were seen to be only for men, while others were seen to be only for women because of the careers they would take up that conform gender roles. Thus, girls from childhood grow up with the attitude that certain subjects are only for boys and not girls. However, it was not until recently, that the Zambian educational system began trying to remove gender biases and correct negative attitudes but this is still quite new such that studies done today still reveal these attitudes towards certain subjects and hence may have an effect on the pupils academic achievement in certain subjects. The sample had a bias towards pupils who took pure Biology, hence fewer girls because, not many girls are encouraged to take science subjects. Trying to correct the situation only at certain levels of the educational system may not help much because from the moment the child is born, these biases in gender begin according to the expectations of the society.

Conclusions

A number of conclusions could be drawn from the findings.

Firstly the hypothesis that, *introverts do not perform better academically better than extraverts in secondary schools in Lusaka Region*, was rejected because cross tabulations revealed that introverts perform academically better than extraverts.

Secondly, the null hypothesis that, *there is no significant relationship between extraversion - introversion and academic achievement,* was rejected because the chi-square value obtained was not significant at the level of significance chosen for the study. This means that the study has revealed that there is a significant relationship between the academic achievement and the personality trait of extraversion – introversion.

Thirdly, for the nature of the relationship, between academic achievement and extraversion – introversion in grade 12 pupils in selected schools in Lusaka Region, it was found to be the same as that established elsewhere where this kind of research has been done, that introverts are better academic achievers than extraverts. Though studies done elsewhere considered the college students that is, those in higher or tertiary learning institutions, it is found that the age range of pupils in those institutions is the same age range we have in our selected secondary schools in Lusaka Region. So though the level of the learning institutions could have

been different, it was still the same age range that was considered. Therefore, hypothesis 3, *the relationship between extraversion – introversion and academic achievement in selected secondary schools in Lusaka Region is not the same as that established elsewhere*, was rejected. This meant that the study revealed that the relationship between extraversion – introversion and academic achievement was the same as that established elsewhere.

Fourthly, this research alerts teachers to the existence of the important links between personality and learning but does not tell what these links are. Though personality seems to be in complex relationship with a number of other variables, teachers must still operate as their own researchers sensitive to the individual personalities of their pupils and alert to the relationship between these personalities and other variables involved.

Recommendations

The following recommendations are made to the Ministry of Education in general and curriculum development planners and teachers in particular.

1. Since a relationship has been established between the personality trait of extraversion - introversion and academic achievement of grade 12 pupils in co-education secondary schools, there is need for teachers and Curriculum planners to take into consideration the individual differences of the pupils in the classroom in order to assist them overcome difficulties they encounter and enable teachers bring out the best in pupils in terms of academic achievement.

2. The classroom teachers should be trained in such a manner that they Gain the skill to identify introverts and extraverts in their classroom. This is necessary because without this skill, they may fail to carter for pupils of different personalities even if they may know how to because they would not know who is an introvert, ambivalent or an extravert.

3. Despite the economical limitations, the Ministry of Education should help the Government of Zambia take education as a priority and try as

much as possible to put in the education sector the necessary resources that would help the system be more effective. Teachers should have facilities to carter for individual differences.

4. The current school calendar for the three year course of senior secondary Education is very condensed and does not give much room for projects, practicals and educational tours. This has resulted in teachers usually rushing through the syllabus in order to complete it in the given time and so employing teaching styles that do not require much time. There is very little time or no time for projects, practicals, outings etc. An extravert who requires stimulation from the external environment will be disadvantaged if these things are not done. It is therefore recommended that the educational calendar for senior secondary be reconsidered so that teachers have enough time to consider individual differences.

5. The current curriculum considers more of the similarities than the Individual differences in the personalities of the pupils, so educational goes are hoped to be attained more easily. Curriculum planners should not only consider similarities but also individual differences when they plan for education.

The following are recommendations for future research.

1. Since a significant relationship has been established between academic achievement and the personality trait of extraversion, it becomes necessary to find out how extraversion affect academic achievement and the extent to which it does.

2. This study was limited to the defined age range, it is therefore important that the study be extended to other levels of the education system.

3. Teacher's personality trait could also be given attention in relation to the pupils' performance and personality traits.

4. Studies of finding out specific subjects in which introverts and extraverts Perform better could be helpful.

5. The effect of streaming according to personality traits and academic achievement is another area that can be explored in educational research.

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APPENDIX I

Grade 12 Biology Revision Test

Duration: 1 hour 30 minutes

SECTION A **20 Marks**

Encircle the letter of your choice

1. Which structures in the plant cell contain cellulose and chromosomes?

	Cellulose	Chromosomes
a.	Cell wall	Ribosome
b.	Nucleus	Cell wall
c.	Cell wall	Nucleus
d.	Ribosome	Cell wall

2. The table shows three functions of cells. Which row is correct?

	Absorption	Transport	Support
a.	Red blood cells	Root hair cell	Muscle cell
b.	Xylem vessel	Muscle cell	Root hair cell
c.	Muscle cell	Xylem vessel	Red blood cell
d.	Root hair cell	Red blood cell	Xylem vessel

3. Groundnut seeds contain a nutrient, which is broken down by amylase during germination. Which test would detect this nutrient?

