DETERMINING THE MODERATING EFFECT OF AGE ON THE RELATIONSHIP BETWEEN EDUCATION AND LEVEL OF COGNITIVE MORAL REASONING

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ABSTRACT

Ethics in South African business has become a key factor in the success or failure of the economy. The purpose of this study is therefore to gain a deeper understanding of the effect that level of education and type of education has on cognitive moral reasoning, and the moderating effect that age has on these relationships. Of particular interest in this study is the role of business orientated education.

The sample included individuals who have attained various types and levels of education from all religious, racial and socio-economic backgrounds. The instrument used to evaluate the level of cognitive moral reasoning of each individual in the sample was the second version of the Defining Issues Test (DIT) originally by Rest (1979), i.e. DIT-2 adapted by Narvaez, Thoma and Bebeau (1999).

The most significant finding of the research is the apparent surge in post-conventional moral thinking of younger people with business oriented education. This finding was significant given previous findings of similar studies regarding age and business students. No significant evidence was found to differentiate males versus females, as well as the influence of level of education.

The results raise the question of the longevity of the effects of ethical training, and whether perhaps the effects are most evident during the time of the training.

KEYWORDS

Cognitive moral reasoning, unethical behaviour, decision making, post-conventional thought

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Lance Van der Scholtz Date

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1. INTRODUCTION TO RESEARCH PROBLEM

1.1. INTRODUCTION

It has been said that there is no such thing as Business Ethics, only Ethics. In the words of the great Albert Einstein: "*Relativity applies to physics, not ethics*". The subject of Ethics has been around for centuries, and although it can be quite complex, fundamentally it can be described as the study of right and wrong (Griseri & Seppala, 2010). "*The only tyrant I accept in this world is the 'small voice' within*" are powerful words spoken by Mahatma Ghandi, and is a reminder of the courage often required to live with integrity, while capturing the simplicity of it.

From a business perspective the imperative of ethical behaviour goes beyond just legal and moral obligation. McMurrian and Matulich (2006) suggest that business ethics is irrefutably linked to trust by employees, business partners, and customers, without which companies will suffer significant reputational and therefore financial damage in the long-term. Henry Ford said that "*A business that makes nothing but money is a poor business*". Businesses today still fail to fully understand the broader context within which they exist and the extent to which their actions have an impact, even though 'triple bottom line' is a term that's been around since the late 1980's (Liveris, 2010).

This research project aims to better understand levels of ethics of individuals by investigating key drivers and demographics which have been alluded to in previous literature. With the research being set in South Africa, it is crucial that it be relevant to the country. The following is an overview of why this research is necessary within the South African context.

1.2. RELEVANCE TO SOUTH AFRICA

Ethics in South African business has become a key factor in the success or failure of the economy. In a recent study of 200 leading South African companies, international consultancy Deloitte found that corruption was cited as their biggest concern (The Economist, 2010). In a further study conducted by the World Bank it was found that one-third of businesses in South Africa expected to donate "gifts" to secure a government contract (The Economist, 2010). According to the UNODC's Country Corruption Assessment Report (2003) South Africa's most significant problems include: the lack of clear anti-corruption legislation; insufficient co-ordination of anti-corruption work within all sectors of society; and inadequate information about corruption and the impact of anti-corruption measures. In a recent article, News24 claimed that only a third of all cases reported to the National Anti-Corruption Hotline actually get dealt with by the Public Service Commission (PSC) (News24, 2010). This is a concerning factor given the prevalence of corruption in all sectors of society.

The infamous 'Arms deal' implicating Schabir Shaik and President Jacob Zuma in a questionable $5 billion deal which was investigated over ten years is an example of corruption within the public sector or government (The Economist, 2010). The suspicion that those at the top will escape sanctions is reinforced by the scuttling of the arms-deal by the Hawks in 2009, as well as President Zuma's charges being dropped on a legal technicality (The Economist, 2010). The probing of the Competition Commission into collusion in the airline industry on pricing strategies during the FIFA 2010 World Cup is an example in the private sector (Defence Web, 2010).

South Africa was ranked 46th out 160 countries by Nation Master in terms of level of corruption, with Iceland being the least corrupt ranked at number one (Nation Master, 2005). In terms of GDP, South Africa is ranked 29th in the world according to the World Fact Book (Central Intelligence Agency (CIA), 2010). Despite education enjoying the largest portion of the South African government spending, amounting to R165 billion in the 2010/11 financial year (South African Government, 2011), it remains to be a major problem. This is illustrated by the fact that in 2009 South African matriculants achieved a pass rate of only 60.7 percent, 1.8 percent lower than the previous year (South African Government, 2011).

The effect of education on cognitive moral reasoning and ethical behaviour is therefore paramount in the South African context given the crisis it finds itself in, in terms of both education and levels of corruption. What does the future hold if the effects of the current levels of corruption were further exacerbated by the influx of future leaders produced by the current education system in crisis?

1.3.RESEARCH OBJECTIVES

The purpose of the study is to gain a deeper understanding of the effect age and education has on cognitive moral reasoning. A further aspect of the study will be to determine the role which the type of education plays in the cognitive moral reasoning, particularly the role of business orientated education. It has often been said that business and ethics do not always agree, and this gives rise to the need to determine whether people with business orientated education have a lower level of ethics as opposed to their non-business orientated counterparts.

The final objective is to make recommendations based on the findings of this research to aid the academic community interested in ethical studies, as well the business and political leaders who not only set the example but also shape the ethical environment our future leaders will operate in.

1.4. RESEARCH MOTIVATION

Ethics has long been an area of keen focus for researchers, but much remains to be understood about what drives individuals to unethical behaviour. This is articulated in the following statement: "*As corporate scandals proliferate, practitioners and researchers alike need a cumulative, quantitative understanding of the antecedents associated with unethical decisions in organizations*" (Kish-Gephart, Harrison, & Trevino, 2010).

Understanding the factors influencing levels of ethical decision making is of great importance to South African business and the economy as a whole. This research will therefore contribute to the existing body of knowledge and is pertinent to learning institutions and policy makers alike, who have a role to play in creating better environments for ethical decision making and develop cognitive moral reasoning of our future leaders.

1.5. RESEARCH SCOPE

The scope of the research will be limited to the South African environment. The respondents used in the collection of data were selected to represent various demographic groupings pertinent to this field of study in order to link levels of ethics with relevant key influencing factors. The data analysis is based on the scores achieved by respondents and is not an indication of actual ethical

intentions or practices in their workplaces. Respondent's anonymity and confidentiality of all data has been preserved throughout the research project.

2. LITERATURE REVIEW

2.1. COGNITIVE MORAL REASONING

Cognitive Moral Reasoning can be defined as involving the manner in which an individual determines a particular course of action that is most morally justifiable, with these actions being affected by their degree of post-conventional reasoning (Morton, Worthley, Testerman, & Mahoney, 2006). As in introduction to the field of ethics the following is an overview of Cognitive Moral Reasoning with regard to the works of Lawrence Kohlberg.

2.1.1. KOHLBERG'S THEORY

Lawrence Kohlberg is a name synonymous with research in Cognitive Moral Reasoning. His interdisciplinary approach, which fused the works of both Rawls and Piaget, excited many researchers at the time and still remains relevant today despite substantial criticism received (Rest, Narvaez, Thoma, & Bebeau, 2000). According to Kohlberg (1963), individuals go through six stages of development in moral thought which has been summarised in Table 1. "*As individuals develop they become less self-centred and develop broader definitions of morality and their reasoning becomes more sophisticated*"; "*making each stage more advanced than the one before*" (Johnson, 2007, p. 62). The model illustrated in Table 1 was instrumental in determining the level of cognitive moral reasoning of individuals because the instrument called the Defining Issues Test described in 2.10 has the stages of development in moral thought built into its analysis. Although modified according to the work of Rest *et al* (2000), the key indicator for the purposes of this kind of study is determined by the amount of level of 3 or post-conventional thought.

TABLE 1: STAGES OF DEVELOPMENT IN MORAL THOUGHT (KOHLBERG, THE DEVELOPMENT OF CHILDREN'S ORIENTATIONS TOWARD A MORAL ORDER, 2008)

Level 1: Pre-Moral level (Pre-conventional)	**Stage 1**: Punishment and obedience orientation
	Stage 2: Naive obedience hedonism
Level 2: Morality of Conventional Role Conformity (Conventional)	**Stage 3**: Good-boy morality of maintaining good relations, approval of others
	Stage 4: Authority maintaining morality
Level 3: Morality of Self-accepted Moral Principles (Post –conventional)	**Stage 5**: Morality of contract and of democratically accepted law
	Stage 6: Morality of individual principles of conscience

2.1.2. CRITICISM OF KOHLBERG THEORY

Kohlberg viewed these stages as an invariant sequence where each stage could only occur once the preceding stage had occurred (Rest, Turiel, & Kohlberg, 1969). Rest (1975) argued against the sequential nature of Kohlberg's model and suggested that an individual is never completely in one stage or another, but that it would change depending on the set of circumstances being experienced (Rest, Davison, & Robbins, 1978). Morton *et al* (2006) suggested that Kohlberg's model, while exploring the roles of both cognition and emotion, focused primarily on cognition.

A Neo-Kohlbergian Approach was later established to address some of the criticism of Kohlberg's model (Rest, Narvaez, Thoma, & Bebeau, 2000). While being based on the stages of the Kohlberg model, Rest *et al* postulated to the following Developmental Schemas (instead of stages): 1) Personal Interest

Schema; 2) Maintaining Norms Schema; and 3) Post-conventional Schema, which they describe as shifting distributions rather than a staircase (Rest, Narvaez, Thoma, & Bebeau, 2000). Further to this, Rest et al (2000) criticised Kohlberg's sixth stage for "*assuming Foundational Principlism*", as "*too individually orientated rather than community oriented*" which may insinuate "*consensus for deontic principles*" where consensus may not exist (Rest, Narvaez, Thoma, & Bebeau, 2000, p. 384).

2.2. DETERMINANTS OF LEVEL OF MORAL REASONING

In a study of business students in the United States of America, it was found that "*empathetic and narcissistic personality traits were significant predictors of ethical decision making*"; as well as that "*finance majors showed a marked and statistically significant tendency to be less empathetic and more narcissistic as compared to other business students*" (Brown, Sautter, Littvay, Sautter, & Bearnes, 2010, p. 203). The evidence found by Brown et al. (2010) to support their first hypothesis above suggests that the level of moral reasoning of students was linked to personality and therefore cannot necessarily be taught. The evidence supporting their second hypothesis however indicates that the financial sub-discipline either attracts or cultivates students with personalities that result in less ethical behaviour (Brown, Sautter, Littvay, Sautter, & Bearnes, 2010). Further to this the role of business schools will be discussed in 2.7.

Watson *et al* (2009, p. 429) produced results indicating that *"past behaviours can be a significant direct predictor of future intentions and significantly add to the explained variance in ethical intentions over and above situational factors and moral reasoning".* Patterned Normative Behaviour (PNB) was determined

through measures of 1) socially responsible behaviour; and 2) self-indulgent behaviour (Watson, Douglas, Berkley, Madapulli, & Zeng, 2009). However they conclude that PNB is not sufficient to explain ethical outcomes, and that it should not be used as a replacement of modern techniques of measuring moral capacities or judgment (Watson, Douglas, Berkley, Madapulli, & Zeng, 2009).

2.3. DECISION MAKING PROCESS

Before one explores the realm of ethical decision making it is important to first consider the concept of decision making. Decision making, according to Altier (1999), consists of the following 5 general steps:

- Define decision statement
- Establish the objectives
- Evaluate the objectives
- Generate alternatives
- Compare and choose

"*It's hard to think of a longer lever to pull than better decision making*" - Jeff Bezos, Founder and CEO Amazon.com.

Decision making is a fundamental component of leadership. It is human nature to display a combination of intuitive and rational decision making. Devine and Sherman (1992) conclude that we are all social creatures and decision makers, with imperfect minds that cannot make judgments and decisions without error.

2.4. ETHICAL DECISION MAKING

The vast majority of literature produced on cognitive moral reasoning and ethical decision making is based on Kohlberg's (1969) seminal work on

cognitive moral development theory (Nguyen, Basuray, Smith, Kopka, & McCulloh, 2008). The question *"Can we as educators justify producing smart and knowledgeable students who have not learned to think ethically?*" is a very valid question posed by Sternberg (2011), and sets the scene for the following literature on ethical decision making.

James Rest (1986) postulated that ethical decision-making is a process that comprises of (Hongsheng, 2010):

1) recognition of an ethical issue or problem;

2) judgment about the morality of the issue or problem;

3) formation of behavioural intentions; and

4) subsequent ethical/unethical behaviour.

Rest argues "*that proper functioning in all components is required*" for ethical decision making, and that *"research and moral education will be enhanced by adopting a process model*" (Frederickson & Ghere, 2005, p. 51).The components of the model suggested by Rest (1986) are Moral Sensitivity, Moral Judgment, Moral Motivation and Moral Character, which are described in the following.

2.4.1. MORAL SENSITIVITY

The first component of Rest's (1986) model can be described as the recognition of the existence of an ethical problem, and can also be called moral sensitivity (Johnson, 2007). Moral sensitivity also requires empathy and perspective skills for individuals to be able to understand moral issues (Johnson, 2007); as well

as being able to perceive the likely outcomes and effects on those involved as a results of alternative courses of action (Frederickson & Ghere, 2005).

2.4.2. MORAL JUDGMENT

The second component of the model is called moral judgment which occurs after an individual has recognised that an ethical issue or problem exists; where individuals make judgments on what is right or wrong given the specific context (Johnson, 2007). Johnson (2007) argues that moral judgment is the most extensively researched component of Rest's model, and that Kohlberg's (1963) stages of moral development model (as illustrated in Table 1) as well as defective reasoning are key aspects of moral judgment. Johnson (2007) suggests that defective reasoning can be referred to as moral stupidity of otherwise intelligent people under the influence of internal factors such as: 1) *Insecurities*: Low self-esteem and self-doubt can often cause individuals to be blind of larger ethical considerations; 2) *Greed*: A winner-take-all culture in society may encourage unethical behaviour in the pursuit of success; and 3) *Ego:* Self-serving biases often put individuals at risk of making questionable decisions.

