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MASTERS – RESEARCH REPORT

Subjective Opinions of Industrial/Organisational
Psychologists' on the Identity of their Profession

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**A research report submitted in partial fulfilment of the requirements for the
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Humanities, University of the Witwatersrand, Johannesburg.**

Declaration

I, Shivani Chetty, hereby declare that this research report is my own, unaided work. It has not been submitted before for any other degree or examination at this or any other university.

Date: 30-01-2015

Signature: _S. Chetty_

Dedication

I dedicate this research report to my dearest grandmother, Muniamah Pillay. I hope this achievement makes you proud.

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I would like to acknowledge the God of my understanding for blessing me with a sound mind and functional body to fulfil the requirements of a master's degree.

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Abstract

Conflicting research exists regarding the professional identity of Industrial/ Organisational (I/O) psychology. Whilst some literature posits that the field of I/O psychology is a key profession to ensuring organisational development, other publications argue that the core principles of the profession need to be re-evaluated. Hence, this study aimed to explore the subjective opinions of I/O psychologists' on the identity of their profession to gain a deeper understanding of the current state of I/O psychology.

Through purposive sampling, qualified and HPCSA registered I/O psychologists participated in this Q methodology study. Participants were tasked with arranging a concourse of statements into a matrix grid according to their opinions. The self-composed concourse of statements set out in this research study hinged on five main identity themes namely: visibility, differentiation, competitive image, benefits or relevance and lastly, capitalism/ethics within the South African context. In doing so, the current research study gained a deeper understanding of how I/O psychologists' perceive the identity of their profession. With the use of the PQ method program, the data received was interpreted through by-person factor analysis.

The results of this research study indicated that participants believed the identity of I/O psychology is influenced and impacted upon by the importance of an I/O psychologist, misunderstandings of the profession, individuality within I/O psychology and the value-add of the field.

It is recommended that future research analyses the subjective opinions of I/O psychologists' on the identity of their profession from a more industry specific context as this may have an influence on results. The variations that participants may have in academic qualifications and working experience should also be investigated as a factor of influence in future studies.

Focus groups are also recommended for purposes of studying a broader sample, especially for research that has time constraints.

Keywords: industrial psychology, organisational psychology, identity, profession

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.2 Problem formulation	5
1.3 Research outline	7
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Identity	9
2.2 Professions	10
2.3 Professional identity of I/O psychology	10
2.4 A brief historical overview of I/O psychology	14
2.5 A brief historical overview of I/O psychology in South Africa	17
2.6 Miscellaneous factors that possibly influenced the identity of I/O psychology	19
2.6.1 Multidimensionality of the field	19
2.6.2 Interdisciplinary field	20
2.6.3 Science-practitioner model	21
2.6.4 The name of the profession	22
2.7 Identity themes in I/O psychology	24
2.7.1 Visibility and differentiation	24
2.7.2 Competitive image	26
2.7.3 Relevance and benefits	27
2.7.4 Capitalism and ethics	28
2.8 Synopsis of the identity themes in I/O psychology	30
2.9 Research question	31
2.10 Rationale and aims	31

CHAPTER THREE: METHODOLOGY	33
3.1 Introduction	33
3.2 Why q methodology?	33
3.3 What is q methodology?	34
3.4 Conducting q methodology	35
3.5 Sampling	38
3.5.1 Suitability of purposive sampling	38
3.5.2 Limitations of purposive sampling	39
3.5.3 About the sample	40
3.6 Procedure	41
3.7 Benefits and limitations of q methodology	43
3.7.1 Strengths of q methodology	44
3.7.2 Limitations of q methodology	44
3.8 Ethical considerations	45
CHAPTER FOUR: RESULTS	47
4.1 Introduction	47
4.2 Factor rotation	47
4.3 Analysing factors	49
4.4 Factor one – we are important	51
4.4.1 Distinguishing statements for factor one	53
4.5 Factor two – we are misunderstood	55
4.5.1 Distinguishing statements for factor two	57
4.6 Factor three – we have individuality	58
4.6.1 Distinguishing statements for factor three	61

4.7	Factor four – we add value	63
4.7.1	Distinguishing statements for factor four	65
4.8	Demographics of Q sorts in each factor	67
4.9	Consensus statements for factors one to four	70
CHAPTER FIVE: DISCUSSION		73
5.1	Introduction	73
5.2	Synopsis of factors one to four	73
5.3	Shared perceptions across factors one to four	77
5.3.1	Practice in history	77
5.3.2	Functionality	79
5.3.3	Psychological grounding	80
CHAPTER SIX: CONCLUSION		82
6.1	Research contributions	82
6.2	Limitations of the study	83
6.3	Strengths of the study	84
6.4	Final thoughts and recommendations for future research	85
References		87

Appendices

Appendix A: Q set	96
Appendix B: Cards	99
Appendix C: Scoring sheet	100
Appendix D: Interview schedule	101
Appendix E: Demographic questionnaire	102
Appendix F: Research participation invite	103
Appendix G: Correlation matrix between sorts	105
Appendix H: Participant Q-sort factor loadings	107

List of Tables

Table 1: Demographics of participants	41
Table 2: Eigenvalues for unrotated factors	47
Table 3: Factor array for factor one	51
Table 4: Distinguishing statements for factor one	54
Table 5: Factor array for factor two	55
Table 6: Distinguishing statements for factor two	58
Table 7: Factor array for factor three	59
Table 8: Distinguishing statements for factor three	62
Table 9: Factor array for factor four	63
Table 10: Distinguishing statements for factor four	66
Table 11: Emergent identity themes for factor loadings based on results	67
Table 12: Demographics of Q Sorts in each factor	69
Table 13: Consensus statements	71

List of Figures

Figure 1: Representation of identity themes	31
Figure 2: Matrix grid	37
Figure 3: Screeplot graph	48

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Profession

Chapter One: Introduction

1.1 Background

Industrial and organisational psychology, hereafter referred to as I/O psychology, may be broadly defined as the scientific study of human behaviour in the context of work (Muchinsky, Kriek, & Schreuder, 2005). Van Vuuren (2010) refers to I/O psychology as an applied science which seeks to explain human behaviour in the workplace. I/O psychology matches employees according to a suitable organisational fit so that workers can perform optimally.