a. Iodine
b. Ethanol emulsion test
c. Benedict's test
d. Biuret test

4. Which chemical elements are combined to make molecules of glycogen?

a. Carbon, Hydrogen and Oxygen
b. Carbon, Hydrogen and Nitrogen
c. Carbon, Hydrogen, Oxygen and Nitrogen
d. Carbon, Nitrogen and Oxygen

5. Which of the following secretions does not contain enzymes?

a. Gastric juice
b. Pancreatic juice
c. Saliva
d. Bile

6. Which components of faeces is an excretory product?

a. Cellulose (dietary fibre)
b. Bile pigments
c. Bacteria
d. Mucus

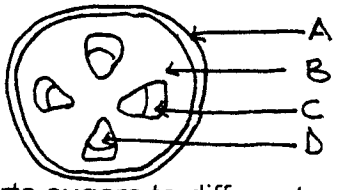
7. The following equation for Photosynthesis is incomplete

1 + Water $\xrightarrow[2]{\text{Light}}$ Sugar + 3

What do the numbers represent?

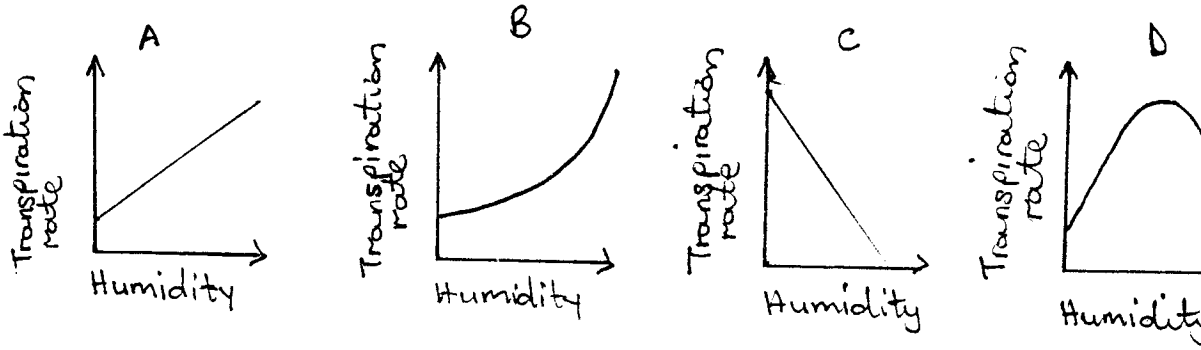
	1	2	3
a.	Oxygen	Chlorophyll	Carbon dioxide
b.	Carbon dioxide	Chlorophyll	Oxygen
c.	Carbon dioxide	Oxygen	Chlorophyll
d.	Chlorophyll	Oxygen	Carbon dioxide

8. The diagram shows a section through the stem of a green plant.



Which tissue transports sugars to different parts of the plant?

9. Which graph shows the effect of increased humidity on the transpiration rate of a plant?



10. Which blood vessel carries blood with the lowest concentration of urea?

a. Hepatic portal vein
b. Pulmonary vein
c. Vena cava
d. Renal vein

11. Which one of the following is a function of cilia in the trachea?

a. to produce and release mucus
b. to moisten the passing inhaled air
c. to support the wall of the trachea

d. to make mucus flow toward the larynx

12. Which one of the following sets of events occurs as a result of respiration in all living cells?

	Oxygen	Carbon dioxide	Dry mass
a.	Uptake	Release	Increase
b.	Uptake	Release	Decrease
c.	Release	Uptake	Increase
d.	Release	Uptake	Decrease

13. Which of the actions straightens (or extends) the forearms?

a. Contractions of the biceps muscle
b. Relaxation of the biceps muscle
c. Contraction of the triceps muscle
d. Relaxation of the triceps muscle

14. Which substances in the dialysis fluid of the Kidney machine should be kept at a lower concentration than in the blood?

a. Glucose and Salts
b. Amino acids and Glucose
c. Glucose and Urea
d. Salts and Urea

15. Where is the hormone glucagons produced and where does it act?

	Site of production	Site of action
a.	Adrenal gland	Liver
b.	Adrenal gland	Body muscles
c.	Pancreas	Liver
d.	Pancreas	ileum

16. Which list of drugs is addictive and lead to withdrawal symptoms when it's use is discontinued?

a. Alcohol, Aspirin and Heroin
b. Heroin, Alcohol and Nicotine
c. Nicotine, Aspirin and Alcohol
d. Heroin, Nicotine and Aspirin

17. To which group [s] are micro-organisms that fix nitrogen in the soil likely to belong?

a. Bacteria and fungi
b. Bacteria only
c. Fungi only
d. Viruses and fungi

18. Which structure in the flower of a plant produces male gametes?

a. Ovary
b. Anther
c. Stigma
d. Receptacle

19. What causes Albinism?

a. Change in chromosome member
b. Dietary deficiency
c. Hormone deficiency
d. Mutation of a gene

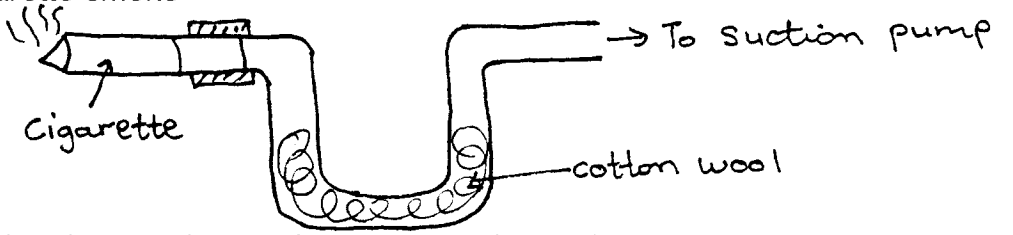
20. In mice, if black is dominate to white and 100 pairs of hybrid mice are mated, the F, generation will be

a. All black
b. All grey
c. 3 black; 1 white
d. 1 black; 1 white

SECTION B (36 marks)

Answer all questions. Write your answers in the spaces provided.