2.4.3. MORAL MOTIVATION

After moral judgment of an ethical issue or problem has occurred decision–makers need to be motivated to follow through on choices made; with "*moral values often in conflict with other important values like job security, career advancement, social acceptance and wealth"* (Johnson, 2007, p. 70). Ethical behaviour will occur when an individual prioritises moral values above other values and takes responsibility for moral outcomes (Morton, Worthley,

Testerman, & Mahoney, 2006). Rewards and emotions are critical factors in following through with moral tasks and moral motivation: 1) Ethical behaviour and follow through is much more likely to occur if reward mechanisms promote this; 2) Emotions such as jealousy, rage, or depression as an example can also affect the moral motivation of an individual (Johnson, 2007).

2.4.4. MORAL CHARACTER

Closely linked to moral motivation is moral character. This is the ability to persist in a moral task in the face of obstacles (Morton, Worthley, Testerman, & Mahoney, 2006). The final stage of moral action or executing the plan therefore requires character (Johnson, 2007). Individuals with strong will and confidence in themselves, as well as those having an internal locus of control, are more likely to persist in executing the moral task; whereas externally orientated people are more likely to be susceptible to situational pressures and are therefore less likely to persist (Johnson, 2007).

2.5. MODEL FOR ETHICAL BEHAVIOUR

"To act ethically, individuals must go through a series of steps. Unless all these steps are completed, people are not likely to behave in an ethical way" (Sternberg, 2011). Building on the works of Rest as illustrated in 2.4, the following is a model for ethical behaviour according the work of Stenberg (2011).

- Recognize that there is an event to which to react
- Define the event as having an ethical dimension
- Decide that the ethical dimension is significant
- Take personal responsibility for generating an ethical solution

- Figure out what ethical rule(s) might apply to the problem
- Decide how these abstract ethical rules apply to the problem so that they suggest a concrete solution
- Prepare for possible repercussions of having acted in what one considers an ethical manner.

Understanding the dynamics of ethical decision making and how ethical decisions are made is the first step of the journey. The following explores the notion that ethics can be taught or improved upon through training.

2.6. TRAINING IN ETHICS

2.6.1. CAN ETHICS BE TAUGHT?

Kohlberg and Hersh (1977) suggest that exposing students to genuine moral conflicts, and facilitating discussion around the reasoning behind possible resolutions is an example of introducing cognitive moral development at school. In an attempt to answer the question: "*Can business ethics be learned in a classroom?*", Carrol (2005) conducted longitudinal studies on students at the University of Georgia. In his findings Carrol (2005) concludes and concurs with Socrates who believed ethics consisted of "*knowing what we ought to do*" and that this knowledge could and should be taught. Kohlberg and Hersh (1977) suggested that given our capacity to progress to stages of higher moral reasoning, it should be the aim of education to facilitate this development toward more complex ways of reasoning.

Nguyen *et al.* (2008) specifically set out to determine whether teaching made a difference in ethical judgment and subsequent ethical intention by performing pre and post tests on 246 students from a mid-Atlantic school. The study

evaluated ethics along three dimensions namely: moral equity, relativism and contractualism. Moral equity being "*defined as individual perception of fairness and justice, as well as what is right and wrong in the broadest sense*"; Relativism "*defined as the perception of what is right and wrong based on guidelines and parameters embedded in the social and cultural system, rather than individual considerations, captures the deontological concept"*; and Contractualism "*defined as individual perception of what is right and wrong based on notions of an implied contract that exists between business and society, captures normative philosophies*" as defined by Nguyen *et al.* (2008) citing LaFleur *et al.*, Reidenbach and Robin (1995). The study ultimately showed that improvements were only statistically significant in the contractualism dimension and that student learning in contractualism ethics significantly predicts ethical behavioural intention (Nguyen *et al.*, 2008).

2.6.2. EXPERIENCE BASED ETHICS MODEL

Figure 1 is an illustration of how the developmental process of learning ethical decision making may occur (Pelsma & Borgers, 1986). The model is strongly influenced by Kohlberg's (1963) stages of moral development, and also builds on the works of Kolb (1976) that suggests learning is in fact a four-stage cycle consisting of (Pelsma & Borgers, 1986):

- Abstract conceptualisation (AC), or thinking;
- Active experimentation (AE), or doing;
- Concrete experience (CE), or feeling; and
- Reflective observation (RO), or watching.

The model links these modes of learning to the dimensions indicated in Table 2. As indicated in the model, the more individuals progress through the stages of moral reasoning the more highly integrated the four dimensions become, and as the learning modes are more effectively exploited one can see how an individual is able to progress upward toward principle or conscience orientation.

TABLE 2: RELATIONSHIP BETWEEN LEARNING MODES AND GROWTH DIMENSIONS (PELSMA & BORGERS, 1986)

Mode	Dimension Increased
Abstract conceptualisation (AC)	Symbolic Complexity
Active experimentation (AE)	Behavioural Complexity
Concrete experience (CE)	Affective Complexity
Reflective observation (RO)	Perceptual Complexity

The modes can be exploited to invoke development through exposure to moral dilemmas. Students should be encouraged to consider theory, debate various alternatives and their consequences and in so doing are able to conceptualise and also reflect on actual personal experience.

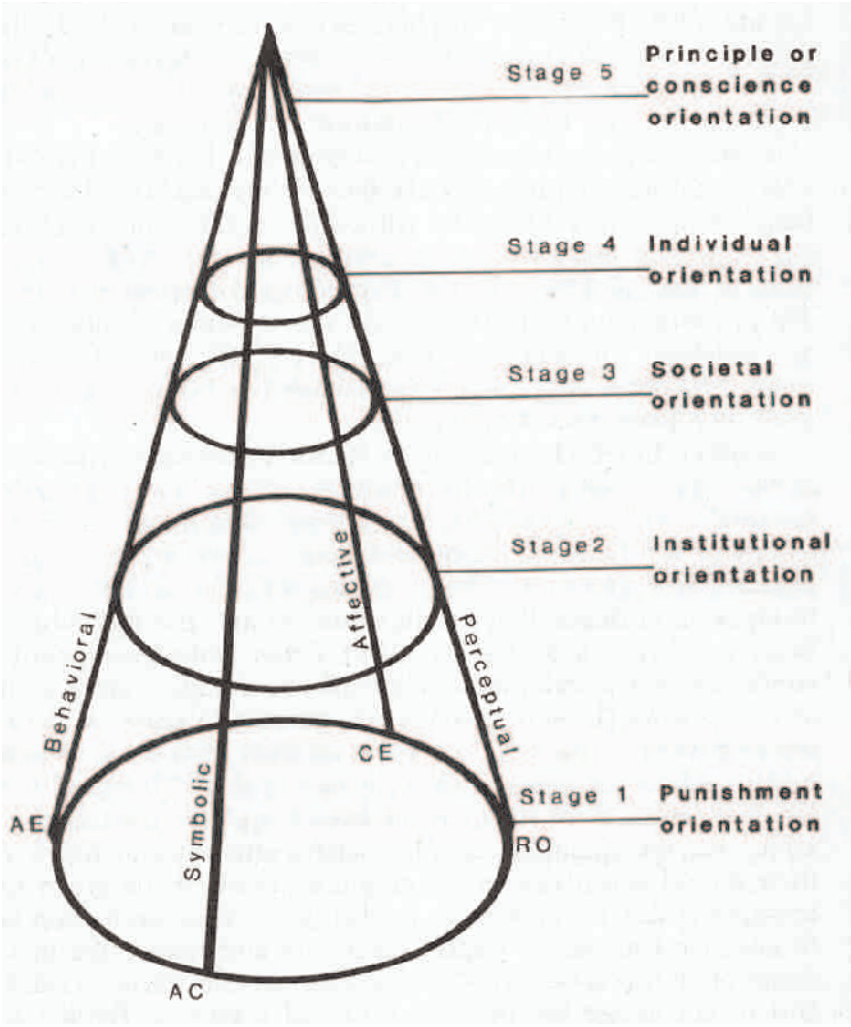

FIGURE 1: THE EXPERIENCE-BASED ETHICS MODEL (FROM KOLB, B. EXPERIENCE AS THE SOURCE OF LEARNING AND DEVELOPMENT. EAGLEWOOD CLIFFS, NJ: PRENTICE-HALL, (1984))

2.7. THE ROLE OF BUSINESS SCHOOLS

The imperatives of exposing students to the consequences of unethical decisions cannot be over-emphasised, and if perceptions regarding ethics are not adequately addressed it raises the question of how likely and at what cost these perceptions change when students enter the corporate world (Smyth, Kroncke, & Davis, 2009). With so much focus on corporate governance due to recent scandals, business and political leaders are looking to business schools to instil ethics in today's executives (Carrol, 2005).

In a study which surveyed 786 students from three colleges in America, it was found that non-business majors were statistically more ethical than business majors Smyth *et al* (2009). However, when comparing the results of the three colleges the study revealed that the business majors were statistically less ethical than non-business majors for the two colleges with minimal or no formal ethics exposure in the curriculum; but the differences were minor in the college where ethics was a formal part of the curriculum according to Smyth *et al* (2009).

Curren and Harich (1996) conducted a study to compare business students with humanities students and found that they in fact did not differ significantly. Curren and Harich (1996) postulate that despite popular perception of business students being less ethical, due to the increased awareness and focus on implications of unethical behaviour, business faculties and therefore students have become much more sensitive toward ethical issues in business. A similar study conducted by Brown (1996) between graduate business, education and engineering students also failed to demonstrate significant differences in ethics between the three groupings.

In a study to determine the ethical principles that guide business students, Guyette and Piotrowski (2009) found that the 'golden rule tenet' i.e. do unto others what you would have them do to you, and the 'utilitarian ethic' principles were the most frequently chosen of a total of fourteen approaches for business ethical decision making. The following two most frequently chosen approaches were 'might equals right ethic' i.e. "*what is ethical is what an individual has the strength and power to accomplish*", and 'means-end ethic' which is basically pseudo for consequentialism.

2.8.THEORIES OF ETHICS

The following is an overview of the most prominent theories of ethics.

2.8.1. VIRTUE ETHICS

Virtue ethics is a philosophy that suggests the concept of determining the rightness or wrongness of an individual action is misplaced, and that one should rather consider the virtues and character of people instead (Griseri & Seppala, 2010). It embraces the idea of a 'good life', and that people with virtues such as honesty, integrity, kindness and fairness are more likely to act in an ethical way (Griseri & Seppala, 2010). Virtue ethics can also be explained by the following: "*An action A is right for S in circumstances C if and only if a fully virtuous agent would characteristically do A in C*" (Svensson, 2010).

2.8.2. DESCRIPTIVE AND NORMATIVE ETHICS

Descriptive and normative ethics are two distinct sub-disciplines of business ethics. Fundamentally the first addresses the question "*what is?*"; and second addresses the question of "*what ought to be?*" (Nguyen, Basuray, Smith, Kopka, & McCulloh, 2008). Essentially descriptive ethics is based in the social sciences while normative ethics is based in moral philosophy (Nguyen, Basuray, Smith, Kopka, & McCulloh, 2008).

2.8.3. DEONTOLOGICAL THEORIES

The most well known example of deontological theory is in the work of Immanuel Kant. Kant believed that humans are responsible for their motives and intentions behind decisions and not for the consequences thereof since these could be affected by fortune as an example (Griseri & Seppala, 2010). The central focus of deontology is the concept of duty, and that the "*morality of*

a behaviour is assessed by application of a rule or principle" (Tanner, Medin, & Iliev, 2008). Kant argued that an ethical choice can be expressed in universal terms and should be acceptable for any person to adopt (Griseri & Seppala, 2010).

A typical example of the application of deontological theory would be the act of telling a lie. Since it would not be permissible as a generally accepted act for any person to adopt, it cannot be deemed acceptable. The act itself, no matter how noble the justifications are and regardless of what the outcome may be, is fundamentally immoral.

2.8.4. CONSEQUENTIALISM

In contrast to deontological theory, consequentialism calls for decisions about what is right or wrong based on the consequences (Tanner, Medin, & Iliev, 2008). This could also be better understood through the saying 'the ends justify the means'. A well known example of consequentialism is utilitarianism, which is focused on promoting the greatest good for the greatest amount of people (Griseri & Seppala, 2010).

2.8.5. CRITICISM OF THEORIES

Criticism of consequentialism would include the potential for fanaticism, where any action can be justified by the outcome. A gruesome example of this could be killing a healthy child for spare parts and saving many other lives (Griseri & Seppala, 2010).

Similarly, fanaticism in deontology could result in disproportionately harsh consequences for the stakeholders of the outcomes of someone maintaining a

consistent principle (Griseri & Seppala, 2010). An example of such fanaticism is sacking someone for a false expense claim, when perhaps it could have been due to a genuine error (Griseri & Seppala, 2010).

2.9.UNETHICAL CHOICES IN THE WORKPLACE

Unethical behaviour in the work place can be influenced by individual characteristics, moral issue characteristics as well as the organizational environment characteristics such as ethical climate, ethical culture and codes of conduct (Kish-Gephart, Harrison, & Trevino, 2010) as illustrated in Figure 2 below.