Schreuder and Coetzee (2010) also consider human behaviour and its relation to organisations in their description of the profession. However, their definition also notes the academic arm of I/O psychology. For them, the world of academia in I/O psychology plays an important function in generating research for which challenges in organisations can be addressed.

Part of the work of an I/O psychologist is to consider human interactions with reference to psychology in organisations (Gasser, Butler, Waddilove, & Tan, 2004). As psychologists, practitioners of the field have thorough theoretical knowledge of personality constructs, cognitive processes and people development. Moreover, I/O psychologists are scientists. Hence, I/O psychologists are often described by the term scientist-practitioner (Gasser et al., 2004; Hough, 2006). This means that I/O psychologists develop scientific theories and models which are in turn applied practically to resolve problems in society and business.

Whilst I/O psychologists work at the organisation, group and individual level they can also operate in highly diverse roles. By implication their function can vary considerably at any of these levels. For example, at an organisational level the work of an I/O psychologist has developed to include focus areas such as change and strategic management as well as recruitment and selection (Chmiel, 2008; Muchinsky et al., 2005). From a group perspective, however, I/O practitioners can work in the fields of learning and training interventions. At an individual level, I/O psychologists may focus on areas such as employee wellbeing and job satisfaction.

Further to these different working levels in which the profession is inextricably multifaceted, it should be noted that I/O psychology operates in a variety of business areas. These include consulting, banking and corporate sectors. Many I/O psychologists also work in private practice as well as in academia. Whilst most practitioners receive a broad scope of training in this field, I/O psychologists often have an area of speciality in a sub-field of the profession. As such I/O psychologists specialise in inter alia, psychometric assessments, talent management or organisational development. It should be noted that whilst these fields form part of the broader scope of I/O psychology's identity; they may also be seen as careers in their own light. For example, the human resource management field can be practiced by an individual as an independent career or as part of the work of an I/O psychologist. Furthermore, whilst many I/O practitioners have their forte in specific areas, they are never employed by the label of an "I/O psychologist." Rather, I/O psychologists' are titled under their area of specialisation. This trend has stuck with the profession since the early 1900's (Freedheim & Weiner, 2003).

Although the field is fairly new within the South African workspace, the profession has grown considerably. As the profession has grown, many external and internal factors have influenced and affected the development of the professions' identity. It has been argued that the field is in fact a reactive, rather than proactive profession to external and internal factors (Freedheim & Weiner, 2003). The identity of I/O psychology is hence shaped and moulded by its responses to various factors in the environment and by the field itself.

Socioeconomic demands is an example of an external factor which affects business operations and I/O psychology's identity. This is because practitioners of the field are required to be responsive to such socioeconomic demands. An I/O practitioner in business would hence be expected to respond to socioeconomic pressures by applying expertise in a change management intervention for example. Such an intervention may merely be an operational change in an assembly line or a cost cutting initiative which involves staff layoffs.

On the other hand, intra-disciplinary forces are internal factors which influence the professions' identity. For example, over time research, literature and theories in I/O psychology have been redirected to alternative considerations of solving business challenges. As such, a shift in focus in the professions' identity from a research perspective becomes apparent. Such intra-disciplinary forces that inform the identity of the profession are also evident in the formation of organisations like the Society for Industrial and Organizational Psychology (SIOP). Such organisations ensure that practitioners are supported in terms of practice and research initiatives as well as mitigate change in the identity of the profession as it develops (SIOP, 2014).

Due to the aforementioned external and internal influences on the identity of I/O psychology, the profession has inevitably been subject to change. These changes mean that practitioners of the field may need to adapt in order to respond to globalisation, technological advances and economic developments. Indeed, Schreuder and Coetzee (2010) note that the changing nature of working environments requires a rigorous focus on adapting most of I/O psychology's sub-fields.

Pragmatically, this could include I/O psychologists re-evaluating the business interventions they implement so that they are more applicable to contemporary terms. For example, interventions may need to be redesigned to specifically target women, who in modern times, are seen more often working in male dominated roles. From a theoretical point of view, research by I/O psychologists may require a shift in focus to more current issues in the workplace. This includes producing knowledge that gives employees a competitive edge globally through initiatives like the National Research and Development Strategy (NRDS) (Schreuder & Coetzee, 2010).

As the profession advances and evolves in response to changes, the identity of the profession is often challenged (Cooper-Thomas & Wright, 2008; Ryan & Ford, 2010). This may lead practitioners, laypersons and business entities into a state of confusion and uncertainty regarding the professional identity of the field. As such, the current identity challenges that exist in I/O psychology will be explored in order to better understand the status of the profession.