1. The diagram shows the apparatus used for collecting some substances in cigarette smoke



As the cigarette burns, the cotton wool turns brown.

(a) i) Name the substance which causes the cotton wool to change colour.....(1)

ii) The cotton wool provides a large surface area on which this

substance collects. What structures in the lungs does the cotton wool represent?.....(1)

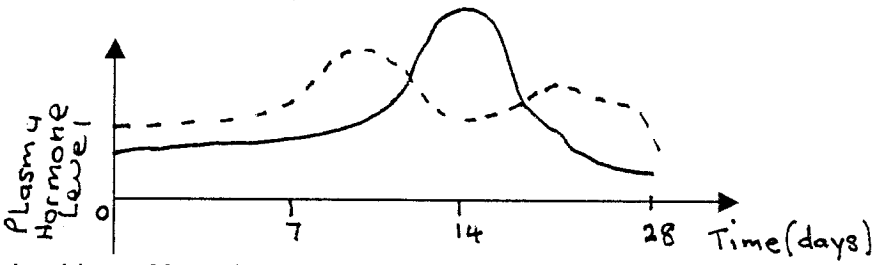
iii) Explain how smoking affects the amount of oxygen taken up by the blood.....
.....
.....
.....(3)

(b) State two ways in which smoking can damage the smoker's health.

1.....
2.....(2)

(c) Babies born to women who smoke during pregnancy are smaller than average. Suggest the possible reason for the reduced birth weight.....
.....
.....2)

2. The graph below illustrates relative levels of Oestrogen and Progesterone during the menstrual cycle.



a) i. Mark with an X on the graph that represents Progesterone
ii. State two functions of Progesterone during the human Reproductive cycle.....
.....
....(4)

b) i. From the graph, what would you say about the days that might be considered as possible for conception?
.....
.....
..... (2)

ii. What other factors, in your opinion may affect hormonal changes during the menstrual cycle in humans?
.....
.....
..... (3)

c) Name two other hormones concerned with reproduction and in each case, state one function.

1. hormone:.....
   function:.....
2. hormone:.....
   function:.....

d) Fertilisation involves fusion of a single ovum with a single sperm and yet human males with sperm count below 50 milliom/ml are likely to be infertile. Suggest a possible explanation.....
.....
.....(3)

3. The A, B and O blood groups are controlled by multiple alleles of a single gene. The gene locus is usually represented by the symbol I. There are three alleles represented by the symbols I, I and I. Alleles I and I are equally dominant and I is recessive to both.

a. State all the possible genotypes of blood groups A, AB and O.

Blood group A.....
Blood group AB.....
Blood group O..... (4)

b. If a group 0 man married a group AB woman, state the possible blood groups that their children could have
..... (1)

c. i. Explain using the above symbols, the possible blood groups of the children parents are both heterozygous, the father for blood group A and the mother for blood group B.

Genotypes of parents:.....
Genotypes of offspring:.....
Blood groups:..... (3)

ii. What are the chances of their first child belonging to blood Group AB? Give your answer as a percentage and show your working.

.....% chance (2)

SECTION C (24 marks)

Answer two questions from this section. Write your answer on the answer sheet provided.

1. a. All viruses are parasites

   i) State the meaning of the term parasite (2)

   ii) State two ways in which HIV (Human Immuno-Deficiency Virus) is different from each of the following

   1. A Bacterium
   2. A Fungus (4)

   b. Describe the biological basis of two methods of preventing the spread of HIV. (6)

2. a. Define the term digestion and explain why it is necessary for an animal's food to be digested. (5)

   b. Give an account of what happens to protein from the time it enters the stomach of a named mammal to the time the products of its digestion are ready to be absorbed into blood. (7)

3. Write an essay on the structure of the leaf and its adaptation for photosynthesis. When this question is marked the examiner will look to see how well you write about a biological subject. You will be given credit for expressing relevant ideas clearly and in a sensible order. (12)

APPENDIX II

Grade 12 Mathematics Revision Test

Duration: 1 hour 30 minutes

Instructions

- This test consists of two sections (A and B).
- In Section A, you are only required to write down the answers.
- But for Section B, you, MUST show all the working.
- Neither Electronic calculations nor mathematical tables may be used.
- All answers must be written in the space provided.

SECTION A

Write answers only (30 marks)

1. Estimate the value of $\frac{75.21}{1.53}$ giving your answer to one significant figure.

   .....

2. Given that $X\sqrt{Y} = K$, where K is a positive constant, and that X=10, when y=9, calculate the value of y when x=6.

   .....

3. $AB = \begin{pmatrix} 8 \\ -6 \end{pmatrix}$ and $CD = \begin{pmatrix} 3 \\ 2 \end{pmatrix} AB$. The point D is (1,4). Find the coordinates of the point C.

   .....

4. The area of a rectangle is 5cm. Find it's area after being enlarged by a scale factor of

   .....