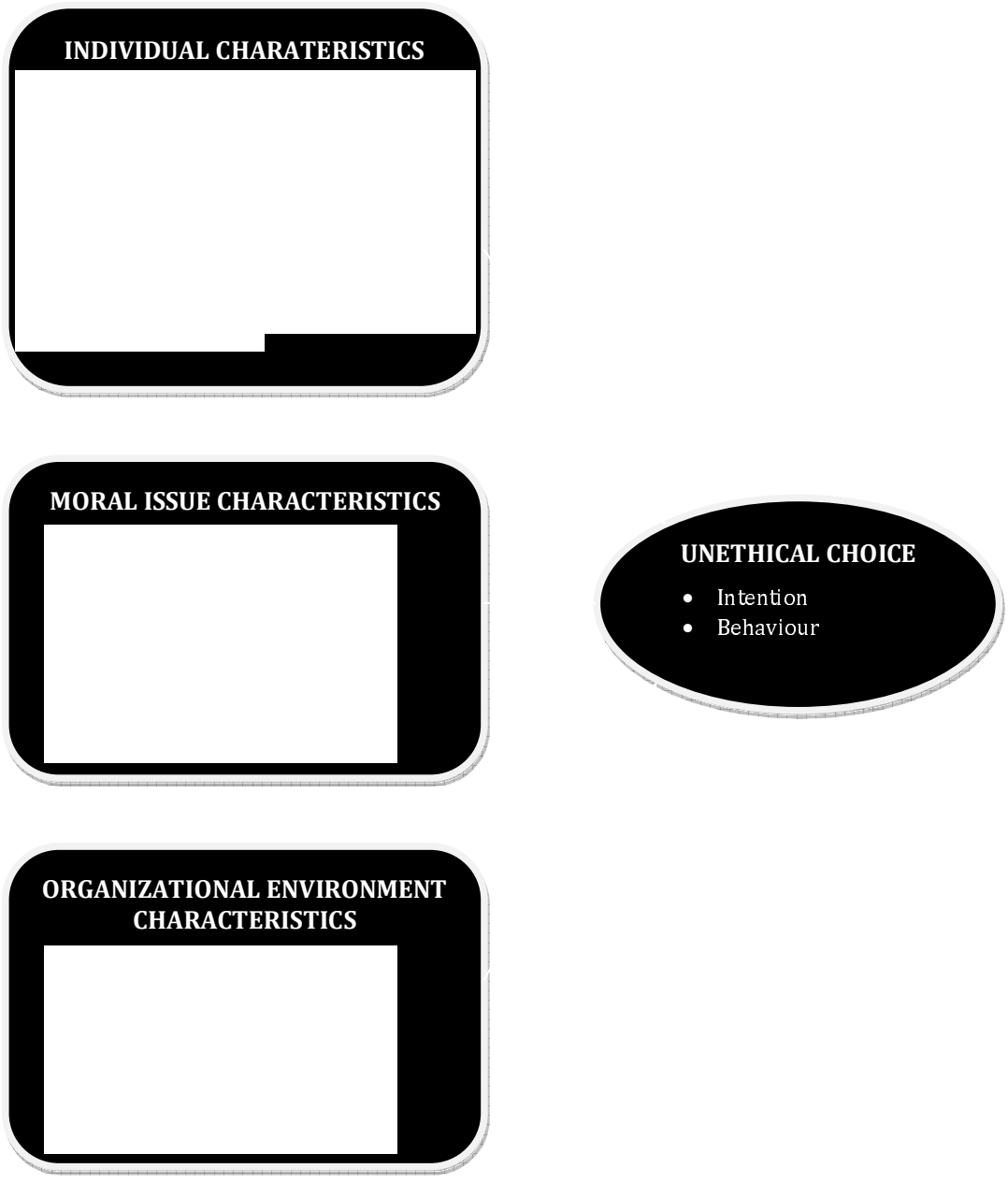

FIGURE 2: META-ANALYTIC FRAMEWORK FOR ANTECEDENTS OF UNETHICAL CHOICES IN THE WORKPLACE

Individual characteristic, moral issue characteristics and organizational characteristics, as contained in the model have been described by Kish-Gephart *et al* (2010) in the following way:

2.9.1. INDIVIDUAL CHARACTERISTICS

Individual characteristics are mainly about the level of cognitive moral development of an individual. In this model it is hypothesised that the level of cognitive moral reasoning is negatively related to unethical choices, intentions or behaviour. Building on the works of Kohlberg (1969), Rest (1979) developed the initial Defining Issues Test (DIT) as a measure of cognitive moral reasoning or ethics of an individual discussed in section 2.10.

Individual characteristics also include moral philosophies like idealism and relativism. Kish-Gephart *et al* (2010, p. 3) cite Forsyth (1980) in defining these philosophies: "*a) Idealism, one's concern for the welfare of others, and b) relativism, one's emphasis on moral principles being situationally determined rather than universal*".

2.9.2. MORAL ISSUE CHARACTERISTICS

Kish-Gephart (2010) postulates that the characteristics of the ethical dilemma facing an individual have an influence on unethical choices, and that moral intensity of an issue comprises of the following:

- Concentration of effect – degree to which consequences of unethical choice are concentrated (i.e. not spread across many individuals)
- Magnitude of consequences – total potential harm to victims as result of unethical choice
- Probability of effect – likelihood of harm as a result of unethical choice
- Proximity – social, cultural, psychological and physical nearness to the victim of the act
- Social consensus – degree of peer agreement

- Temporal immediacy – length of time before harmful consequences are realized
- General moral intensity

Kish-Gephart (2010) hypothesised that an increase in any of the above factors would proportionally increase the moral intensity of an issue, and that moral intensity was negatively related to unethical choices.

2.9.3. ORGANIZATIONAL ENVIRONMENT CHARACTERISTICS

Organizational environment is influenced by the ethical climate and ethical culture within the organization, and is the final component of the factors influencing unethical choices.

Ethical Climate can be describe in terms of how it "*may characterise organisations in terms of broad normative characteristics and qualities that tell people what kind of organization this is – essentially what the organization values*" and is "*likely to be associated with attitudes*" (Trevino, Butterfield, & McCabe, 1998). Ethical Culture "*characterises the organisation in terms of formal an informal control systems (e.g. rules, reward systems, and norms) that are aimed more specifically at influencing behaviour*" (Trevino, Butterfield, & McCabe, 1998).

2.10. DEFINING ISSUES TEST

It has often been said that one cannot change that which cannot be measured. It is for this reason that the Defining Issues Test (DIT) was originally established by Rest (1979) to be used as a measure of moral judgment. Subsequent to his death in 1999, his associates Narvaez, Thoma and Bebeau established the

updated version of the test called DIT-2 (University of Minnesota & University of Alabama, 2008). Empirical evidence has demonstrated the validity and reliability of the moral development DIT instrument (Robinett, 2008). In comparison to the original DIT, DIT-2 has been found to be more up to date; shorter and more streamlined; and "*produces stronger trends on validity and reliability"* (Bebeau & Thoma, 2003).

The test consists of five ethical dilemmas, each followed by 12 issue statements (University of Minnesota & University of Alabama, 2008). The test was constructed to evaluate the respondent's level of moral reasoning through their relative weighting of conventional versus post-conventional responses (Morton, Worthley, Testerman, & Mahoney, 2006). Essentially the moral judgment scores respondents receive are called developmental indices consisting of the following general moral schemas (Bebeau & Thoma, 2003):

- *"Arguments that appeal to personal interests (Personal Interest)"*;
- *"To maintaining social laws and norms (Maintaining Norms)"*; and
- *"Appeal to moral ideals and/or theoretical frameworks for resolving complex moral issues (Post-conventional – P Score)"*.

Other indicators include Religious orthodoxy; Antisocial Score representing considerations "*that reflect an anti-establishment attitude"*; and the Humanitarian/Liberalism variable which is a *"proxy for humanitarian liberal perspective on moral issues"* (Bebeau & Thoma, 2003). Although there are a host of indicators in addition to the above-mentioned few, researchers typically report findings in terms of the P Score, i.e. the proportion of selected items

appealing to Post-conventional frameworks as stated above (Bebeau & Thoma, 2003).

The following is an extract produced by the Center for the Study of Ethical Development summarizing the five ethical dilemmas: *"(a) A father contemplates stealing food for his starving family from the warehouse of a rich man hoarding food; (b) A newspaper reporter must decide whether to report a damaging story about a political candidate; (c) A school board chair must decide whether to hold a contentious and dangerous open meeting; (d) A doctor must decide whether to give an overdose of pain-killer to a suffering but frail patient; (e) College students demonstrate against U.S. foreign policy*" (University of Minnesota & University of Alabama, 2008).

Johnson (2007) reports the following general findings from previous studies using the DIT:

- Moral reasoning ability generally increases with age
- When education stops, moral development plateaus
- There are no consistent differences between moral reasoning of men and woman
- Ethics coursework increases levels of moral judgment
- Older students (those in graduate and professional school) gain a great deal from moral education programmes
- Principled leaders can improve the moral judgment of the group as a whole

Based on the available literature relevant to this study and with reference to the findings of researchers highlighted in the literature review above, the following research question and hypotheses have been made.

3. RESEARCH QUESTIONS/HYPOTHESES

The research question of the study is:

Does the level and type of education achieved by an individual have an influence on their ethical reasoning in business?

Using the mean scores of post-conventional stage thinking as an indicator of moral reasoning, the following hypotheses have been made:

3.1. HYPOTHESIS 1

Hypothesis 1 is concerned with the influence that level of education has on level of cognitive moral reasoning. Previous studies and literature indicate that higher levels of education correlate to higher levels of ethics. Hypothesis 1 can therefore be framed as follows:

$H1_0$: $\mu_{upper} \geq \mu_{lower}$

$H1_A$: $\mu_{upper} < \mu_{lower}$

Where:

μ_{upper} = Mean post-conventional score for respondents with education levels of Masters and higher

μ_{lower} = Mean post-conventional score for respondents with education levels of honours and lower

$H1_0$ = Null hypothesis 1

$H1_A$ = Alternative hypothesis

3.2. HYPOTHESIS 2

Hypothesis 2 deals with type of education rather than level of education. Part of the objectives of this research is to determine the influence that business orientated education (e.g. MBA programs) has on ethical behaviour of these kinds of students in relation to other fields of study. Previous studies are divided as to whether business students are indeed more or less ethical than others, but the general sentiment is still weighted towards lower levels of ethics being associated with business students. Hypothesis 2 can therefore be framed as:

$H2_0$: $\mu_{business} < \mu_{other}$

$H2_A$: $\mu_{business} \geq \mu_{other}$

Where:

$\mu_{business}$ = Mean post-conventional score for respondents from business (i.e. MBA)

μ_{other} = Mean post-conventional score for respondents from other fields of study combined

$H2_0$ = Null hypothesis 1

$H2_A$ = Alternative hypothesis

3.3. HYPOTHESIS 3

Having considered level and type of education, hypothesis 3 aims to determine whether age has a moderating effect on the relationship between education and cognitive moral reasoning. This will be tested by evaluating the results within

level of education and type of education, according to age respectively. Hypothesis 3 therefore states that:

H3: Age has a moderating effect on the relationship between education and cognitive moral reasoning of a business person.

The following research methodology section will describe the research design and the methods used to: test the above hypotheses; and achieve the objectives set out in this research.

4. RESEARCH METHODOLOGY

4.1. RESEARCH DESIGN

The research is quantitative in nature. It is not causal, but rather determines if there is statistically significant variance between the tested demographics. This approach is fit for the purpose of the research and achieving the objectives set out in 1.31.3 above. Primary data was collected, although secondary data was used for benchmarking purposes.

4.1.1. RESEARCH INSTRUMENT

The instrument used to evaluate the level of moral reasoning of each individual in the sample was the second version of the Defining Issues Test (DIT), i.e. DIT-2 described 2.10. The DIT was originally designed by Rest (1979) and is exclusively available through the Centre for the Study of Ethical Development (Bebeau & Thoma, 2003). Based on the literature described above this test was selected as the most suitable due to the amount of consensus among researchers, as well as its reliability and usability.

4.1.2. DATA COLLECTION

The online DIT-2 is an anonymous and self-administered test, which ensures confidentiality. Survey Monkey was used as the online tool to ensure the greatest number of responses as opposed to the traditional physical hard-copy method previously used for the completion of DIT tests. Respondents were required to complete the survey in one sitting and evaluate the importance of various issues relevant to the ethical dilemmas described in 2.10 above.

The DIT-2 online survey was made available to the sample being tested via an email request. The preamble to the test as well as the full DIT-2 can be seen in Appendix B. The results for each individual respondent were sent to the Center for the Study of Ethical Development where the information was analysed and a report containing the scoring was returned to the author (University of Minnesota & University of Alabama, 2008).

4.2. POPULATION AND SAMPLING

The population of the research can be defined as business people over the age of 18. This includes individuals who have attained various types and levels of education from all religious, racial and socio-economic backgrounds.

The sampling method was a combination of snowballing and convenience sample. This method, while being the most effective in ensuring the maximum amount of responses were received in the required space of time, is a non-probability method the outcome of which cannot be considered to be representative of the entire population.

The survey link accompanying the response request was sent to current GIBS MBA students, colleagues and friends, who were requested to invite other members of their social networks to do the test as well. The key demographic information that was required by respondents was age, gender, level of education and type of education completed. Targeting GIBS MBA students was a deliberate attempt to get sufficient respondents with a business related field of study to satisfy one of the research objectives being an evaluation of business versus non-business orientated education. The snowballing method via social

networking platforms ensured that respondents from various other fields of study were accounted for in the data collected.

4.3. DATA ANALYSIS

After the scoring of each respondent was received from the Center for the Study of Ethical Development, the above-mentioned hypotheses were tested by way of Wilcoxon two-way tests and supported by Chi-square tests which is "*appropriate for situations in which differences in samples is required*" (Blumberg, Cooper, & Schindler, 2005). Non-parametric statistical tests needed to be used given the small sample size and that normal distributions could not be assumed.

The moral judgment scores received per respondent are indicative of the level of moral development, and the key scores received as an output of the DIT-2 were as follows (Bebeau & Thoma, 2003):

- Personal Interest Schema:

  Responses that tend to be focused on direct advantages to the respondent. Considerations also tend to focus on the good and evil intentions of the parties involved in the cases. These generally include stage 2 and 3 of Table 1: Stages of development in moral thought .