1.2 Problem formulation

Research globally, as well as in the South African context has indicated that there is reason to investigate the identity of I/O psychology (Benjamin & Louw-Potgieter, 2008; Cooper-Thomas & Wright, 2008; Ryan & Ford, 2010; Suffla & Seedat, 2004). As indicated previously, I/O psychology has grown into a profession that can be independent of or associated with other professions. This is an internal reflection of the professions' identity and formulates one aspect for why the field's identity has previously been under scrutiny. Indeed, if the field is defined by multiple sub-professions questions arise about how and why the identity of I/O psychology as a profession is unique and distinct. Moreover, the identity of I/O psychology itself should offer some level of differentiation so that the profession can be deemed as an autonomous and independent practice.

Another concern relating to I/O psychology's identity is based on how people external to the profession relate to or understands I/O psychology itself (Rothmann & Cillers, 2007; Van Vuuren, 2010). It is often the case that people are not aware of the existence of the profession. Sometimes, laypersons do not understand what work is involved in the profession or misunderstand the technical attributes I/O psychology has to offer. As such, people within the workplace and in society often do not have a clear, visible understanding with respect to I/O psychology's identity.

Moreover, changes that have occurred in the profession, such as the suggestion that the name industrial psychology be altered to I/O psychology, have created identity challenges (Highhouse, 2007). Such changes and recommendations have left the identity of the profession in a state of confusion in terms of what the profession represents, the values that it prioritises and the functional purposes it seeks to fulfil. Highhouse (2007, p. 55) argues that

“the humanistic influences signalled by the name change led to tensions with the traditionalists over the relative value of a hard versus soft approach to research and practice, and over whether the field should be theory and science driven, versus practice and value driven”. Overall, such tensions may lead the identity of the profession into a state of ambiguity and uncertainty.

It has also been put forth that professions which can operate independently from I/O psychology could be viewed more favourably in industries and businesses. If, for example, business science is considered in a more optimistic manner in the workplace, the identity of I/O psychology may be under threat (Ryan & Ford, 2010). Even if closely related professions are not viewed in a more positive manner, it has been asserted that business entities prefer professions that they can relate to.

As such, the attributes which give I/O psychology’s identity a competitive edge could be undermined, making the field less important in the professional world. If assertions about I/O psychology’s identity lacking a competitive distinction are true, then questions about how relevant and beneficial I/O psychology’s current identity is may be posed. The value in I/O psychology’s identity coupled with its applicability as a profession is important to clarify in order for the field to be recognised.

Lastly, the identity of I/O psychology has also been characterised as a profession in which ethics and workplace capitalism has been questioned (Renecke, 2001; Suffla & Seedat, 2004). The extent to which the identity of I/O psychology has conformed to ethical standards and the role, if any, that the profession has played in capitalistic acts will inform the challenges faced by the field. From this, it is clear that a multitude of facets need to be taken into consideration

in order to fully understand the identity challenges and critiques the profession faces. Based on associations that concepts such as “identity” and “profession” have to this research topic, it is also suitable to unpack these terms in attempting to fully understand the problems that exist in I/O psychology.

1.3 Research Outline

Chapter two of this research report provides a rigorous literature review which begins with a consideration of important concepts that relate to the research topic. Thereafter, a brief historical overview of I/O psychology will be presented in order to provide a framed understanding of the profession itself. Important developments that may have influenced the identity of I/O psychology will be outlined to contextualise the study. The emergent themes which have impacted on the identity of I/O psychology will be presented thereafter. Following this, the research question and rationale that this study set out to explore will be outlined.

In chapter three, the research methodology that has been used to conduct this study will be discussed. Specifically, a detailed description of the methodology employed will be presented in order to provide a better understanding on the technique. This includes the steps that were followed by the researcher to receive data. Thereafter, the sample, procedure and ethical considerations of this study will be noted.

Chapter four will discuss the findings for this research study based on the statistical results. Thereafter, chapter five will provide a discussion that will report on the analytical interpretation of these findings. Lastly, chapter six will conclude this research report by

highlighting the research contributions of this study. The strengths, limitations and future recommendations of this study will also be presented in chapter six.

Chapter Two: Literature Review

2.1 Identity

The concept of “identity” denotes feelings about oneself. Identity refers to the manner in which a person comes to understand their being (van Tonder, 2009). This is a reflection of the personal attributes that an individual has about him/herself and is also a subjective thought process. When an individual considers their identity, beliefs about uniqueness coupled with a place of belonging are important. Places of belonging are usually associated with family circles, friends, organisations or social groups.

How one comes to understand their identity may be influenced by many different factors. People often categorise their identity based on inherent factors such as gender or social factors such as occupation (Foreman & Whetten, 2002). As such, identity becomes a concept which is structurally complicated. This is because an individual can have many levels of identity at the same time. For example, a person may identify herself as a mother, a female and a manager concurrently, thereby owning many inherent and social levels of identities.

Furthermore, an individual’s identity is not always a fixed or constant phenomenon (Agostino, 2004). This is because identity is ever changing and adapts to time and social interactions. Hence, at one point in time an individual’s identity may be characterised as a teenager whose social interactions extend to school friends. This changes over time however, as later on in life the same individual may identify him or herself as an adult whose social interactions are largely dominated by work colleagues.

2.2 Professions

Researchers have attempted to understand the abstract concept of “professions” as early as the 1950’s (Saks, 2012). Professions constitute of two fundamental aspects, that is, distinct knowledge and exclusive expertise. Other important factors to consider when understanding professions is the ability to have a positive influence on society and being guided by a framework of ethical codes in practice and knowledge generation. When professional bodies are formed, they are largely dependent on the profession it represents to offer distinction in labour practices or knowledge base (Morris, Crawford, Hodgson, Shepherd, & Thomas, 2006). Professional bodies are often self-governing and also serve to endorse the professional independence for the field it represents.