5. Find the inverse of the matrix $\begin{pmatrix} 3 & 2 \\ -1 & 0 \end{pmatrix}$

   .....

6. H is the point (3, k) an L is (0, 4). Given that the gradient of LH is –1, calculate the value of K

.....

7. Given that $-4 \leq p \leq 3$ and $1 \leq q \leq 5$, find the greatest possible value of p-q.

.....

8. Describe completely the Locus of points in three dimensions which are 15 cm from a given point X. A sketch is not required.

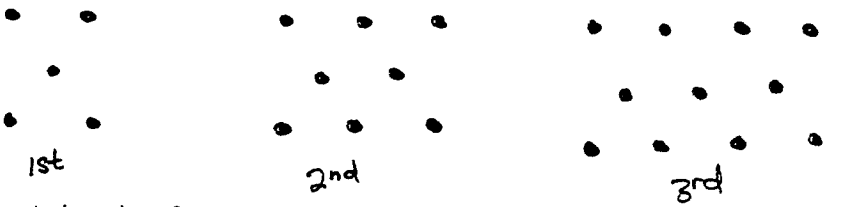
.....

9. Evaluate $5^{\frac{1}{2}} \times 5^{\frac{1}{2}}$

.....

10. Express 0.040375 correct to 2 decimal places.

.....

11. 

Without drawing further patterns, find the number of dots in the 41st pattern.

.....

12. John is X years old. His sister Mercy is (5x – 12) years old. Given that Mary is twice as old as John. Find Mary's age.

.....

13. A programme or Radio Christian voice began at 22:45 one evening and finished at 03:20 on the following morning.
For how many minutes did the programme last?

.....

14. The line y=2x –4 is mapped onto the line K by a reflection in the x – axis. Find the equation of K.

.....

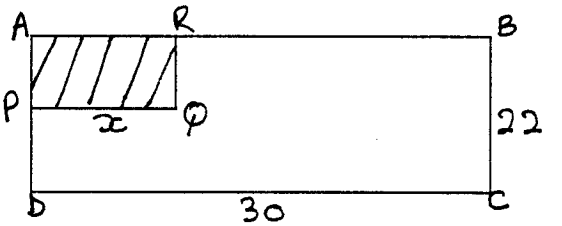
15. The mean of 8 numbers is 6.5. When another number is added, the mean becomes 6. Find the number.

.....

SECTION B

Show all the working (20 marks)

16.



ABCD represents a rectangular garden, which measures 22m by 30m. A man wishes to fence off a rectangular section by placing a 30m length of wire netting along PQR as shown shaded in the diagram.

Taking length to be xm, prove that the remaining unshaded area, y square metres is given by $y = 660 - 30x + x^2$.

17. A hospital diagnoses that a patient has contracted a virus x but it is not known which one. Of the three strains of the virus X_1, X_2 or X_3 the patient has. For a patient having virus X, The probability of it being X_1 , X_2 , or X_3 is ½, 3/8 or 1/8 respectively. The probability of recovery is ½ for X_1 , 2/3 for X_1 and ¼ for X_3 .

Find the probability that the patient will recover.

APPENDIX III

Grade 12 English Revision Test

Duration: 1½ hours.

Instructions: Answers to Secton A and B should be written on the answer sheet provided.

SECTION A: Summary (20 marks)

Read the following and answer the question.

You are a reporter on the staff of your local newspaper. Your editor has given you the following assignment: to interview a Professor Jones, who is an expert on the life and works of William Shakespear and, following the interview, to write a 100 word article on the topic: 'shakespear's Qualities as a Writer.' Your notes from the interview read as follows:

Question: In the literary history of England, William Shakespear is placed as its greatest genius. What qualities did his work have which distinguished him so much from other writers?

Prof. Jones: That's a very wide topic to have to sum up in a few words. However, his most outstanding quality was his perfect mastery of the English language. That is the language of his own time. His vocabulary ranges from the sonority of Latinised English to the simplicity of common speech. His immense creative power coupled with his medium produced the multitude of metaphors and similies, which enriched his work.

Question: Before he began writing, I believe he was an actor. Did this training help him as a dramatist?

Prof. Jones: Yes, very much so. He became a master of the technical skills of the drama of his day and of what we today would call stage management and direction. Indeed, among the writers of tragedy, Shakespeare stand pre-eminent as the master of good beginnings, of complex and swiftly developing plots, of catastrophe growing out of action and of splendid scenes of reconciliation at the end.

Question: To write successful plays I have always thought that one would also have to have a good understanding of human nature. Was this so of Shakespear?

Prof. Jones: Yes, very much so. In his plays he uses characters from the noblest of the basest. All his major characters are faced with similar moral problems and questions of conscience, which we ourselves face in our daily lives. He is full of

deep feeling, but never sentimental. His plays are dramas of passion; love, hate, jealous, fear, frustration and desperation.

Question: Shakespeare mostly wrote about serious historical subjects, which usually included all types of violence. Was he himself a very serious minded person?

Prof. Jones: No, not really, Indeed, one of his overall qualities was his wit and humour, though very much different from our type of humour today. He liked his characters to fool around and behave foolishly in their actions. Some of his plays are completely given over to comedy: Midsummer Night's Dream, where his leading character is a man who is turned into a donkey. A favourite strick was to get his servant characters drunk.

Question: I see. Which do you think is his best play?