- Maintaining Norms Schema:

  Mainly stage 4 considerations, which are characterised by maintaining the legal system, maintaining existing roles and formal organizational structure.

- Post-conventional Schema:

Post-conventional thinking refers to stage 5 and 6, and is known as the P-score. These considerations focus on organizing society by appealing to consensus producing procedures. These respondents would typically insist on due process and safeguard minimal basic rights.

- N2 Score:

  The N2 score is a new addition to the DIT and is very closely linked to the P-score.

The P-score was used as the indicator of level of moral judgment for the purposes of this study. Previous studies in the United States of America yielded P-score results taken from the DIT-2 Guide (Bebeau & Thoma, 2003) which serve as a useful benchmark when interpreting the moral judgment scores detailed in chapter 5 are depicted in Table 3.

TABLE 3: DIT SUBGROUP MEANS AND STANDARD DEVIATIONS FOR THE P-SCORE BY GENDER (BEBEAU & THOMA, 2003)

	Gender					
	Male			**Female**		
Level of education	Mean	Standard Deviation	N	Mean	Standard Deviation	N
Jr. High	15.68	9.18	20	16.03	17.36	16
Sr. High	32.19	16.88	428	35.26	17.19	233
Voc/Tech	29.6	17.25	35	33.88	13.80	74
Jr. College	28.87	14.19	84	32.27	14.13	152
Freshman	29.66	14.07	808	34.02	13.54	1,271
Sophomore	29.77	14.63	394	34.39	14.65	625
Junior	15.68	14.63	521	36.61	15.77	786
Senior	34.58	15.06	980	40.03	15.23	1.434

M.S. degree	38.19	14.73	349	43.08	16.16	499
Prof. Degree	42.29	16.17	791	47.66	15.05	773
Ph.D/Ed.D	46.81	16.76	84	54.16	14.72	78
Other	33.66	15.5	32	38.79	15.91	67
Total	34.35	15.94	4,526	38.61	15.82	6,008

Although the sample size in some instances were small and the study was limited to a sample from the United States of America, the results definitely raise interest in how specific demographics such as age, level of education and gender compare with each other in terms of their level of cognitive moral reasoning.

4.4. LIMITATIONS

The data used in the research was limited to South African respondents which cannot be assumed to be representative of global norms given that culture may have a significant role in cognitive moral reasoning. Cultural differences having an influence was evident in a previous study done by Lin and Ho (2008) on Taiwanese and American accounting students. The study found that the "*US accounting students tend to follow justice and egoism philosophies while their Taiwanese counterparts appear to follow justice and deontology philosophies when considering ethical issues"* (Lin & Ho, 2008).

The amount of data collected for this research was also limited to the amount respondents available to complete the full DIT-2 testing instrument. Respondents may not have had English as their first language which may have an impact on how respondents understand the moral dilemmas presented in the DIT-2 test (University of Minnesota & University of Alabama, 2008). A further

limitation is therefore also the degree to which the reliability and validity checks performed by the Center for the Study of Ethical Development are effective in removing bogus or unreliable data. The reliability and validity of the actual data collected will be discussed in section 5.4. Limitations will be discussed further in section 6.6 of the discussion of results.

5. RESULTS

This chapter will describe the sample characteristics and provide a summary of the results of all respondents. The results of various demographic groupings will be depicted, as well as the overall validity and reliability of the results achieved. Each of the hypotheses were also tested and the results of these will also be contained in this chapter.

5.1.INSTRUMENT ADJUSTMENTS

The only adjustments required to the online DIT-2 were in terms of the demographic questions. The original test referred to educational levels relevant to the United States of America. These were altered to be relevant to South Africa and were approved by the University of Alabama prior to the data collection process.

5.2.SAMPLE CHARACTERISTICS

A total of 98 respondents attempted to complete the online DIT-2 test over a period of three weeks. Out the 98 attempts 43 responses were deemed to be unusable due to the following reasons:

- Respondents choosing to skip certain scenarios in the test
- Respondents not completing response in one sitting
- Responses failing to pass the validity and reliability tests performed by the University of Alabama prior to data processing

Figure 3 is an indication of the breakdown of the entire sample according to the field of study.

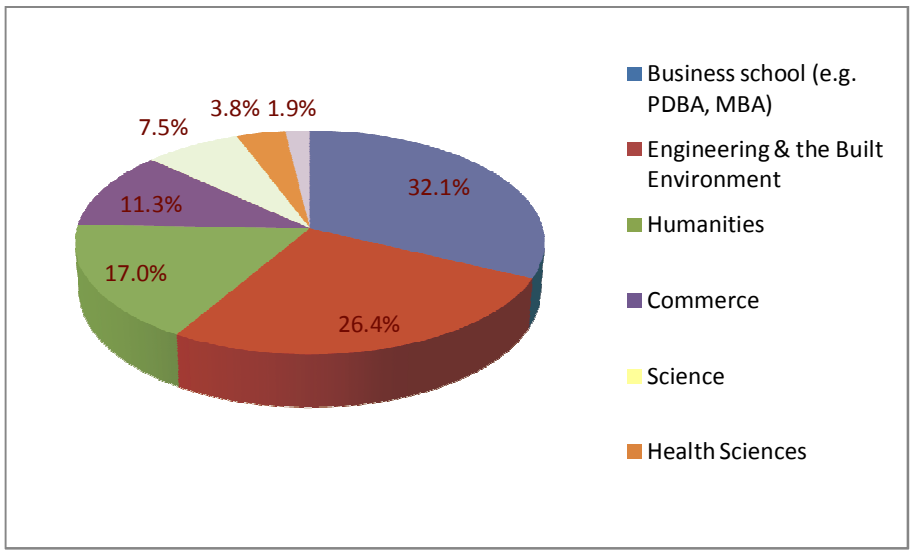

FIGURE 3: ENTIRE SAMPLE ACCORDING TO FIELD OF STUDY

In accordance with the objectives set out in this research the sample included business and non-business students, as well as various levels of education and ages. The sample frequency distributions of each demographic grouping according to age, gender, level of education and type of education are also highlighted in the following.

5.3. RESULTS ACCORDING TO DEMOGRAPHIC GROUPINGS

Adhering to the hypotheses in Chapter 3, the results are depicted below in the relevant demographic groupings. Summarised extracts of the results achieved will be highlighted below, with the full data set available in Appendix B.

5.3.1. ENTIRE SAMPLE

The summarised descriptive statistics for the entire sample is illustrated in Table 4. Generally speaking the entire sample scored an average P-score in the

region just above senior high students in the DIT results from a previous study illustrated in Table 3.

TABLE 4: DESCRIPTIVE STATISTICS OF ENTIRE SAMPLE

Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
PSCORE	**PSCORE**	32.27	12.15	55	24.00	30.00	40.00
N2SCORE	**N2SCORE**	27.20	13.29	55	15.18	26.79	40.45
STAGE23	**STAGE23**	24.95	10.78	55	18.00	24.00	32.00
STAGE4P	**STAGE4P**	37.73	14.58	55	28.00	36.00	46.00

5.3.2. AGE

Frequency distribution of respondents according to age was split between younger than 35 years; and 35 years and older, as illustrated in Table 5.

TABLE 5: FREQUENCY DISTRIBUTION ACCORDING TO AGE

Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Younger than 35	30	54.55	30	54.55
35 and older	25	45.45	55	100.00

The summarised descriptive statistics according to age is illustrated in Table 6.

TABLE 6: DESCRIPTIVE STATISTICS ACCORDING TO AGE

Age	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
Younger than 35	**PSCORE**	**PSCORE**	34.17	11.73	30	26.00	34.00	44.00
	N2SCORE	**N2SCORE**	30.12	13.29	30	18.96	28.33	41.45
	STAGE23	**STAGE23**	26.68	11.03	30	18.00	28.00	34.00
	STAGE4P	**STAGE4P**	34.10	13.07	30	26.00	34.00	44.00

Age	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
35 and older	PSCORE	PSCORE	30.00	12.49	25	24.00	28.00	40.00
	N2SCORE	N2SCORE	23.70	12.66	25	14.09	19.97	33.47
	STAGE23	STAGE23	22.88	10.30	25	18.00	20.00	30.00
	STAGE4P	STAGE4P	42.08	15.35	25	32.00	38.00	58.00

Against expectation, the mean P-score of the younger group was higher than the older group. Statistical significance of the difference in the above mean P-scores was tested by way of a Wilcoxon two-sample test.

TABLE 7: WILCOXON SCORES ACCORDING TO AGE

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable Age					
Age	**N**	**Sum of Scores**	**Expected Under H0**	**Std Dev Under H0**	**Mean Score**
Younger than 35	30	910.0	840.0	59.005863	30.333333
35 and older	25	630.0	700.0	59.005863	25.200000
Average scores were used for ties.					

TABLE 8: WILCOXON TWO-SAMPLE TEST RESULTS ACCORDING TO AGE

Wilcoxon Two-Sample Test	
Statistic	630.0000
Normal Approximation	
Z	-1.1778
One-Sided Pr < Z	0.1194
Two-Sided Pr > |Z|	0.2389

Wilcoxon Two-Sample Test	
t Approximation	
One-Sided Pr < Z	0.1220
Two-Sided Pr > |Z|	0.2440
Z includes a continuity correction of 0.5.	

With a significance level of 0.05 (α = 0.05), the Wilcoxon two-sample test according to age did not yield a statistically significant finding.

5.3.3. GENDER

The frequency distribution of respondents according to gender can be seen in Table 9.

TABLE 9: FREQUENCY DISTRIBUTION ACCORDING TO GENDER

Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Male	29	54.72	29	54.72
Female	24	45.28	53	100.00

The summarised descriptive statistics according to gender is illustrated in Table 10.

TABLE 10: DESCIPTIVE STATISTICS ACCORDING TO GENDER

Gender	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
Male	**PSCORE**	**PSCORE**	31.17	11.95	29	24.00	30.00	40.00
	N2SCORE	**N2SCORE**	28.76	14.10	29	15.18	29.14	40.92
	STAGE23	**STAGE23**	24.48	9.11	29	18.00	24.00	32.00

Gender	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
	STAGE4P	STAGE4P	40.14	14.69	29	30.00	38.00	52.00
Female	PSCORE	PSCORE	33.58	13.00	24	24.00	34.00	41.00
	N2SCORE	N2SCORE	25.96	12.54	24	17.02	23.96	32.17
	STAGE23	STAGE23	25.83	12.88	24	17.00	26.00	33.00
	STAGE4P	STAGE4P	34.83	14.67	24	24.00	34.00	41.00

Females on average achieved a P-score of 33.58, while males achieved an average P-score of 31.17. Statistical significance of the difference the above mean P-scores was tested by way of a Wilcoxon two-sample test.

TABLE 11: WILCOXON SCORES ACCORDING TO GENDER

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable Gender					
Gender	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Male	29	756.0	783.0	55.817425	26.068966
Female	24	675.0	648.0	55.817425	28.125000
Average scores were used for ties.					

TABLE 12: WILCOXON TWO-WAY SAMPLE TEST RESULTS ACCORDING TO GENDER

Wilcoxon Two-Sample Test	
Statistic	675.0000
Normal Approximation	
Z	0.4748
One-Sided Pr > Z	0.3175
Two-Sided Pr > |Z|	0.6350

Wilcoxon Two-Sample Test	
t Approximation	
One-Sided Pr > Z	0.3185
Two-Sided Pr > |Z|	0.6369
Z includes a continuity correction of 0.5.	

With a significance level of 0.05 (α = 0.05), the Wilcoxon two-sample test according to gender did not yield a statistically significant finding.

5.3.4. LEVEL OF EDUCATION

The frequency distribution of respondents according to level of education was split between respondents with Honours degrees and lower, and those with Masters degrees and higher. Figure 4: Entire sample according to level of educationFigure 4 is an illustration of the entire breakdown of the sample according to level of education.

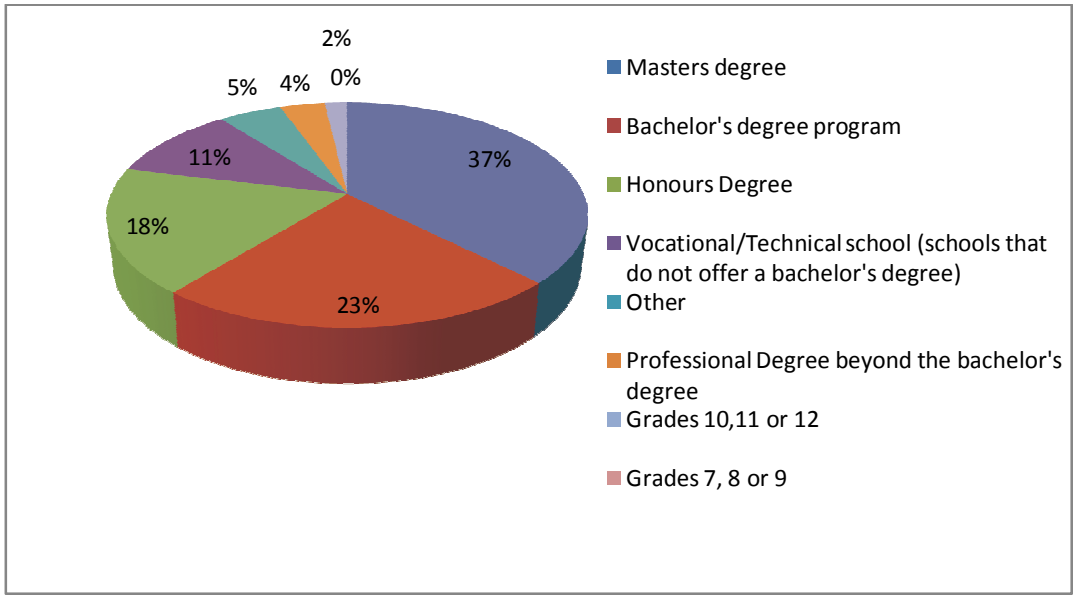

FIGURE 4: ENTIRE SAMPLE ACCORDING TO LEVEL OF EDUCATION

In accordance with hypothesis 1the sample was divided into respondents with honours level and below, and respondent with masters level and above. The frequency distribution can be seen in Table 13.