However, the idea that professions must hold practical autonomy and academic independence is somewhat idealised in contemporary terms (Morris et al., 2006). Professions rarely offer exclusivity in terms of its theoretical base and skillset. As the world becomes increasingly interconnected, globalisation advances and technology progresses. As a result professions become more and more intertwined. Due to this interconnectedness, many professions can no longer claim that they offer a specialised service to the world of business and society. In this respect, such occupations are often deemed as semi-professionals or emerging professionals.

2.3 Professional Identity of I/O Psychology

Professional identity is concerned with a person’s occupation in an organisation. Professional identity may be described as the attributes and values that allow people to define their role within an occupation (Piironen & Timonen, 2007). A professional identity is not

just about relaying an individual's professional title. It is about an individual defining their function, purpose and responsibility in a career.

In 1974, the professional identity of psychology was characterised by competencies in psychometric evaluation, psychological intervention and expert referrals in the field (Abel & Louw, 2009). These three pillars served as the main functions for how the profession would come to be understood and displayed the kind of knowledge practitioners of the field had. It has been argued that professional identity is also represented by the knowledge and academic training of an individual (Schaerer, 2011). The professional identity of I/O psychologists' may be characterised by their academic and theoretical exposure to human behaviour in the workplace. Additionally, the knowledge I/O psychologists' receive through their internship training and other working experiences may also be viewed as part of their professional identity.

In the business world, I/O practitioners may describe their professional identity as an I/O psychologist with an area of specialisation. For example, one may refer to their professional identity as an I/O psychologist specialising in talent management or psychometric assessment. In academia on the other hand, I/O psychologists' may be lecturers whose professional identity is characterised by their specific research interests in employee wellness or ergonomics for example.

As individuals associate themselves with a particular professional identity, the idea of demonstration is important (Chreim, Williams, & Hinings, 2007). Demonstration means that it is important for an individual to enact aspects of a profession in order for it to be deemed as a part of their professional identity. Therefore, if one describes their professional identity as

an I/O psychologist, he/she must conduct work that is in line with an I/O psychologist. In South Africa, the line of work of an I/O psychologist has been categorised into six groups (Schreuder & Coetzee, 2010; Van Vuuren, 2010). An I/O psychologist would normally demonstrate some dimension out of these categories as this forms part of their professional identity. These six sub-fields are personnel psychology; organisational psychology; career psychology; psychometrics; ergonomics and consumer psychology.

- Personnel psychology is one of the oldest sub-fields of I/O psychology. The identity of personnel psychology is characterised by its interest in individuality as well as interconnectedness with psychology and human resources.

- Organisational psychology's identity places emphasises on understanding, at the organisational level, the impact that firms have on their workers in terms of behaviour, attitudes and work conduct.

- The identity of career psychology is epitomized by the relationship between individuals and the environment. The patterns of association that emerge as a result of this relationship are of particular interest in career psychology.

- Psychometrics is identified by the development and use of instruments to test individuals for various work related reasons such as recruitment.

- Ergonomics identity is characterised by the human-machine interface (HMI), that is, the interaction between people and systems in the world of business

- The identity of consumer psychology can be described by the interplay of behaviour between buyer and seller.

Additionally, how practitioners conduct themselves is central to describing their view on the professions' values and goals. If someone works ethically, this indicates that they believe

their profession values fair and principled practices. Indeed, fair and ethical practices are stipulated as an integral aspect of I/O psychology's professional identity in South Africa (HPCSA, 2005). The code of ethics highlighted by the Health Professions Council of South Africa (HPCSA) serves as a framework for the manner in which I/O professionals should engage in their work. This guideline refers to inter alia, adherence to informed consent through professional practice and respect for human rights.

In South Africa, the professional identity of an I/O psychologist is distinct from other professional fields by virtue of completing a twelve month internship and registering as a practitioner with the HPCSA (Benjamin & Louw-Potgieter, 2008). The HPCSA highlights specific areas that I/O interns must be exposed to during the twelve month program. Some of these areas focus on human resource psychology, testing and assessment as well as professional ethics (HPCSA, 2005). Once an I/O psychology intern fulfils all the internship requirements set out by the HPCSA, he/she may proceed to write board examinations and register with the council as an I/O psychologist.

According to Louw (as cited in Benjamin & Louw-Potgieter, 2008), a core aspect of professionalization is for the field to be a part of a group. In South Africa the Psychological Society of South Africa (PsySSA) is a national body that is associated with the development and regulation of psychology and its sub-fields as a profession. For I/O psychology in particular, the Society for Industrial and Organisational Psychology of South Africa (SIOPSA) is an organised group that aims to assist I/O psychologists in providing optimal services to the country ("SIOPSA," 2014). Through SIOPSA, many networking and publication opportunities are available to members of the organisation at conferences.

It should also be noted that within the South African context, the professional identity of individuals may be especially challenged. This is because apart from the complexities that exist in identity itself, there are many other diversities in terms of labour legislation, cultural differences in business and socio-economic distinguishers within the country (Adams & Crafford, 2012).

Based on the implications that diversity has in the workplace, certain questions that relate to I/O practitioners identity must be considered. For example, how ethical is the professional identity of I/O psychologists if they do or do not account for socioeconomic differences when considering employment in a diverse country like South Africa? Such considerations are indeed important to ponder for this research study. It is additionally important to consider I/O psychology from a historical perspective in order to better gauge the manner in which the field has developed. To reach this end, a brief historical account which highlights some important trends in I/O psychology's history will be provided.