Prof. Jones: That's a question everybody asks and a question to which everybody has a different answer. For me, Hamlet, Prince of Denmark is the best.

Prof. Jones, thank you.

Now write an article.

SECTION B - COMPREHENSION (20 marks)

Read the following passage and circle the answer of your choice.

THE EFFECT OF THE SECOND WORLD WAR ON AFRICA

During the Second World War the Western and Communist Allies had emphasized the right of peoples to choose their own governments. Africans fighting alongside European soldiers had gained new self-confidence. The presence of America, French and British private soldiers in Africa territories had shown that not all Europeans were highly placed administrative officers. The collapse of the European empires in the Far East demonstrated that empires were not necessarily permanent. Thus the Africans were aware of a more exciting future.

On the other hand, the European colonial powers had realized to what extent after fifty years of empire rule, African remained under-developed. There was a need for better communications, agricultural research, greater opportunities for education, more hospitals, welfare departments and new industries. Various organizations were set up with the purpose of helping such development. In 1949, President Truman instituted the first programme of aid to the under-developed countries. This programme provided both technical assistance and financial aid. In Britain the Colonial Development and Welfare Organisation entered into anew period of activity.

In France in 1946 began the Fonds d'Investissement et de Development Economique et Social des Territories d' Outre-Mer (FIDES).

Yet in spite of the seemingly rosy future, it was over fifteen years before a majority of the African states had gained independence, but they still required much aid for development. Nevertheless, during that fifteen years the people had the opportunity to grow in political maturity.

The sums of money set aside for improving the amenities in the colonial territories during the immediate pre-war period had been very small. Immediately after the war the two greatest colonial powers in Africa produced quite ambitious schemes for expansion. Unfortunately the plans were not always well devised or practical. The most astonishing failures were those of the British Government to establish mechanized groundnut production in Tanganyika and egg production in the Gambia. Nor did the amounts actually spent reach the sums foreshadowed. By 1950 Britain had spent only one-third and France only one-quarter of what had been intended. The sums did, however, increase during the next five years.

Private investments in Africa reached much larger proportions because some areas, as for example those in the Far East, were no longer available. The most popular field for private investment was still in mines and mining industries. As a result there was large-scale development of the production of minerals and active prospecting for new sources. There was a real boom in certain territories. For example the Union Miniere du Haut-Katanga carried out such a large trade that it paid taxes to the amount of one-third of the budget of the Congo state. Other areas attracting were Guinea and Mauritania for iron, Akjouit and Rhodesia for copper, and Ghana and the Isles de Los for bauxite.

Some private money was used in the fostering of plantations in British East Africa, the Ivory Coast and the French Congo. The increased trade and the growing wealth of some Africans encouraged more enterprising trading companies.

Though the rate of modernization was much slower than had been expected, progress was made. The mileage both of roads and railways increased year by year; the capacity of the ports was extended to take the increased trade. This growth was most noticeable in West Africa where the docks of Dakar, Aidjan, Takoradi, Lagos and Matadi expanded. Then large international airports like Kano drew African into the world air-route service.

The African countries did not need to depend entirely on foreign money either. During the war they had built up quite large credits with the colonial powers, as a result of their supplying raw materials. During the first five years after the war these credits increased because industry in Europe had to change back to peacetime production and was for the time being unable to supply all the African requirements.

The African territories, therefore, had money to finance some of their own development schemes.

Unfortunately, improvements were held up because capital goods, being needed all over the world, were in short supply. Many Africans regarded these delays as due to another attempt of the Europeans to exploit them.

Now answer questions 1-9.

In each of questions 1 to 8 select the best of the four choices given. Write down the answer of your choice against the number of each question. Do not write any words.

1. By fighting alongside the European soldiers, Africans

   a. gained more confidence in themselves as individuals.
   b. gained more experience in the use of weapons.
   c. became aware that all Europeans did not hold high positions of power.
   d. became aware that because Europeans were such good soldiers their empires would last for ever.

2. In 1949

   a. it was first realized that Africa was under-developed.
   b. the first programme of technical and financial aid was begun.
   c. because of the increasing number of casualties during the war more hospitals were built.
   d. the majority of African states gained independence.

3. In the period 1949 –64, the colonial powers

   a. expanded their empires in Africa.
   b. began to teach Africans politics.
   c. invested large amounts of money in African development.
   d. invested less money than before the war.

4. The failure to set up 'mechasinsed groundnut production' in Tanganyika.

   a. that enough money had not been spent
   b. that the plans had not been practical
   c. that there had been an unfair distribution of funds between Tanzania and Zambia
   d. that more money would have to be spent in the future.

5. Private investment in Africa increased because

a. new mineral deposits were discovered
b. the government of the Congo levied no taxes on private mining companies
c. other areas in the world where these private companies formerly invested their money were no longer available for investment
d. the Far East was no longer available for private investment

6. Communications in West Africa were improved

a. the building of new roads, railways, airports and seaports
b. the extension of roads and railways, the building of new airports and seaports
c. the increased mileage of roads and railways; the building of international airports and the expansion of seaports
d. the increased mileage of roads and railways; the building of international airports and the expansion of seaports

7. After the war African countries did not entirely depend on foreign aid because

a. during the war they had collected money from colonial powers
b. they got money from their own development schemes
c. they were now able to manufacture and sell their own capital goods
d. the colonial powers owed them money for raw materials they had received during the war

8. The principal effect of the Second World War on Africa was that

a. many Africans were killed fighting with the Allies
b. Africa shared in the benefits of aid programmes of under-developed countries
c. the colonial empire in Africa collapsed
d. Investment by private companies increased

9. In your now words explain the meaning of the underlined words.

SECTION C

Complete sentence B as per given instructions.