TABLE 13: FREQUENCY DISTRIBUTION ACCORDING TO LEVEL OF EDUCATION

Level of Education	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Honours and below	32	60.38	32	60.38
Masters and PHD	21	39.62	53	100.00

The summarised descriptive statistics according to level of education is illustrated in Table 14.

TABLE 14: DESCRIPTIVE STATISTICS ACCORDING TO LEVEL OF EDUCATION

Level of education	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
Honours and below	**PSCORE**	**PSCORE**	30.56	11.83	32	24.00	30.00	39.00

Level of education	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
	N2SCORE	N2SCORE	24.54	12.26	32	14.20	23.76	33.68
	STAGE23	STAGE23	25.31	11.80	32	18.00	24.00	32.00
	STAGE4P	STAGE4P	38.81	14.31	32	28.00	37.00	47.00
Masters and PHD	PSCORE	PSCORE	34.86	13.02	21	24.00	34.00	44.00
	N2SCORE	N2SCORE	31.98	14.01	21	19.87	26.98	41.60
	STAGE23	STAGE23	24.76	9.60	21	16.00	28.00	34.00
	STAGE4P	STAGE4P	36.10	15.68	21	28.00	34.00	46.00

Respondents with honours level and below achieved lower P-scores on average than the respondents with masters level and above as was expected. Statistical significance of the difference the above mean P-scores was tested by way of a Wilcoxon two-sample test.

TABLE 15: WILCOXON SCORES ACCORDING TO LEVEL OF EDUCATION

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable Level of Education					
Level of Education	**N**	**Sum of Scores**	**Expected Under H0**	**Std Dev Under H0**	**Mean Score**
Masters and PHD	21	626.50	567.0	54.846613	29.833333
Honours and less	32	804.50	864.0	54.846613	25.140625
Average scores were used for ties.					

TABLE 16: WILCOXON TWO-WAY SAMPLE TEST RESULTS ACCORDING TO LEVEL OF EDUCATION

Wilcoxon Two-Sample Test	
Statistic	626.5000

Wilcoxon Two-Sample Test	
Normal Approximation	
Z	1.0757
One-Sided Pr > Z	0.1410
Two-Sided Pr > |Z|	0.2820
t Approximation	
One-Sided Pr > Z	0.1435
Two-Sided Pr > |Z|	0.2870
Z includes a continuity correction of 0.5.	

With a significance level of 0.05 (α = 0.05), the Wilcoxon two-sample test according to level of education did not yield a statistically significant finding.

5.3.5. TYPE OF EDUCATION

With pertinence to hypothesis 2, the type of education was grouped into respondents in business related fields of study versus non-business related fields of study. Business related study grouping comprised of respondents currently at or have been to business school (i.e. MBA or PDBA), while the non-business grouping comprised of a combination of all other fields of study (such as Engineering, Law, Health Sciences, Commerce and Humanities). The corresponding frequency distribution is shown in Table 17.

TABLE 17: FEQUENCY DISTRIBUTION ACCORDING TO FIELD OF STUDY

Field of Study	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Business	17	32.08	17	32.08

Field of Study	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Other	36	67.92	53	100.00

The summarised descriptive statistics according to type of education is illustrated in Table 18.

TABLE 18: DESCRIPTIVE STATISTICS ACCORDING TO TYPE OF EDUCATION

Field of Study	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
Business	**PSCORE**	**PSCORE**	38.00	9.59	17	28.00	40.00	44.00
	N2SCORE	**N2SCORE**	34.23	9.86	17	26.79	37.62	41.59
	STAGE23	**STAGE23**	22.35	9.47	17	18.00	18.00	32.00
	STAGE4P	**STAGE4P**	34.71	16.72	17	20.00	32.00	46.00
Other	**PSCORE**	**PSCORE**	29.56	12.72	36	21.00	29.00	38.00
	N2SCORE	**N2SCORE**	24.31	13.72	36	13.65	19.45	33.61
	STAGE23	**STAGE23**	26.39	11.39	36	18.00	26.00	36.00
	STAGE4P	**STAGE4P**	39.17	13.79	36	31.00	37.00	47.00

According to mean P-scores achieved by respondents, the most significant difference all demographic groupings compared was achieved between the business oriented group versus the other fields of study grouped together. Statistical significance of the difference the above mean P-scores was tested by way of a Wilcoxon two-sample test.

TABLE 19: WILCOXON SCORES ACCORDING TO FIELD OF STUDY

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable FOS

Field of Study	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Business	17	587.50	459.0	52.340864	34.558824
Other	36	843.50	972.0	52.340864	23.430556
Average scores were used for ties.					

TABLE 20: WILCOXON TWO-SAMPLE TEST RESULTS ACCORDING TO FIELD OF STUDY

Wilcoxon Two-Sample Test	
Statistic	587.5000
Normal Approximation	
Z	2.4455
One-Sided Pr > Z	0.0072
Two-Sided Pr > |Z|	0.0145
t Approximation	
One-Sided Pr > Z	0.0089
Two-Sided Pr > |Z|	0.0179
Z includes a continuity correction of 0.5.	

The Wilcoxon two-sample test according to type of education yielded a statistically significant finding. With statistical significance of 0.05 (α = 0.05), using the one-side probability figure, the null hypothesis could be rejected and it could be concluded that for this sample of respondents, respondents with business oriented study achieved higher P-scores than respondents from non-business fields of study.

5.4. VALIDITY AND RELIABILITY

It is critical for any research being conducted that the data collected be as reliable and valid as possible. It is for this reason that reliability and validity of data received from any respondent is checked by the scoring mechanism used by the University of Alabama. One of these checks is the *Rate and Rank* consistency which eliminates respondents with random responses which are not consistent with each other. Incidents where a respondent rates a certain issue as very highly important to an ethical issue, but yet ranks it lower than issues rated with lower importance, is clearly an example of unreliable data.

There are also a number of meaningless items built into the test, of which the number of endorsements would indicate unreliable data when a certain threshold is reached. The DIT does also allow for a certain number of blank entries up to a defined threshold per respondent. Finally missing data as well as non-differential of rates and ranks beyond a certain threshold are also grounds for excluding data from results.

6. DISCUSSION OF RESULTS

6.1. INTRODUCTION

The results of the researcher's hypotheses provided in chapter 5 will be discussed in this chapter. The implications of these outcomes as well as further limitations encountered will also be discussed.

6.2. ENTIRE SAMPLE

The size and spread of the entire sample were sufficient for the purposes of the researcher's objectives. There was sufficient representation of key demographic groupings in order to make meaningful conclusions regarding the differences observed, although the sample size ultimately dictated that statistical evaluations had to be based on non-parametric methods.

Using the historic results provided by the DIT in Table 3 as a benchmark, the following general initial observations could be highlighted:

- In general the data collected appeared to be similar to the benchmark provided in Table 3, and fundamental error in the collection process was deemed to be ruled out
- The entire sample's P-score ranged between 8 and 62, with a standard deviation of 12.15 and a mean of 32.27; while the benchmark study had a standard deviation of 16.05 and a mean of 36.74
- Females achieved higher P-scores than males, although not statistically significantly so, which supports Johnson's (2007) conclusion that this comparison has not historically not provided conclusive evidence

With the reference to the specific goals of the hypotheses of the research, the following observations were made.

6.3. HYPOTHESIS 1

Using the P-scores depicted in 5.3.4, the results show that respondents with Masters level education and above have a mean 4.3 higher than that of respondents with Honours level education and below. The null hypothesis could not be rejected based on the Wilcoxon two-sample test at a 0.05 level of significance (α=0.05).

The results indicated that higher levels of education attained contributed positively towards level of ethics, but this was not statistically significant. This trend is supported by the findings of previous studies although it cannot, however, be ascertained from this study whether the higher mean is as a result of the impact of tertiary institutions on these individuals, or whether students who choose to progress to Masters level study and above are inclined to be inherently more ethical.

Due to the concentration of respondents in the tertiary level bracket, it stands to reason that had more respondents been below tertiary level there may have been a more significant finding regarding influence of level of education on cognitive moral reasoning. Further investigation into this aspect, using a larger spread within the sample is therefore warranted.

6.4. HYPOTHESIS 2

Results according to type of education proved to be the most significant finding. The respondents representing a business field of study (i.e. MBA, PDBA etc.)

obtained an average P-score of 8.44 more than respondents from all other disciplines grouped together. The null hypothesis states that business students should have lower average scores compared to the rest. The null hypothesis was rejected based on the Wilcoxon two-sample test at a 0.05 level of significance (α=0.05), and the alternate hypothesis was found to be true.

6.4.1. GREAT STRIDES BEING MADE BY BUSINESS SCHOOLS

The vast majority of the business student sample was MBA students at GIBS. The result could therefore be due to a heightened awareness of ethical issues as a result of the Environment of Business course. In the environment we live in today, it is evident that there is a much stronger focus from business schools around the issues of ethics on a political, business and personal level. Following the financial crisis business students would also have been more exposed to the consequences of what some would deem unethical behaviour through the recent ramp up in corporate governance regulations and media coverage.

Although inferences of the entire population cannot be made due to the non-probabilistic sampling method and small sample size, the result is encouraging given the future leaders of business in South Africa are likely to come from this dynamic segment of society. It cannot also be assumed that all business schools have the same level of focus on ethics since no other business schools were sampled.

6.4.2. NON-BUSINESS FIELDS OF STUDY

The fact that non-business fields of study scored lower scores than business students could be indicative of the fact that ethics is generally perceived as

being relevant to business. Based on these outcomes the level of awareness of ethical related issues are clearly not as apparent in non-business fields.

The difference could also possibly be explained if were to be found that MBA students are better able to provide model answers based on knowledge of theory, and are more prone to respond from a socially desirable perspective, when compared to non-business students. This would mean that the results obtained for non-business students are a more accurate reflection of the levels of ethical thought and therefore more indicative of actual decision making in reality. No evidence supporting this was evident in this research and would need to be investigated further.

6.5. HYPOTHESIS 3

Respondents under the age of 35 obtained an average P-score 4.17 higher than respondents over the age of 35, as seen in 5.3.2. In a Wilcoxon 2 sample test performed, the null hypothesis stated that there was no statistical difference between the two groupings. The null hypothesis could not be rejected based on the Wilcoxon two-sample test at a 0.05 level of significance (α=0.05), and therefore age by itself was not a significant influencing factor.

The results indicate that the younger respondents generally scored higher than the older respondents, although it was not statistically significant. This is quite surprising given the indications from previous studies and literature. It must again however be emphasised that the small sample size and non-probability sampling method must be taken into account.

To better evaluate the objectives of hypothesis 3, a deeper look at the findings in hypotheses 1 and 2 according to age is illustrated in Table 21.

TABLE 21: P-SCORES FOR TYPE AND LEVEL OF EDUCATION ACCORDING TO AGE

	Younger than 35	35 and older
Business vs Other	Business > Other	No statistical difference
Level of Education	No statistical difference	No statistical difference

The observation that can be made from Table 21 is that the statistical difference between the higher scores of the business versus non-business oriented respondents was due to the business respondents below the age of 35. Above the age of the 35, the scores were not statistically different in either of the type and level of education comparisons.

The general findings with regard to age, although inconclusive, are not supported by the findings of Johnson (2007) which states moral reasoning increases with age as indicated in 2.10. This could be due to the fact that stronger influencing factors were present in the specific sample of this research. Johnson (2007), however, does suggest that "*when education stops, moral development plateaus*". The findings above could therefore be evidence that perhaps level moral development not only plateaus when education stops, but could in fact deteriorate with time, and that ethical sensitivity is at its peak during the period of training.

This could also be an indication that the effects of ethical training embedded in tertiary education become less apparent during later stages of life, and that people generally 'average out' in terms of cognitive moral development in the long run despite initial differences due to various fields of study.

Ultimately, with regard to hypothesis 3, it could not statistically be found that age had a consistent moderating effect on the relationship between both:

- Level of education and cognitive moral reasoning; as well as
- Type of education and cognitive moral reasoning.

These findings do however raise interest in the significance achieved within the younger business demographic grouping, and what this may imply about what previous literature has concluded.

Is this an indication of a new wave of moral leaders in business?

But more importantly, will this significant level of ethics remain long after the constant exposure to ethical training and heightened awareness provided by the business school environment is no longer present?

6.6.LIMITATIONS

The sample size proved to be the most limiting factor in the collection of data. Access to business students where the researcher was solely reliant on fellow MBA students was challenging given the amount of survey fatigue experienced by students during the relevant period of time. A greater sample would possibly also increase the opportunity compare further subgroups within each demographic category to gain deeper understanding of the influencing factors.

The length of time required to complete the DIT-2 caused many respondents to end the survey prematurely. Despite the researchers request in the survey preamble to complete the survey in one sitting, many respondents attempted to complete in multiple sittings. As a result these factors caused a substantial amount of data to be discarded. Additional bogus data was then further filtered

out though the reliability and validity checks performed by the University of Alabama.

The following is the concluding section of this research based on the findings and discussions above.

7. CONCLUSION

Ethics in business remains to be a very contentious issue in South Africa today. A deeper understanding of the critical factors affecting the level of ethics or cognitive moral reasoning was achieved by this research project. The following is a summary of the key findings; the implications of these findings and what this means for South Africa; and finally some key recommendations and closing thoughts.