2.4 A Brief Historical Overview of I/O Psychology

According to Landy and Conte (2010), influential historians such as Cattell and Munsterberg, played a fundamental role in the development and progression of I/O psychology. Between the late 1800's and early 1900's research investigations by Cattell focused on understanding individual differences amongst workers and how this influences their behaviour. Munsterberg, on the other hand, coined the ability to measure employees relative to their work performance and devoted a considerable amount of research to industrial efficiency.

Around the same time that industrial efficiency was conceptualised, a similar phenomenon called scientific management was pioneered by industrial engineer Frederick Taylor (Taylor, 1911). The concept was based on furthering practical efficiency in the workplace by breaking down tasks into smaller and more manageable parts. In doing so, efficient work operations would lead to an increase in job opportunities, profit margins in business and improve the work-life balance of employees.

Subsequently, Lillian Gilbreth produced research which postulated applying scientific management to employees work stations. Gilbreth was one of the first notable females contributing to the development of I/O psychology. In particular, she played a significant role in developing industrial management techniques (Muchinsky, 2006). She was also the first PhD graduate in the field of I/O psychology sometime after 1917 (Landy & Conte, 2010).

In the 1920's the idea of workers being viewed in a more humanistic manner became progressively important to researchers such as Elton Mayo (Landy & Conte, 2010; Mayo, 1930). It was during this time that schools of thought in I/O psychology began considering the adverse effect that machines in industrialisation had on employees. Moreover, psychologists were deeply involved in psychometric testing during World War I. It was around the same time that I/O psychology research was published in the *Journal of Applied Psychology* for the first time (Muchinsky, 2006). Fundamentally, the journal addressed issues relating to science complimenting practice in I/O psychology which still remains a contentious topic in contemporary terms.

In 1935 a regulatory body called the American Association for Applied Psychology (AAAP) was formed (Freedheim & Weiner, 2003; Koppes, n.d.). Later, in 1945 the AAAP

merged with the American Psychological Association (APA) who officially established Division 14. Division 14 was a designated section which focused on supporting and developing the profession, which at the time, was labelled Industrial and Business Psychology. During the same time that World War II broke out and techniques offered by I/O psychologists became increasingly important to civilians in the U.S, recruitment, selection, testing, leadership and machine design was highly sought after (Muchinsky, 2006).

Between 1946 and 1963 I/O psychology had evolved on various accounts. The science and practice of I/O psychology was legitimized and fields such as ergonomics were recognised as separate to the profession (Muchinsky, 2006). Research had diverged to focus on business and organisational dynamics. Muchinsky (2006) also notes that I/O psychology began to merge with other disciplines. For example, organisational behaviour was a blend of I/O psychology, sociology and social psychology.

Additionally, the profession had seen multiple reviews in terms of scope of practice and content coverage. It has been noted that between 1950 and the mid parts of the 1970's book reviews had included and incorporated focus areas such as personnel management, group dynamics and organisational behaviour (Freedheim & Weiner, 2003). I/O psychology had hence grown to become increasingly diverse and had expanded to a multitude of domains in the research and practice paradigm. As such, dynamics relating to organisations as well as individuals and groups became part of an I/O psychologist's expertise.

In the 1970's, members of the APA became disgruntled with the incorporation of new subject areas in the profession (Landy & Conte, 2010). A call for an independent organisation was proposed which led Division 14 to officially integrate with SIOP in 1982. Amongst other

intentions, SIOP aimed at expanding the presence of the professions' identity in the public domain as well as to develop research and working opportunities for I/O psychologists. An important shift in focus by the profession was also apparent in the early 1990's as theory development and research design methods became especially popular. During this time the practical scope of I/O psychologists increased as more professions were working in business sectors such as consulting, psychological assessments and coaching (Lefkowitz, 2005).

2.5 A Brief Historical Overview of I/O Psychology in South Africa

I/O psychology has notable developments since the profession emerged in South Africa. Prior to World War II, South African psychology was informed by international literature and schools of thought. The first South African psychology laboratory was developed for experimental purposes in 1917 at the University of Stellenbosch by Professor. Wilcocks (Nicholas, 2013). It has been posited that the first I/O psychology course might have also been offered at the University of Stellenbosch in 1943 (Raubenheimer, 1982).

In South Africa independent research in I/O psychology began in 1946 when the National Institute for Personnel Research (NIPR) was established (Schreuder & Coetzee, 2010). This institution was directed by Simon Biesheuvel who is considered to be the father of South African I/O psychology (Schreuder, 2001). During 1969, the Human Science Research Council (HSRC) played a pivotal role in developing the I/O psychology field through research in manpower, statistics and psychometrics (Schreuder, 2001). It was also during this period that many Afrikaans universities had shifted the discipline of I/O psychology to be housed in the economic and management faculties due to the services rendered by the profession to such industries.

Since this era, the profession had developed tremendously and faculties were increasingly housing I/O psychology as a discipline, making its presence much stronger amongst scholars. Between the 1970's and 1980's the number of registered students and employed lecturers in universities had increased greatly (Raubenheimer, 1982). It was also during this time that the Professional Board of Psychology originated which allowed for legal registration and regulation amongst I/O practitioners.