1. The suitcase was all left behind at the airport.

Begin:
The luggage.....

2. If you want to get your money, you must come with me now.

Begin:
Only by.....

.....

3. Has anybody done anything to improve the situation or have people allowed things to go on as before. (Review excluding 'anybody' and people').

.....
.....

4. He always respects his uncle.

Begin:
He always looks.....
.....

5. Amir lived in a large house. His daughter's name was Farida. The house was on top of a hill. (Combine into one sentence without using 'and').
.....
.....

6. Jonathan tries his best to get the first position in class but he never manages.

.....
.....

7. In your place, I'd ask for higher wages.

Begin:
If I.....
.....

8. " Have you had any news of your sister's result, Paul? He asked.

Begin:
He asked Paul.....

9. Despite their hunger they waited for the bus until late in the afternoon.

Begin:
Hungry.....
.....

10. Their son is not so quick and intelligent as their daughter.

Begin:
Their daughter.....
.....

APPENDIX IV

THE UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION

STUDENTS' QUESTIONNAIRE

Dear Student,

I am a Master of Education Student in Educational Psychology at the University of Zambia conducting a research in "***The Relationship between Extraversion – Introversion and Academic achievement in Grade 12 Pupils of Selected Schools in Lusaka.***"

This research can be done more meaningfully if I obtain students' answers to the squestions.

I would be very grateful if you would answer questions in this questionnaire as honestly as possible. Your answers will contribute significantly toward solving some problems in the area of educational achievement. I assure you that all your answers will be treated in the strictest of confidence.

You will find 56 questions in this questionnaire. The big number of questions is regretted but do know that this is so because every question is important.

Under each question there are three answers given i.e. Yes, No and Not sure. Tick the one answer that you consider most correct under each question.

Now, kindly write your particulars here:

Your name..... **Age:**.....

Sex:..... **Date:**.....

In anticipation of your cooperation, allow me to thank you very much.

Thank you.

P.C. Simukonda (Mrs)

1. Do you like planning things well ahead of time?
   Yes.....No.....Not sure.....

2. Do you like to have time to be alone with your thoughts?
Yes..... No..... Not sure.....

3. Do you become restless when working at something in which there is little action?

Yes..... No..... Not sure.....

4. Do you quite enjoy taking risks?

Yes..... No..... Not sure.....

5. If you are watching a funny film or play do you laugh louder than most of the people around you?

Yes..... No..... Not sure.....

6. Are you normally on time for appointments and school?

Yes..... No.....Not sure.....

7. Generally, do you prefer reading to meeting people?

Yes..... No.....Not sure.....

8. Is your anger quick and short?

Yes..... No.....Not sure.....

9. Are you fairly talkative when you are with a group of people?

Yes..... No..... Not sure.....

10. Do you always try to find the underlying motives for the actions of other people?

Yes..... No..... Not sure.....

11. Can you always be (fully) relied upon?

Yes..... No..... Not sure.....

12. Are you inclined to be slow and careful if your actions?

Yes..... No.....Not sure.....

13. Do you like talking to people so much that you never miss a chance of talking to a stranger?

Yes..... No.....Not sure.....

14. Can you make decision quickly?

Yes..... No..... Not sure.....

15. Would you say that your temper is well controlled?

Yes..... No..... Not sure.....

16. Are you eager to learn about things even though they have no relevance to your everyday life?

Yes..... No..... Not sure.....

17. Do you often get into problems because you do things without thinking?

Yes..... No.....Not sure.....

18. Do you have difficult in applying yourself to work that requires sustained concentration?

Yes..... No..... Not sure.....

19. Do you like organizing and initiating leisure-time activities?

Yes..... No..... Not sure.....

20. Do you enjoy spending long periods of time by yourself?

Yes..... No..... Not sure.....

21. Would you enjoy fast driving?

Yes..... No..... Not sure.....

22. Do you generally do and say things without stopping to think?

Yes..... No..... Not sure.....

23. Does it often take you a long time to get started on something?

Yes..... No..... Not sure.....

24. Do you often forget little things that you are supposed to do?

Yes..... No..... Not sure.....

25. Do you walk faster than most people?

Yes..... No..... Not sure.....

26. Are you more distant (closed up) and reserved than most people?

Yes..... No ..... Not sure.....

27. Are you frequently so lost in thought that you do not notice what is going on around you?

Yes..... No..... Not sure.....

28. Do you like mixing with lots of other people?

Yes..... No..... Not sure.....

29. Are you rather careful in new situations?

Yes..... No..... Not sure.....

30. Are you a person who acts on impulse?

Yes..... No..... Not sure.....

31. Do you tell your friends what you think is wrong with them?

Yes..... No.....Not sure.....

32. Are you inclined to rush from one activity to another without pausing for rest?

Yes..... No..... Not sure.....

33. Would you do almost anything for a challenge?

Yes..... No.....Not sure.....

34. Do you like to tell jokes and stories to groups of friends?

Yes..... No.....Not sure.....

35. If you say you will do something do you always keep your promise no matter how inconvenient it might turn out to be?

Yes..... No.....Not sure.....