7.1. KEY FINDINGS

7.1.1. LEVEL OF EDUCATION

Level of education was not found to be a significant contributing factor according the results of this study as discussed in 6.3 above. A wider spread of representation in the sample according to level of education may have yielded more significant results, although the lack of significance could be indicative of the other factors such as type of education being more statistically relevant as a contributing factor to cognitive moral reasoning.

7.1.2. BUSINESS VERSUS THE REST

The most significant finding of the research is the apparent surge in post-conventional moral thinking of younger people with business oriented education. This is clear evidence of the effort on the part of business schools to invest in students through a more whole person approach and in so doing benefit business South Africa through the quality of leaders being developed. This is an encouraging result for business schools and business students alike, especially with some previous studies showing support to the contrary.

7.1.3. OLD VERSUS YOUNG

Purely from the perspective of age, the results show no statistical variance between the older and younger age groupings. As mentioned above the only significance regarding age was within the type of education comparison below the age of 35. This result however is more likely to be due to the kind of education received more than the pure aspect of age.

7.2. IMPLICATIONS FOR SOUTH AFRICA

Benjamin Akande once said that "*hope is not a strategy*". Given the general tone and climate of our political environment regarding ethics, the state of our education system and the level of corruption both in private and public sectors, it is difficult for one to see evidence of a clear strategy in South Africa regarding ethics in general beyond hope.

Despite education receiving a significant injection of resources, the amount of inefficiencies at an implementation or local level is not only stifling the economy but potentially hindering our ability to use education as the medium to develop the imperative levels of cognitive moral reasoning required for a prosperous society.

7.3. RECOMMENDATIONS

As indicated at the very beginning of this dissertation, there is no such thing as business ethics, only ethics, and taking cognisance of the results achieved in this study, the author recommends a systematic reform of all levels of education with regards to ethics training in South Africa. Awareness of ethical issues and constant cognitive moral development needs to be present from primary school levels already and maintained throughout an individual's career.

All fields of study need to focus on the realities of ethics being everyone's business, and that like the business school approach, ethics training cannot be omitted in a whole person approach to development. Ethics training should therefore be compulsory in all fields of study.

Not only should ethics training be introduced earlier, but it should also not end at tertiary level, but should be an ongoing offering as a standard general business practice for employees regardless of their level across all sectors. In as much as literacy and numeracy are key indicators of development in a society, so too should be the level cognitive moral reasoning.

7.4. FUTURE RESEARCH

7.4.1. LONGEVITY OF TRAINING EFFECTS

The researcher recommends future research into the possibility that the effects of ethics training are most evident at the time of learning and may deteriorate over time. As suggested by the findings of this study, it may be incorrect to assume that age necessarily builds on levels of moral thought without ongoing intervention and awareness of ethical decision making.

It would be interesting to see if the same set of respondents, particularly those below 35 in business school, were re-tested in a few years time to determine whether their scores increased or not, assuming they would not have been exposed to further ethical training prior to re-testing. Additionally if the same non-business respondents were tested, one would be able to establish whether the statistical difference remained.

7.4.2. FURTHER LONGITUDINAL TESTING

Further longitudinal studies should be done on students prior to tertiary education and retested on completion. Business students should for example be tested prior to starting an MBA programme and re-tested on completion, and likewise for other non-business disciplines. The purpose of this would be twofold:

- Firstly to determine the measure of increased post-conventional thinking as a result of being in a tertiary institution. Levels of increase should be compared between various disciplines (particularly business vs non-business) ;
- Secondly to determine whether certain levels of ethics are inherent in people choosing certain fields to start with, i.e. are less ethically inclined individuals more prone to select business as a chosen field of study.

7.4.3. ROLE OF OUR LEADERS

Johnson (2007) found that principled leaders can improve the moral judgment of the group as a whole. South Africa would present a prime setting for further research into the role that the leaders play in influencing the level of ethics in a country, given our unique and colourful socio-political environment both past and present, and ultimately this has an impact on the business environment.

7.5. CLOSING THOUGHTS

The economic imperative of ethics in business is clearly evident given the recent history of fraudulent behaviour causing major companies such as Enron to go under, and it can even be argued that the global recession could have been avoided through more ethical business practices. With the ruthless environment of business, it is not surprising that the win at all cost philosophy is

often taught, particularly in business orientated institutions. Encouragingly though these trends are changing as demonstrated in the findings of this research. It is, however, critical to evaluate and understand the level to which education, type of education and the moderating effects of age, as well as all the other influencing factors, on the type of ethical decisions that are being made by people in business today.

In the quest to find the answer to the challenging situations South Africa finds itself in today, people may look for it from the government, our leaders, or even the religious institutions as the moral fibre of society. But ultimately the solution lies within each of us listening to the tyrant that is the small voice within, once alluded to by Mahatma Ghandi.

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APPENDIX A: CONSISTENCY MATRIX

Research Hypothesis	**Literature Review**	**Data Collection**	**Analysis**
Hypothesis 1: Higher level of education higher cognitive moral reasoning of an individual.	(Rest, Turiel, & Kohlberg, 1969) (Morton, Worthley, Testerman, & Mahoney, 2006)	Defining Issues Test (DIT-2)	Evaluation for statistical significance between the means of the tested demographic groupings (by level of education).
Hypothesis 2: Type of education has a moderating effect on the relationship between education and cognitive moral reasoning.	(Robinett, 2008) (Brown, Sautter, Littvay, Sautter, & Bearnes, 2010)	Defining Issues Test (DIT-2)	Evaluation for statistical significance between the means of the tested demographic groupings (by type of education).
Hypothesis 3: Age has a moderating effect on the relationship between education (level and type) and cognitive moral reasoning.	(Rest, Davison, & Robbins, 1978) (Rest, Narvaez, Thoma, & Bebeau, 2000) (Kohlberg, The Development of Children's Orientations Toward a Moral Order, 2008)	Defining Issues Test (DIT-2)	Evaluation for statistical significance between the means of the tested groupings within H1 and H2 according to age.

APPENDIX B: QUESTIONNAIRE

Questionnaire preamble:

Good day,

This online survey is being conducted for the purposes of research in partial fulfilment of the requirements of the Gordon Institute of Business Science (GIBS) MBA degree.

The purpose of the study is to gain a deeper understanding of the effect age and education has on cognitive moral reasoning (or Ethics). A further aspect of the study will be to determine the role which the type of education plays in the level cognitive moral reasoning, particularly the role of business orientated education.

As a valued survey participant, please be assured that all responses are anonymous and will be strictly confidential. Participation is voluntary and the results will be utilised only for the purpose described above. The necessary consent has been granted for this survey to be conducted.

Please click on the following link to begin the survey (will take approximately 20mins to complete):

https://www.surveymonkey.com/s/R2NZGWT

Your participation is greatly appreciated!

Thanks and Regards,

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APPENDIX C: RESULTS

APPENDIX B: QUESTIONNAIRE

Questionnaire preamble:

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Please click on the following link to begin the survey (will take approximately 20mins to complete):

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Your participation is greatly appreciated!

Thanks and Regards,

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Defining Issues Test-2

1. Defining Issues Test-2

This questionnaire is concerned with how you define the issues in a social problem. Five short stories about social problems will be described. After each story, there will be a list of questions. The questions that follow each story represent different issues that might be raised by the problem. In other words, the questions/issues raise different ways of judging what is important in making a decision about the social problem. You will be asked to rate and rank the questions in terms of how important each one seems to you.

PLEASE TRY TO FINISH THE QUESTIONNAIRE IN ONE SITTING.

Defining Issues Test-2

2. EXAMPLE of the task

Imagine you are about to vote for a candidate for the Presidency of South Africa. Before you vote, you are asked to rate the importance of five issues you could consider in deciding who to vote for. Rate the importance of each item (issue) by checking the appropriate box.

*1. Rate the following issues in terms of importance.

	Great	Much	Some	Little	No
1. Financially are you personally better off now than you were four years ago?	◯	◯	◯	◯	◯
2. Does one candidate have a superior moral character?	◯	◯	◯	◯	◯
3. Which candidate stands the tallest?	◯	◯	◯	◯	◯
4. Which candidate would make the best world leader?	◯	◯	◯	◯	◯
5. Which candidate has the best ideas for our country's internal problems, like crime and health care.	◯	◯	◯	◯	◯

Note. Some items may seem irrelevant or not make sense (as in item #3). In that case, rate the item as "NO".

After you rate all of the items you will be asked to RANK the top four items in terms of importance. Note that it makes sense that the items you RATE as most important should be RANKED as well. So if you only rated item 1 as having great importance you should rank it as most important.

*2. Consider the 5 issues above and rank which issues are the most important.

	1	2	3	4	5
Most important item	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯

Again, remember to consider all of the items before you rank the four most important items and be sure that you only rank items that you found important.

Note also that before you begin to rate and rank items you will be asked to state your preference for what action to take in story.

Thank you and you may begin the questionnaire!

Defining Issues Test-2

3. Story 1

Famine

The small village in northern India has experienced shortages of food before, but this year's famine is worse than ever. Some families are even trying to feed themselves by making soup from tree bark. Mustaq Singh's family is near starvation. He has heard that a rich man in his village has supplies of food stored away and is hoarding food while its price goes higher so that he can sell the food later at a huge profit. Mustaq is desperate and thinks about stealing some food from the rich man's warehouse. The small amount of food that he needs for his family probably wouldn't even be missed.

*1. What should Mustaq Singh do? Do you favor the action of taking food?

◯ Should take the food ◯ Can't decide ◯ Should not take the food

*2. Rate the following issues in terms of importance.

	Great	Much	Some	Little	No
1. Is Mustaq Singh courageous enough to risk getting caught for stealing?	◯	◯	◯	◯	◯
2. Isn't it only natural for a loving father to care so much for his family that he would steal?	◯	◯	◯	◯	◯
3. Shouldn't the community's laws be upheld?	◯	◯	◯	◯	◯
4. Does Mustaq Singh know a good recipe for preparing soup from tree bark?	◯	◯	◯	◯	◯
5. Does the rich man have any legal right to store food when other people are starving?	◯	◯	◯	◯	◯
6. Is the motive of Mustaq Singh to steal for himself or to steal for his family?	◯	◯	◯	◯	◯
7. What values are going to be the basis for social cooperation?	◯	◯	◯	◯	◯
8. Is the epitome of eating reconcilable with the culpability of stealing?	◯	◯	◯	◯	◯
9. Does the rich man deserve to be robbed for being so greedy?	◯	◯	◯	◯	◯
10. Isn't private property an institution to enable the rich to exploit the poor?	◯	◯	◯	◯	◯
11. Would stealing bring about more total good for everybody concerned or wouldn't it?	◯	◯	◯	◯	◯
12. Are laws getting in the way of the most basic claim of any member of a society?	◯	◯	◯	◯	◯

*3. Consider the 12 issues above and rank which issues are the most important.

	1	2	3	4	5	6	7	8	9	10	11	12
Most important item	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Defining Issues Test-2

4. Story 2

Reporter

Molly Dayton has been a news reporter for the *Gazette* newspaper for over a decade. Almost by accident, she learned that one of the cadidates for Lieutenant Governor for her state, Grover Thompson, had been arrested for shop-lifting 20 years earlier. Reporter Dayton found out that early in his life, Candidate Thompson had undergone a confused period and done things he later regretted, actions which would be very out-of-character now. His shoplifting had been a minor offense and charges had been dropped by the department store. Thompson has not only straightened himself out since then, but built a distinguished record in helping many people and in leading constructive community projects. Now, Reporter Dayton regards Thompson as the best candidate in the field and likely to go on to important leadership positions in the state. Reporter Dayton wonders whether or not she should write the story about Thompson's earlier troubles because in the upcoming close and heated election, she fears that such a news story could wreck Thompson's chance to win.

*1. Do you favor the action of reporting the story?

◯ Should report the story ◯ Can't decide ◯ Should not report the story

*2. Rate the following issues in terms of importance.

	Great	Much	Some	Little	No
1. Doesn't the public have a right to know all the facts about all the candidates for office?	◯	◯	◯	◯	◯
2. Would publishing the story help Reporter Dayton's reputation for investigative reporting?	◯	◯	◯	◯	◯
3. If Dayton doesn't publish the story wouldn't another reporter get the story anyway and get the credit for investigative reporting?	◯	◯	◯	◯	◯
4. Since voting is such a joke anyway, does it make any difference what reporter Dayton does?	◯	◯	◯	◯	◯
5. Hasn't Thompson shown in the past 20 years that he is a better person than his earlier days as a shop-lifter?	◯	◯	◯	◯	◯
6. What would best service society?	◯	◯	◯	◯	◯
7. If the story is true, how can it be wrong to report it?	◯	◯	◯	◯	◯
8. How could reporter Dayton be so cruel and heartless as to report the damaging story about candidate Thompson?	◯	◯	◯	◯	◯
9. Does the right of "habeas corpus" apply in this case?	◯	◯	◯	◯	◯
10. Would the election process be more fair with or without reporting the story?	◯	◯	◯	◯	◯
11. Should reporter Dayton treat all candidates for office in the same way by reporting everything she learns about them, good and bad?	◯	◯	◯	◯	◯
12. Isn't it a reporter's duty to report all the news regardless of the circumstances?	◯	◯	◯	◯	◯

*3. Consider the 12 issues you rated above and rank which issues are the most important.

	1	2	3	4	5	6	7	8	9	10	11	12
Most important item	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Defining Issues Test-2

5. Story 3

School Board

Mr. Grant has been elected to the School Board District 190 and was chosen to be Chairman. The district is bitterly divided over the closing of one of the high schools. One of the high schools has to be closed for financial reasons, but there is no agreement over which school to close. During his election to the School Board, Mr. Grant had proposed a series of "Open Meetings" in which members of the community could voice their opinions. He hoped that dialogue would make the community realize the necessity of closing one high school. Also he hoped that through open discussions, the difficulty of the decision would be appreciated, and that the community would ultimately support the school board decision. The first Open Meeting was a disaster. Passionate speeches dominated the microphones and threatened violence. The meeting barely closed without fist-fights. Later in the week, school board members received threatening phone calls. Mr. Grant wonders if he ought to call off the next Open Meeting.