In 1994, PsySSA was officially incepted to represent the discipline of psychology on all matters concerning human development in post-democracy South Africa (PsySSA, n.d.). Additionally, PsySSA aimed to function as a trade union on behalf of the profession, provide networking opportunities for members and was accredited to facilitate training in the field. During this period, SIOPSA was an official division of PsySSA (Moyo, 2012). However, SIOPSA established itself as an independent operation in 2005 after taking PsySSA to court over the validity of their constitution ("PsySSA," 2003).

Although there have been difficulties between organisations like PsySSA and SIOPSA, there have also been positive historical developments in the profession. For example, the International Congress of Psychology (ICP) was recently held in South Africa after 123 years in 2012 (Ngcobo, 2013). This conference is a highly successful congress which held almost 6000 delegates and strengthened psychology's growth and support within South Africa worldwide.

The above mentioned historical overview of I/O psychology in South Africa and globally shows many notable developments in the profession. Through this progression, some changes or trends may have impacted on the identity of the field. It is important to evaluate some of

these changes in order to provide insight to possibilities re the emergence of identity themes that challenge I/O psychology. Additionally, it is important to qualify some of these changes to provide context for why the identity of the profession is a suitable area of investigation.

2.6 Miscellaneous Factors that Possibly Influenced the Identity of I/O Psychology

Attempts to explore and research the identity of I/O psychology have been a practice which has accompanied the field for many decades. As decades have passed, some developments in the profession will be highlighted by presenting former literature relating to the identity of I/O psychology.

2.6.1 Multidimensionality of the field

In the early 1900's the profession was largely described by technological facets and associated with industries from a practical level. As time passed, knowledge of the mind and cognition became increasingly important. Further to this, considering individuals from a humanistic perspective became progressively fundamental in I/O psychology. Campbell's (1970) research, for example, took an enquiring approach to reflect on how principles employed by and for the practice could aid in up-lifting both the worker and organisation. The scope of content in the profession in the late 1900's saw a deeper involvement in understanding organisational behaviour and wellness amongst employees. More recent trends reveal interest from the profession in cross-cultural positions and critical evaluations of the profession (Freedheim & Weiner, 2003; Highhouse & Schmitt, 2012).

Based on such progressions, the scope of I/O psychology is highly multidimensional and encompasses a broad variety of sub-fields. The profession is influenced by many disciplines under the psychological domain such as clinical and counselling psychology (Venter &

Barkhuizen, 2005). Furthermore, the profession is influenced by fields outside of psychology such as business and economic management. As such, the scope of content and theoretical coverage in I/O psychology has seen much change since the profession began research and practice.

This has however, caused reason for concern. In being a multidimensional profession, the uniqueness of I/O psychology is affected (Highhouse & Schmitt, 2012; Landy & Conte, 2010). If an I/O psychologist is in fact, working as a business consultant or a human resource manager, it is suitable to question the special value-add I/O practitioners bring to the world of work. Following from this, one may also ask if such unique benefits actually matters in business.

2.6.2 Interdisciplinary field

Closely related to the multidimensionality of the field and alongside its historical developments, I/O psychology's relocation to business schools was a significant change in the profession (Aguinis, Bradley, & Brodersen, 2014). As the profession has grown, I/O psychology has continuously been housed by faculties that are somewhat unrelated to psychology. This move occurred both globally and within the South African context in commerce and business management.

As such, I/O psychology has an interdisciplinary flavour due to its relation with fields like human resources and personnel management (Guest, 2006). The concept of an interdisciplinary flavour can be understood as the mutually beneficial relationship between I/O psychology and similar professions with regards to research and practice. Aguinis et al (2014) and Guest (2006) note that because the profession has interconnections with

occupations concerned with business, I/O psychology is beneficial to informing critical organisational practices such as strategic management. In other words, I/O psychology operates hand-in-hand with similar professions, not only to learn from, but also to educate other occupations on business enhancement.

However, it may be postulated that the interdisciplinary nature of I/O psychology has negative impacts on the professions' identity (Aguinis et al., 2014). This is because such faculty changes in the discipline have created a mismatch between applying business, administrative and management techniques in the workplace. There is also the consequence of a mismatch in training and research focus between faculties. As such, the research produced by different faculties and the application thereof in the world of business are often incongruent. Due to such mismatches, it may be argued that there is a blurred view on the identity of the profession. As a consequence of such inconsistencies, the identity of I/O psychology is indeed, often misunderstood or misconstrued amongst laypersons (Ryan & Ford, 2010; Van Vuuren, 2010).

2.6.3 Scientist-practitioner model

As noted earlier, I/O psychology exists in a dual function; as a science and as an applied practice amongst members of the field (Highhouse & Schmitt, 2012; Van Vuuren, 2010). As a science, I/O psychology contributes to the growth of knowledge in the various sub-fields that form part of the broader discipline. As a practice, the scientific knowledge of the discipline is applied with the goal of solving problems in the workplace. This dual purpose that I/O psychology serves hinges on a model referred to as the scientist-practitioner model (Barnard & Fourie, 2007). Moyo (2012) argues that I/O psychology exists as discipline which encompasses these two facets of science and practice.

As the world experiences global, political and economic changes, I/O psychology constantly adapts to such variations in order to meet business needs (Renecke, 2001). Indeed, the profession is ever changing and continuously adjusting to the surroundings it finds itself in. It is often the case that as scientific research is developed by the discipline, it is applied in practice to meet environmental demands and changes in business. However, it has also been put forth that as the environment changes; scientific research is developed in response to dealing with such changes (Moyo, 2012). Therefore, research may be produced and develop in I/O psychology as a result of practical problems that arise in the workplace.