36. Do you enjoy solving problems even though they have no practical application?

Yes..... No..... Not sure.....

37. Do you generally move about at a leisurely pace?

Yes.....No.....Not sure.....

38. Do you sometimes gamble money on matches, elections or such-like?

Yes..... No..... Not sure.....

39. Do you often get involved in things you later prefer to come out?

Yes..... No..... Not sure.....

40. Are you so thoughtful and reflective that your friends sometimes call you a dreamer?

Yes..... No..... Not sure.....

41. When you are angry with someone do you wait until you have cooled off before tackling him or her about the incident?

Yes..... No..... Not sure.....

42. Can you honestly say that you honour your commitments more than most people?

Yes..... No..... Not sure.....

43. Are you usually full of vigour (energy)?

Yes..... No..... Not sure.....

44. Do you get so excited that you do gestures when you talk?

Yes..... No..... Not sure.....

45. Do you often spend an evening just reading a book?

Yes..... No..... Not sure.....

46. Do you find that you have often crossed a road leaving your more careful companions on the other side?

Yes..... No..... Not sure.....

47. Do you make outrageous threats even though you have no intention of carrying them out?

Yes..... No..... Not sure.....

48. Do you take necessary precautions when engaged in an activity that is not quite safe?

Yes..... No..... Not sure.....

49. Do you need to use a lot of self-control keep out of trouble?

Yes..... No..... Not sure.....

50. Are you likely to swear loudly if you trip over something or hit your finger with a hammer?

Yes..... No.....Not sure.....

51. Do you like work that involves action rather than profound thought and study?

Yes..... No..... Not sure.....

52. Normally, do you tend to do things at a fast rate?

Yes..... No..... Not sure.....

53. Are you inclined to have a limited number of friends?

Yes..... No..... Not sure

54. Do you arrive at school or other appointments with plenty of time of spare?

Yes..... No..... Not sure.....

55. Do you get bored more easily than most people doing the same old things?

Yes..... No..... Not sure.....

56. Would you describe yourself as a carefree person (a person who takes what fortune brings)?

Yes..... No..... Not sure.....

APPENDIX V

THE UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION

TEACHERS' QUESTIONNAIRE

Dear Teacher

My name is P.C. Simukonda {Mrs.] . I am a teacher like you. I am currently a Master of Education student in Educational Psychology at the University of Zambia. I am conducting a research into "**The Relationship between Extraversion-Introversion and academic achievement in Grade 12 Pupils of Selected School in Lusaka."**

I fully realize that meaningful information on Grade 12 students can only be obtained from you. This is why I am asking you to help me collect reliable information on Grade 12 Students in your class. I would be grateful if you could answer the 56 questions as honestly as possible. Your answers will contribute significantly toward solving some problems in the area of educational achievement. I assure you that all your answers will be treated in the strictest of confidence. I apologise that the questionnaire is rather long but please know that every question is important if this research has to be meaningful.

Under each question there are three answers given i.e. Yes, No and Not sure. Tick the one answer that you consider most correct under each question.

Your Name.....

Your Student name:.....

Student's Age:..... Student's Sex:..... Date:.....

In anticipation of your cooperation, I thank you most sincerely.

Thank you.

P.C. Simukonda [Mrs.]

1. Is the pupil the kind of a person who likes planning things well ahead of time?

   Yes..... No.....Not sure.....

2. Does the pupil seem to like having time to be alone with his/her own thoughts?

   Yes..... No..... Not sure.....

3. Does the pupil become restless when working at something in which there is little action?

   Yes..... No..... Not sure.....

4. Does the pupil seem to be quite enjoying taking risks?

   Yes..... No..... Not sure.....

5. Is the pupil likely to laugh louder than most of the people around him when watching a funny film or play?

   Yes..... No..... Not sure.....

6. Is the pupil normally on time for school or appointments?

   Yes..... No..... Not sure.....

7. Does the pupil seem to prefer reading to meeting people?

   Yes..... No..... Not sure.....

8. Is the pupil's anger quick and short?

   Yes..... No.....Not sure.....

9. Is the pupil fairly talkative when with a group of people?

   Yes..... No.....Not sure.....

10. Does the pupil seem to try to find the underlying motives for the actions of other people?

    Yes..... No..... Not sure.....

11. Can the pupil be [fully] relied upon?

Yes..... No..... Not sure.....

12. Is the pupil inclined to be slow and careful in his/her actions?

Yes..... No..... Not sure.....

13. Does the pupil like talking to people so much that he cannot miss a chance of talking to strangers?

Yes..... No..... Not sure.....

14. Is the pupil likely to make decisions quickly?

Yes..... No.....Not sure.....

15. Would you say that the pupil's temper is well controlled?

Yes..... No.....Not sure.....

16. Is the pupils eager to learn about things even though they may have no relevance to his/her everyday life?

Yes..... No..... Not sure.....

17. Does the pupil often get into problems because he/she seems to do things without really thinking?

Yes..... No..... Not sure.....

18. Does the pupil have difficult in applying him/herself to work that requires sustained concentration?

Yes..... No..... Not sure.....

19. Does the pupil seem to like organizing and initiating leisure's time activities?

Yes..... No..... Not sure.....

20. Does the pupil seem to enjoy spending long periods of time by him/herself?

Yes..... No..... Not sure.....