*1. Do you favor calling off the next Open Meeting

◯ Should call off the next open meeting ◯ Can't decide ◯ Should have the next open meeting

*2. Rate the following issues in terms of importance.

	Great	Much	Some	Little	No
1. Is Mr. Grant required by law to have Open Meetings on major school board decisions?	◯	◯	◯	◯	◯
2. Would Mr. Grant be breaking his election campaign promises to the community by discontinuing the Open Meetings?	◯	◯	◯	◯	◯
3. Would the community be even angrier with Mr. Grant if he stopped the Open Meetings?	◯	◯	◯	◯	◯
4. Would the change in plans prevent scientific assessment?	◯	◯	◯	◯	◯
5. If the school board is threatened, does the chairman have the legal authority to protect the Board by making decisions in closed meetings?	◯	◯	◯	◯	◯
6. Would the community regard Mr. Grant as a coward if he stopped the open meetings?	◯	◯	◯	◯	◯
7. Does Mr. Grant have another procedure in mind for ensuring that divergent views are heard?	◯	◯	◯	◯	◯
8. Does Mr. Grant have the authority to expel troublemakers from the meetings or prevent them from making long speeches?	◯	◯	◯	◯	◯
9. Are some people deliberately undermining the school board process by playing some sort of power game?	◯	◯	◯	◯	◯
10. What effect would stopping the discussion have on the community's ability to handle controversial issues in the future?	◯	◯	◯	◯	◯
11. Is the trouble coming from only a few hotheads, and is the community in general really fair-minded and democratic?	◯	◯	◯	◯	◯
12. What is the liklihood that a good decision could be made without open discussion from the community?	◯	◯	◯	◯	◯

*3. Consider the 12 issues you rated above and rank which issues are the most important.

	1	2	3	4	5	6	7	8	9	10	11	12
Most important item	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Defining Issues Test-2

Defining Issues Test-2

6. Story 4

Cancer

Mrs. Bennett is 62 years old, and in the last phases of colon cancer. She is in terrible pain and asks the doctor to give her more pain-killer medicine. The doctor has given her the maximum safe dose already and is reluctant to increase the dosage because it would probably hasten her death. In a clear and rational mental state, Mrs. Bennett says that she realizes this; but she wants to end her suffering even if it means ending her life. Should the doctor giver her an increased dosage?

*1. Do you favor the action of giving more medicine?

◯ Should give Mrs. Bennett an increased dosage to make her die.
◯ Can't decide
◯ Should not give her an increased dosage

*2. Rate the following issues in terms of imortance.

	Great	Much	Some	Little	No
1. Isn't the doctor obligated by the same laws as everybody else if giving an overdose would be the same as killing her?	◯	◯	◯	◯	◯
2. Wouldn't society be better off without so many laws about what doctors can and cannot do?	◯	◯	◯	◯	◯
3. If Mrs. Bennett dies, would the doctor be legally responsible for malpractice?	◯	◯	◯	◯	◯
4. Does the family of Mrs. Bennett agree that she should get more painkiller medicine?	◯	◯	◯	◯	◯
5. Is the painkiller medicine an active heliotropic drug?	◯	◯	◯	◯	◯
6. Does the state have the right to force continued existence of those who don't want to live?	◯	◯	◯	◯	◯
7. Is helping to end another's life ever a responsible act of cooperation?	◯	◯	◯	◯	◯
8. Would the doctor show more sympathy for Mrs. Bennett by giving the medicine or not?	◯	◯	◯	◯	◯
9. Wouldn't the doctor feel guilty from giving Mrs. Bennett so much drug that she died?	◯	◯	◯	◯	◯
10. Should only God decide when a person's life should end?	◯	◯	◯	◯	◯
11. Shouldn't society protect everyone against being killed?	◯	◯	◯	◯	◯
12. Where should society draw the line between protecting life and allowing someone to die if the person wants to?	◯	◯	◯	◯	◯

*3. Consider the 12 issues you rated above and rank which issues are the most important.

	1	2	3	4	5	6	7	8	9	10	11	12
Most important item	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Defining Issues Test-2

7. Story 5

Demonstration

Political and economic instability in a South American country prompted the President of the United States to send troops to "police" the area. Students at many campuses in the U.S.A. have protested that the United States is using its military might for economic advantage. There is widespread suspicion that big oil multinational companies are pressuring the President to safeguard a cheap oil supply even if it means loss of life. Students at one campus took to the streets in demonstrations, tying up traffic and stopping regular business in the town. The president of the university demanded that the students stop their illegal demonstrations. Students then took over the college's administration building, completely paralyzing the college. Are the students right to demonstrate in these ways?

*1. Do you favor the action of demonstrating in this way?

◯ Should continue demonstrating in these ways ◯ Can't decide ◯ Should not continue demonstrating in these ways

*2. Rate the following issues in terms of importance.

	Great	Much	Some	Little	No
1. Do the students have any right to take over property that doesn't belong to them?	◯	◯	◯	◯	◯
2. Do the students realize that they might be arrested and fined, and even expelled from school?	◯	◯	◯	◯	◯
3. Are the students serious about their cause or are they doing it just for fun?	◯	◯	◯	◯	◯
4. If the university president is soft on students this time, will it lead to more disorder?	◯	◯	◯	◯	◯
5. Will the public blame all students for the actions of a few student demonstrators?	◯	◯	◯	◯	◯
6. Are the authorities to blame by giving in to the greed of the multinational oil companies?	◯	◯	◯	◯	◯
7. Why should a few people like Presidents and business leaders have more power than ordinary people?	◯	◯	◯	◯	◯
8. Does this student demonstration bring about more or less good in the long run to all people?	◯	◯	◯	◯	◯
9. Can the students justify their civil disobedience?	◯	◯	◯	◯	◯
10. Shouldn't the authorities be respected by students?	◯	◯	◯	◯	◯
11. Is taking over a building consistent with principles of justice?	◯	◯	◯	◯	◯
12. Isn't it everyone's duty to obey the law, whether one likes it or not?	◯	◯	◯	◯	◯

*3. Consider the 12 issues you rated above and rank which issues are the most important.

	1	2	3	4	5	6	7	8	9	10	11	12
Most important item	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Second most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Third most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Fourth most important	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Defining Issues Test-2

8. Demographics

Please provide the following information about yourself:

***1. What is your level of education? Please mark the highest level of formal education you are currently enrolled in or have completed:**

- ◯ Grades 7, 8 9
- ◯ Grades 10,11,12
- ◯ Vocational/Technical school (schools that do not offer a bachelor's degree)
- ◯ Bachelor's degree program
- ◯ Professional Degree beyond the bachelor's degree
- ◯ Honours Degree
- ◯ Masters degree
- ◯ Doctoral degree Ph.D.

Other (please specify)

***2. Please specify field of study for highest level of formal education enrolled in or have completed.**

- ◯ Business school (e.g. PDBA, MBA)
- ◯ Commerce
- ◯ Engineering & the Built Environment
- ◯ Health Sciences
- ◯ Humanities
- ◯ Law
- ◯ Science

Other (please specify)

3. Which best describes your race/ethnicity?

- ◯ Black
- ◯ White
- ◯ Indian
- ◯ Coloured
- ◯ Asian

Other (please specify)

Defining Issues Test-2

***4. What is your gender?**

- ◯ Male
- ◯ Female

***5. How many brothers and sisters do you have? Put 0 if you don't have any.**

The number of brothers: [ ]

The number of sisters: [ ]

6. What is your age?

Enter your age in years: [ ]

***7. In terms of your political views, how would you characterize yourself?**

◯ Very Liberal ◯ Somewhat Liberal ◯ Neither Liberal nor Conservative ◯ Somewhat Conservative ◯ Very Conservative

***8. Are you a citizen of South Africa?**

◯ YES ◯ NO

***9. Is English your primary language?**

◯ YES ◯ NO

Defining Issues Test-2

9. Test taking Environment

We would like to know something about how you completed this questionnaire. Your answers will not affect whether or not you get credit for participation but will help us understand how students take questionnaires outside of class.

1. I completed the questionnaire in one sitting.

- ◯ Yes
- ◯ No

2. Music was playing while I completed the questionnaire.

- ◯ Yes
- ◯ No

3. The TV was on while I completed the questionnaire.

- ◯ Yes
- ◯ No

4. I received phone calls while completing the questionnaire

- ◯ yes-more than one
- ◯ yes-just one
- ◯ No

5. I made a phone call while completing the questionnaire.

- ◯ Yes- more than one
- ◯ Yes- just one
- ◯ No

6. I received emails/text messages while completing the questionnaire.

- ◯ Yes-more than one
- ◯ Yes-just one
- ◯ No

7. I responded to emails/text messages while completing the questionnaire.

- ◯ Yes–more than one
- ◯ Yes-just one
- ◯ No

Defining Issues Test-2

8. I stopped and talked to friends while completing the questionnaire.

- ◯ Yes- more than once
- ◯ Yes- just once
- ◯ No

9. Compared to how I take surveys in the classroom I took this questionnaire:

- ◯ The same way - not different at all
- ◯ About the same way – I had a minimal amount of distractions
- ◯ Not the same way– I had distractions that made me stop and start the questionnaire.
- ◯ Not at all the same way – I completed the questionnaire when I could while doing other things.

APPENDIX C: RESULTS

LEVEL OF EDUCATION		FIELD OF STUDY		ETHNIC		SEX		AGE
1	Grades 7, 8 9	1	Business school (e.g. PDBA, MBA)	1	Black	1	Male	Actual age provided
2	Grades 10,11,12	2	Commerce	2	White	2	Female	
3	Vocational/Technical school (schools that do not offer a bachelor's degree)	3	Engineering & the Built Environment	3	Indian			
4	Bachelor's degree program	4	Health Sciences	4	Coloured			
5	Professional Degree beyond the bachelor's degree	5	Humanities	5	Asian			
6	Honours Degree	6	Law					
7	Masters degree	7	Science					
8	Doctoral degree Ph.D.							

ID	LEVEL OF EDUCATION	FIELD OF STUDY	ETHNIC	SEX	AGE	ASCORE	MSCORE	PSCORE	STAGE23	STAGE4P	N2SCORE	U	CANCER10	NUMCD	HUMLIB	CONSTRAN	TYPENEW
1514321414	7	1	4	1	29	0	0	38	28	34	41.60092304	0.128998427	9	0	3	1	6
1514322074	4	5	4	2	27	1	0	30	28	40	27.49811233	0	5	3	1	1	5
1514342798	4	5	4	2	26	0	4	38	20	34	42.63564683	0.104601006	7	1	1	2	7
1514370694	7	3	2	1	32	0	2	50	16	30	50.90169375	0	3	4	0	2	7
1514760929						0	3	35	27.5	30	27.52379676	0	9	2	1	1	6
1514828794	7	3	4	1	40	3	4	30	18	38	36.2296082	0.233875197	1	0	2	1	5
1514933259	3	2	2	2	43	0	1	44	30	24	30.42350988	-0.06693364	6	2	2	1	6
1515205868	6	6		1	31	0	0	20	36	44	12.63287698	0.079439252	9	1	2	1	3
1515216426	4	2	1	1	28	0	2	26	10	60	16.90707742	0.261667541	9	0	1	2	4
1515220229	4	5	4	2	39	3	1	40	10	42	21.14100275	-0.01363398	9	0	1	1	5
1515229797	7	2	4	2	40	0	4	10	36	46	9.683639153	0.249354005	9	2	0	1	3
1515238273	2	2	4	2	29	0	3	14	48	32	10.75571766	0.067272727	9	2	0	1	2
1515245468						3	1	30	15	45	11.58594698	0.134579439	1	1	1	1	5
1515257357	7	1	3	1	33	1	0	44	34	20	41.44707475	0.074462507	2	0	2	1	6
1515259070	3	1	4	1	46	2	1	24	24	46	17.64366608	0.076822234	8	0	2	1	3
1515261412	7	1	2	1	34	0	3	50	34	10	40.44611648	0.244362874	4	0	3	1	6
1515262164	7	1	3	2	40	0	0	24	8	68	19.86678062	0.367593078	9	0	2	2	4
1515262374	3	3	1	1	43	0	1	30	2	66	12.12336521	0.301431127	9	1	0	2	4
1515270965	7	1	2	1	32	0	1	40	30	28	40.92353585	0.129136691	7	1	3	1	6
1515274361	6	1	2	2	31	1	3	50	4	38	30.57977725	0.356749311	9	2	1	1	6
1515280446	7	1	3	2	36	1	0	26	14	58	19.96700391	0.070607029	1	1	1	1	5
1515289515	7	4	2	1	36	0	0	22	20	58	26.69262918	0.420031463	1	0	2	1	5
1515292436	5	5	4	2	31	1	0	30	56	12	27.26382733	0.385393258	3	2	2	2	1
1515296132	7	1	2	1	34	0	1	26	18	54	25.70711644	0.063712638	1	0	3	1	5
1515298466	7	5	2	1	28	0	1	22	36	40	14.20824633	0.225747247	1	0	3	1	3
1515301299	5	1	4	2	35	3	1	42	18	32	41.90233067	0.151329978	7	1	2	2	7
1515345529	4	2	4	2	41	0	0	20	20	60	15.28869602	0.088252832	9	1	1	1	3
1515355397	7	7	2	2	29	0	1	18	28	52	18.96307229	0.124627311	8	1	2	1	3
1515359986	6	2	3	2	29	3	1	24	32	36	10.87940344	-0.06895648	9	0	3	1	3
1515373880	7	1	2	1	31	0	0	44	18	38	48.83758681	0.220143885	6	1	2	2	7
1515406143	7	3	2	2	34	0	6	62	16	10	56.94396794	0.219192449	2	0	4	2	7
1515464858	7	1	3	2	37	0	4	40	32	20	26.7863814	0.090718406	1	0	2	1	6
1515527145	4	5	4	1	55	3	2	28	36	26	26.37156119	0.116413214	3	0	2	1	2
1515946910	3	3	2	1	42	0	0	8	24	68	3.550390563	0.178552701	9	0	2	2	4
1516911315	4	3	4	1	36	3	1	38	30	24	33.46975705	0.155386082	5	2	1	1	6
1517611779	4	5	2	1	67	0	0	20	22	58	14.08975796	0.217133956	8	1	1	2	4
1517746101	6	1	1	1	30	0	0	28	16	56	37.62154121	0.237383178	8	1	2	2	4
1517931254	6	3	2	1	29	0	0	48	26	26	43.71501229	0.002516175	5	1	4	1	6
1518772425	7	3	2	1	36	0	3	44	16	34	47.30517282	0.176192973	3	0	2	2	7
1518906271	6	7	1	1	45	0	5	24	26	40	14.31605653	0.287362349	6	0	2	1	3
1519327996	7	7	4	2	25	0	2	34	32	30	19.68099231	0.147122302	9	1	3	1	6
1519952499	6	3	1	1	29	0	0	28	36	36	19.21678834	0.380440482	3	0	3	1	3
1520016007	4	3	2	1	50	2	1	40	18	36	38.22966124	0.300734137	7	0	2	1	6
1520630737	4	1	2	1	29	0	0	38	32	30	33.60900509	0.2792344	2	0	3	1	6
1520872162	6	7	4	1	30	1	4	30	16	44	29.14379226	0.325904562	7	0	1	1	5
1521890177	4	3	1	1	28	0	4	12	32	48	15.17531058	0.342086331	9	1	1	1	3
1523158779	6	1	3	1	31	5	4	44	18	20	46.41299972	0	4	4	1	2	7
1523505620	7	1	1	2	32	5	0	34	34	22	26.98243568	0.132931306	9	0	2	1	2
1528180761	7	4	2	2	42	0	3	50	12	32	45.2757216	0.043769968	7	1	2	1	6
1528493172	3	1	4	2	49	5	1	54	18	16	41.59437081	-0.0086262	9	1	2	1	6
1549185359	6	3	4	2	26	4	3	38	24	24	33.75311788	-0.13398007	4	0	4	1	6
1549354711	4	5	4	2	49	3	0	36	20	38	18.74913115	-0.06326384	3	1	2	1	5