The scientist-practitioner model is well known in I/O psychology. However, research has shown that I/O psychology's identity had been previously challenged due to a lack of unity between pragmatic demands and theoretical underpinnings in the profession (Augustyn & Cillie, 2008; Dunnette, 1998; Rothmann & Cilliers, 2007). Undeniably, the balance between theories in I/O psychology meeting the abrupt demands of the practicalities involved in the professional world was a valid concern that is often still addressed today in order to reduce tension in the field. This is because having a well-balanced profession in terms of theory and practice allows the field to move towards a positive identity. The identity of I/O psychology has been critiqued though, due to research and the practice thereof having little relevance and offering minimal ecological value to practicalities in business (Augustyn & Cillie, 2008).

2.6.4 The name of the profession

The idea of a name change to titles such as personnel psychology was apparently first attempted in 1973 (Highhouse, 2007; Landy & Conte, 2010). Koppes (n.d.) documented that social and intellectual influences often impacted on considerations for a name change in the

profession. An example of a social influence was a call for increased attention on humans in the profession by the APA. Intellectual influences, on the other hand, can be noted in shifts in research focus to personnel and leadership theories. As the profession of I/O psychology has matured, the title of the field has continuously been under scrutiny. Many members of professional bodies have argued for the name of the profession to be reconsidered (Highhouse, 2007). This often resulted due to feelings that the title of the profession was somewhat complicated or did not fully represent the function of the field.

In the early days, when I/O psychology had initially developed, titles such as employment psychology and economic psychology were used to refer to the profession (Freedheim & Weiner, 2003). Terminology such as workplace psychology, business psychology and occupational psychology has also been previously used to refer to the profession. These professional names have been used interchangeably as all the above mentioned work titles relate in some way to the scientific application of psychological principles in the workplace.

Although I/O psychology is currently a dominating title in South Africa and America, there are countries that use different names when referring to the profession. For example, in Germany the title work and organizational psychologists is often used (Landy & Conte, 2010). An interesting name change occurred between the 1970's and 1980's in certain South African universities when industrial psychology was changed to personnel management and then to human resource management (Schreuder, 2001). Amongst some of the implications of this name change was that the distinctions between such professions and I/O psychology's identity faded and confusion arose in the public domain in terms of understanding the field.

Bearing in mind the factors discussed which may have possibly impacted on the identity of I/O psychology it can be argued that the profession is ever changing. As a result, the challenges that may exist will be discussed by considering relevant themes in order to contextualise the professional identity of I/O psychology as a profession.

2.7 Identity Themes in I/O Psychology

In line with these considerations on the status of I/O psychology's identity, the current research study has taken an exploratory approach in investigating the profession. Through such an undertaking, a deeper and more comprehensive perspective on the identity of I/O psychology has been gained.

2.7.1 Visibility and differentiation

Following with the research set out by Ryan (2003) in terms of identity themes, it has been argued that I/O psychology is challenged with regards to the professions' identity on the account of visibility and differentiation. To clarify, visibility refers to how well known or discernable I/O psychology is in society and business (Ryan, 2003). The concept of differentiation on the other hand, refers to the extent to which I/O psychology is easily distinguished from similar working professions such as human resource management.

Within these two themes, lies the assertion that there is a lack of visibility and differentiation within the profession in that people often do not understand what I/O psychology is (Cunningham, 2010; Kisamore & Alexander, 2008; Ryan & Ford, 2010). The idea of I/O psychology being more visible and understood to businesses, government and communities has been a prioritised goal of the SIOP previously (Hough, 2006). However, this still seems to remain problematic in contemporary terms.

Ryan and Ford (2010) assert that the exact features that make the profession distinct when compared to similar jobs are not well known. It is hence difficult to answer questions around how I/O psychology is different from the profession of business science. It is important to consider factors such as scope of practice, academic and practical training, licencing and memberships as well as market reach in order for I/O psychology's differentiation to be significant (Gasser et al., 2004). However, the extent to which business operations, employees and society makes reference to these distinctions are questionable. It is crucial for these distinguishing factors to be well known in order for I/O psychology to be viewed as a meaningful and beneficial profession. This indeed poses as a point of contestation for practitioners in terms of ensuring their purpose is well understood.

The themes of visibility and distinctiveness have also been previously considered through research by Meltzer and Nord (1973) who report a lack of barriers between the fields of clinical psychology to I/O psychology. The basic contention in this respect is that there are insufficient distinctions between the various areas of specialisation that fall under the broader psychological profession. This makes the differences between psychological fields more difficult to understand.

More recent literature by Ryan (2003) has contradicted this however, suggesting that the relationship of I/O psychology to the broader field of psychology has collapsed. The nature of I/O psychology's identity has hence been impacted upon because the professions' relationship to the broader psychological field has disintegrated. Based on these contrasting positions it may be suitable to question or clarify whether I/O psychology is still in fact, a "psychological" profession.

Despite efforts to resolve, or at least address this issue, visibility and differentiation in the profession may still remain a challenge to the identity of I/O psychology. A reduction in visibility or differentiation may thwart laypersons understanding of I/O psychologists mandate in the workplace. As a result, it may be argued that I/O psychology's identity is challenged to provide more clarity on the nature of the profession and its distinct purpose in the working context.

2.7.2 Competitive image

In addition, it has been contended that there are potential challenges with respect to I/O psychology being viewed less favourably over closely related professions such as human resource management (Benjamin & Louw-Potgieter, 2008). There may be perceptions that business operations have a higher demand for the techniques and skillset offered by a human resources practitioner as compared to that of an I/O psychologist.