21. Do you think the pupil would not mind getting involved in a risky activity at the expense of enjoyment?

Yes..... No..... Not sure.....

22. Does the pupil generally seem to do and say things without stopping to think?

Yes..... No..... Not sure.....

23. Does it take a long time for the pupil to get started on something?

Yes..... No..... Not sure.....

24. Does the pupil often forget little things that he/she is supposed to do?

Yes..... No..... Not sure.....

25. Is the pupil a fast walker in relation to other people?

Yes..... No..... Not sure.....

26. Is the pupil more distant and reserved than most people?

Yes..... No..... Not sure.....

27. Does the pupil seem frequently lost in thought that he/she does not seem to notice what is going on around him/her?

Yes..... No..... Not sure.....

28. Does the pupil seem to like mixing with lots of other people?

Yes..... No..... Not sure.....

29. Does the pupil seem to take care in new situation?

Yes..... No..... Not sure.....

30. Is the pupil an impulsive person?

Yes..... No..... Not sure.....

31. Do you think the pupil can tell friends what he/she thinks is wrong with them?

Yes..... No..... Not sure.....

32. Is the pupil inclined to rush from one activity to another without pausing for rest?

Yes..... No..... Not sure.....

33. Do you see the pupil as one who can do almost anything for a challenge?

Yes..... No..... Not sure.....

34. Does the pupil seem to like telling jokes and stories to groups of friends?

Yes..... no..... Not sure.....

35. Does the pupil keep the promise no matter how inconvenient it might turn out to be on his/her part?

Yes..... No..... Not sure.....

36. Does the pupil generally move about at a leisurely pace>

Yes.....No..... Not sure.....

37. Does the pupil enjoy solving problems even though they have no practical application?

Yes..... No..... Not sure.....

38. Do you see the pupil as one who can gamble money on matches, election or such-like?

Yes..... No..... Not sure.....

39. Does the pupil often get involved in things that he/she later prefer to come out of?

Yes..... No..... Not sure.....

40. Is the pupil so thoughtful and reflective that sometimes you can call him a dreamer?

Yes..... No..... Not sure.....

41. When the pupil is angry with someone, does he/she wait until he/she has cooled off before tackling them about the incident?

Yes..... No..... Not sure.....

42. Does the pupil honour commitments more than most people?

Yes..... No..... Not sure.....

43. Is the pupil usually full of vigor?

Yes..... No..... Not sure.....

44. Does the pupil get so excited that he/she does gesture when talking?

Yes..... No..... Not sure.....

45. Do you think the pupil would prefer to spend an evening quietly?

Yes..... No..... Not sure.....

46. Do you think the pupil is likely to cross the road without taking much care?

Yes..... No..... Not sure.....

47. Does the pupil make outrageous threats even though he/she does not seem to have intention of carrying them out?

Yes..... No..... Not sure.....

48. Does the pupil take necessary precautions when engaged in an activity that is not quite safe?

Yes..... No..... Not sure.....

49. Does the pupil seem to struggle with him/herself in terms of [self control] to keep out of trouble?

Yes..... No..... Not sure.....

50. Is the pupil likely to swear loudly if he/she trips over something or hit his/her finger with something like a hammer?

Yes..... No..... Not sure.....

51. Does the pupil seem to enjoy work that involves action rather than profound thought and study?

Yes..... No..... Not sure.....

52. Normally, does the pupil tend to do things at a rapid rate?

Yes..... No..... Not sure.....

53. Is the pupil inclined to have a limited number of friends?

Yes.....No..... Not sure.....

54. Does the pupil arrive at school or other appointments with plenty of time to spare?

Yes..... No..... Not sure.....

55. Does the pupil seem to get bored more easily than most pupils doing the same old things?

Yes..... No..... Not sure.....

56. Would you describe the pupil as a carefree person (a person who takes what fortune brings)?

Yes..... No..... Not sure.....

APPENDIX VI

SCORING GUIDE

	EXTRAVERSION	AVERAGE		INTROVERSION
1.	Activity	8 7 6 5 4	3 2 1	Inactivity
2.	Sociability	8 7 6 5	4 3 2 1	Unsociability
3.	Risk-taking	8 7 6 5 4	3 2 1 0	Carefulness
4.	Impulsiveness	8 7 6 5	4 3 2 1	Control
5.	Expressiveness	8 7 6 5 4	3 2 1	Inhibition
6.	Practicability	1 2 3 4	5 6 7 8	Reflectiveness
7.	Irresponsibility	0 1 2 3 4 5	6 7 8	Responsibility

For questions that have a positive (see questions for specific factors) a 'yes' answer scores one mark and for question that have a negative sign, a 'no' answer scores one mark. 'Not sure' scores ½ mark in both cases.

1. **ACTIVITY**

3+	32+
12-	37-
19+	43+
25+	52=

2. **SOCIABILITY**

7-	26-
9+	28+
13+	34+
20-	53-

3. **RISK-TAKING**

4+	46+
21+	38+
29-	48-
33+	54-

4. **IMPULSIVENESS**

1-	30-
14+	39+
17+	49+
22+	55+

5. **EXPRESSIVENESS**

5+	41+
8+	44+
15-	47-
31+	50+

6. **REFLECTIVENESS**

2+	36+
10+	40+
16+	45+
27+	51-

7. **RESPONSIBILITY**

6+	24-
11+	35+
18-	42+
23-	56-

Adapted from Eysenck and Wilson (1991).