1550570871	3	3	2	2	43	1	0	24	40	34	13.21824125	0.259525521	3	1	3	1	2
1552068680	7	5	4	2	50	0	0	24	40	36	13.18679463	0.126114316	1	0	3	1	2
1552723805	4	3	2	1	46	0	1	8	38	52	5.417229987	0.224960671	9	0	3	1	3

Two-way tables of demographic variables and different scores

Frequency Percent Row Pct Col Pct	Table of age1 by pscorea	
age1	pscorea	
	Less than 30	Total
Younger than 35	10 43.48 100.00 43.48	10 43.48
35 and older	13 56.52 100.00 56.52	13 56.52
Total	23 100.00	23 100.00
Frequency Missing = 32		

Frequency Percent Row Pct Col Pct	Table of FOS by pscorea	
FOS	pscorea	
	Less than 30	Total
Business	5 21.74 100.00 21.74	5 21.74
Other	18 78.26	18 78.26
	100.00 78.26	
Total	23 100.00	23 100.00
Frequency Missing = 32		

Frequency Percent Row Pct Col Pct	Table of LOE by pscorea	
LOE	pscorea	
	Less than 30	Total
Honours and less	15 65.22 100.00 65.22	15 65.22
Masters and PHD	8 34.78 100.00 34.78	8 34.78
Total	23 100.00	23 100.00
Frequency Missing = 32		

Frequency Percent Row Pct Col Pct	Table of SEX by pscorea	
SEX(SEX)	pscorea	
	Less than 30	Total
Male	14	14

	60.87 100.00 60.87	60.87
Female	9 39.13 100.00 39.13	9 39.13
Total	23 100.00	23 100.00
Frequency Missing = 32		

Frequency **Percent** **Row Pct** **Col Pct**	**Table of ETHNIC by pscorea**	
ETHNIC(ETHNIC)	**pscorea**	
	Less than 30	**Total**
Black	5 22.73 100.00 22.73	5 22.73
White	8 36.36 100.00 36.36	8 36.36
Indian	3 13.64 100.00	3 13.64
	13.64	
Coloured	6 27.27 100.00 27.27	6 27.27
Total	22 100.00	22 100.00
Frequency Missing = 33		

Frequency **Percent** **Row Pct** **Col Pct**	**Table of age1 by FOS**		
age1	**FOS**		
	Business	**Other**	**Total**
Younger than 35	11 20.75 39.29 64.71	17 32.08 60.71 47.22	28 52.83
35 and older	6 11.32 24.00 35.29	19 35.85 76.00 52.78	25 47.17
Total	17 32.08	36 67.92	53 100.00
Frequency Missing = 2			

Statistics for Table of age1 by FOS

Statistic	DF	Value	Prob
Chi-Square	1	1.4164	0.2340
Likelihood Ratio Chi-Square	1	1.4338	0.2311
Continuity Adj. Chi-Square	1	0.8017	0.3706
Mantel-Haenszel Chi-Square	1	1.3897	0.2385
Phi Coefficient		0.1635	
Contingency Coefficient		0.1613	
Cramer's V		0.1635	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	11
Left-sided Pr <= F	0.9321
Right-sided Pr >= F	0.1856
Table Probability (P)	0.1177
Two-sided Pr <= P	0.2572

Effective Sample Size = 53
Frequency Missing = 2

Frequency
Percent
Row Pct
Col Pct

Table of age1 by LOE			
age1	LOE		
	Honours and less	Masters and PHD	Total
Younger than 35	16	12	28
	30.19	22.64	52.83
	57.14	42.86	
	50.00	57.14	
35 and older	16	9	25
	30.19	16.98	47.17
	64.00	36.00	
	50.00	42.86	
Total	32	21	53
	60.38	39.62	100.00
Frequency Missing = 2			

Statistics for Table of age1 by LOE

Statistic	DF	Value	Prob
Chi-Square	1	0.2596	0.6104
Likelihood Ratio Chi-Square	1	0.2601	0.6100
Continuity Adj. Chi-Square	1	0.0521	0.8195
Mantel-Haenszel Chi-Square	1	0.2547	0.6138
Phi Coefficient		-0.0700	
Contingency Coefficient		0.0698	
Cramer's V		-0.0700	

Fisher's Exact Test	
Cell (1,1) Frequency (F)	16
Left-sided Pr <= F	0.4103
Right-sided Pr >= F	0.7851
Table Probability (P)	0.1955
Two-sided Pr <= P	0.7793

Effective Sample Size = 53
Frequency Missing = 2

Descriptive statistics entire sample

The MEANS Procedure

Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
PSCORE	PSCORE	32.27	12.15	55	24.00	30.00	40.00
N2SCORE	N2SCORE	27.20	13.29	55	15.18	26.79	40.45
STAGE23	STAGE23	24.95	10.78	55	18.00	24.00	32.00
STAGE4P	STAGE4P	37.73	14.58	55	28.00	36.00	46.00

Descriptive statistics by Ethnic group

The MEANS Procedure

ETHNIC	N Obs	Variable	Label	Mean	Std Dev	N	25th Pctl	Median	75th Pctl
Black	7	PSCORE	PSCORE	26.00	6.93	7	24.00	28.00	30.00
		N2SCORE	N2SCORE	20.33	9.00	7	14.32	16.91	26.98
		STAGE23	STAGE23	22.29	13.14	7	10.00	26.00	34.00
		STAGE4P	STAGE4P	46.86	15.31	7	36.00	48.00	60.00
White	20	PSCORE	PSCORE	35.40	15.57	20	22.00	40.00	49.00
		N2SCORE	N2SCORE	31.45	15.80	20	16.59	32.09	44.50
		STAGE23	STAGE23	23.90	9.50	20	17.00	23.00	31.00
		STAGE4P	STAGE4P	37.60	15.49	20	29.00	35.00	52.00
Indian	6	PSCORE	PSCORE	33.67	9.99	6	24.00	33.00	44.00
		N2SCORE	N2SCORE	27.56	13.74	6	19.87	23.38	41.45
		STAGE23	STAGE23	23.00	11.08	6	14.00	25.00	32.00
		STAGE4P	STAGE4P	37.00	21.31	6	20.00	28.00	58.00
Coloured	19	PSCORE	PSCORE	31.47	10.32	19	24.00	30.00	38.00
		N2SCORE	N2SCORE	26.72	11.07	19	17.64	27.26	36.23
		STAGE23	STAGE23	27.47	11.70	19	18.00	24.00	36.00
		STAGE4P	STAGE4P	34.42	11.29	19	26.00	34.00	42.00

Non-parametric test for comparison between age groups

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable age1					
age1	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Younger than 35	30	910.0	840.0	59.005863	30.333333
35 and older	25	630.0	700.0	59.005863	25.200000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	630.0000
Normal Approximation	
Z	-1.1778
One-Sided Pr < Z	0.1194
Two-Sided Pr > |Z|	0.2389
t Approximation	
One-Sided Pr < Z	0.1220
Two-Sided Pr > |Z|	0.2440
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test

Kruskal-Wallis Test	
Chi-Square	1.4074
DF	1
Pr > Chi-Square	0.2355

Non-parametric test for comparison between gender groups

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable SEX					
SEX	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Male	29	756.0	783.0	55.817425	26.068966
Female	24	675.0	648.0	55.817425	28.125000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	675.0000
Normal Approximation	
Z	0.4748
One-Sided Pr > Z	0.3175
Two-Sided Pr > |Z|	0.6350
t Approximation	
One-Sided Pr > Z	0.3185
Two-Sided Pr > |Z|	0.6369
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	0.2340
DF	1
Pr > Chi-Square	0.6286

Non-parametric test for comparison between study fields

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable FOS					
FOS	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Business	17	587.50	459.0	52.340864	34.558824
Other	36	843.50	972.0	52.340864	23.430556
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	587.5000
Normal Approximation	
Z	2.4455
One-Sided Pr > Z	0.0072
Two-Sided Pr > |Z|	0.0145
t Approximation	
One-Sided Pr > Z	0.0089
Two-Sided Pr > |Z|	0.0179
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	6.0273
DF	1
Pr > Chi-Square	0.0141

Non-parametric test for comparison between level of education groups

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable LOE					
LOE	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Masters and PHD	21	626.50	567.0	54.846613	29.833333
Honours and less	32	804.50	864.0	54.846613	25.140625
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	626.5000
Normal Approximation	
Z	1.0757
One-Sided Pr > Z	0.1410
Two-Sided Pr > |Z|	0.2820
t Approximation	
One-Sided Pr > Z	0.1435
Two-Sided Pr > |Z|	0.2870
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	1.1769
DF	1
Pr > Chi-Square	0.2780

Non-parametric test for comparison between different ethnic groups

The NPAR1WAY Procedure

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable ETHNIC					
ETHNIC	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Coloured	19	482.50	503.50	52.480825	25.394737
White	20	596.00	530.00	53.022093	29.800000
Black	7	131.00	185.50	37.198220	18.714286
Indian	6	168.50	159.00	34.819411	28.083333
Average scores were used for ties.					

Kruskal-Wallis Test	
Chi-Square	2.9786
DF	3
Pr > Chi-Square	0.3949

Non-parametric test for comparison between different FOS

The NPAR1WAY Procedure
age1=Younger than 35

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable FOS					
FOS	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Business	11	204.50	159.50	21.185484	18.590909
Other	17	201.50	246.50	21.185484	11.852941

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable FOS					
FOS	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	204.5000
Normal Approximation	
Z	2.1005
One-Sided Pr > Z	0.0178
Two-Sided Pr > |Z|	0.0357
t Approximation	
One-Sided Pr > Z	0.0226
Two-Sided Pr > |Z|	0.0452
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	4.5118
DF	1
Pr > Chi-Square	0.0337

Non-parametric test for comparison between different FOS

The NPAR1WAY Procedure
age1=35 and older

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable FOS

FOS	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Other	19	230.0	247.0	15.631379	12.105263
Business	6	95.0	78.0	15.631379	15.833333
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	95.0000
Normal Approximation	
Z	1.0556
One-Sided Pr > Z	0.1456
Two-Sided Pr > |Z|	0.2912
t Approximation	
One-Sided Pr > Z	0.1508
Two-Sided Pr > |Z|	0.3017
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	1.1828
DF	1
Pr > Chi-Square	0.2768

Non-parametric test for comparison between different LOE

The NPAR1WAY Procedure
age1=Younger than 35

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable LOE

LOE	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Masters and PHD	12	206.0	174.0	21.466844	17.166667
Honours and less	16	200.0	232.0	21.466844	12.500000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	206.0000
Normal Approximation	
Z	1.4674
One-Sided Pr > Z	0.0711
Two-Sided Pr > |Z|	0.1423
t Approximation	
One-Sided Pr > Z	0.0769
Two-Sided Pr > |Z|	0.1538
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	2.2221
DF	1
Pr > Chi-Square	0.1360

Non-parametric test for comparison between different LOE

The NPAR1WAY Procedure
age1=35 and older

Wilcoxon Scores (Rank Sums) for Variable PSCORE Classified by Variable LOE

LOE	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Masters and PHD	9	119.0	117.0	17.568153	13.222222
Honours and less	16	206.0	208.0	17.568153	12.875000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	119.0000
Normal Approximation	
Z	0.0854
One-Sided Pr > Z	0.4660
Two-Sided Pr > |Z|	0.9320
t Approximation	
One-Sided Pr > Z	0.4663
Two-Sided Pr > |Z|	0.9327
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	0.0130
DF	1
Pr > Chi-Square	0.9094