Business operations may not necessarily have a higher demand for the technical skills offered by human resource practitioners, however, it is possible to assert that they can identify more with the value-add of the human resources profession. Based on the argument that I/O psychology may be viewed less favourably over closely related professions such as human resources, one can argue that a theme of competitive image exists in the profession. It may be the case that an I/O psychologist and human resource practitioner fulfil similar day-to-day functions. However, because business entities can relate to human resource management, they favour this profession over I/O psychology.

Also, the nature of I/O psychology's identity may be viewed less optimistically because the profession isn't well marketed or portrayed in a complicated manner. Either way, if Ryan's (2003) claims about a competitive image existing in I/O psychology's identity are valid, it can be expected that practitioners of the profession themselves will experience these concerns. It may further be expected that I/O psychologists have to continuously defend and support the identity of I/O psychology against closely related professions. By investigating I/O psychologist's opinions in this regard, it will be possible to identify if such challenges are perceived to exist and if so, explore the impact this has upon the profession.

2.7.3 Relevance and benefits

Patterson (2001) relays a positive stance regarding emerging relevance of the I/O psychology profession. Research conducted by Patterson (2001) claims that the role of an I/O psychologist is incredibly important in organisations that are concerned with employee wellbeing. This is because I/O psychologists play an instrumental part in aiding wellness amongst workers. Employee wellbeing may be broadly considered as the positive feelings an individual has about his or her life (Diener & Seligman, 2004). Within an organisation in particular, these feelings may relate to one's job security, working hours, workplace control or even the managerial style an employee is subjected to (Sparks, Faragher, & Cooper, 2001).

Furthermore, practitioners themselves have made great contributions to social equality and enriched organisations by creating beneficial opportunities (Patterson, 2001). In this light, the implications that the profession of I/O psychology can have for business are highly advantageous in improving the productivity and profitability of an organisation. As such, the role of an I/O psychologist has been projected in a positive light; one that is crucial to business.

It is suitable, however, to also reflect on work published by Renecke (2001) and Schreuder (2001). The basic contention in their research is that the practical relevance of I/O psychology as a profession in the South African working context is questionable. Renecke (2001) points out that I/O psychology has little significance to the world of work in South Africa due to rapid changes in the commercial and business industry. In line with this, Schreuder (2001, p.3) asserts that “the application of psychological research in the industry is declining.” This indicates that the relevance of research and the practice of I/O psychology in business are of concern to the profession. As the profession engages in theory and furthering knowledge within I/O psychology it should not be at the expense of current practical relevance of the field (Highhouse & Schmitt, 2012).

Based on the above mentioned, there seems to be conflicting views with respect to the relevance and benefits of I/O psychology. This can impact on the identity of the profession in varying ways. It is hence apt to investigate the practical challenges faced by I/O psychologists’ in terms of the applicability and value-add of their professional identity. If the profession is relevant to South African business, the identity of I/O psychology will be quite important. However, if the profession is irrelevant, I/O psychology’s identity may be viewed in an adverse manner to the world of work.

2.7.4 Capitalism and ethics

A further consideration from a more context focused approach is the claim that psychology in general has played an instrumental role in South African work exploitation thereby aiding in the operationalization of capitalism (Hook et al., 2005). To further support this critique, there have been previous accusations that “psychology is a product and producer

of global capitalism” (Painter & Terre Blanche, 2004, p.520). If assertions about I/O psychology aiding in capitalism is true then the ethical principles of the profession is questionable.

In considering these allegations, it is appropriate to explore the identity of I/O psychology relative to the theme of capitalism/ ethics. A critical eye being placed on I/O psychology with respect to capitalism and ethics reveals very strong assertions about the identity’s moral standing. Coupled with this, it is suitable to consider whether the current identity of I/O psychology needs to be revamped, such that the profession serves a more ethical approach. Indeed, Suffla and Seedat (2004) refer to the importance of movements, such as the Psychology and Apartheid Committee (PAC) in ensuring an effective refurbishment of psychology toward a more liberating profession. These movements were aimed at addressing oppression amongst Black psychologists in South Africa so that the field could develop towards more emancipatory practices (Stones, 2001).

Focusing on issues pertaining to I/O psychology’s ethics will also bring about a deeper and more context specific understanding on how the professions’ identity could possibly relate and contribute to democracy in South Africa. An example of how this may be the case is apparent in the adaptation of the Ethical Code of Professional Conduct. This code was reviewed to ensure the highest standards of human protection and clear standards of cultural and linguistic diversities due to salient challenges such as psychometric testing (SIPOSA 5th Annual Industrial Psychology Conference, 2002).

Lefkowitz (2005) argues that I/O psychology’s values lie in the purposes the profession aims to serve. Ethical and fair practices are arguably one of the most important objectives in

I/O psychology. The values held by I/O psychologists are reflected in what the profession deems as important. Ensuring I/O professionals practice in a manner which is free from bias is also fundamental to the field. Furthermore, values within the I/O psychology profession are replicated by practitioner's decisions regarding whose interests they serve and on what criteria they do so. I/O psychologists therefore often face the dilemma of balancing the purposes they serve and who they work for, that is, directors/owners or employees of a firm?

2.8 Synopsis of the Identity Themes in I/O Psychology

In closing of this chapter, a brief synopsis that consolidates the aforementioned identity themes in I/O psychology will be outlined. With regards to the identity of I/O psychology then, the idea of a lack visibility and differentiation in the profession has been highlighted (Cunningham, 2010; Ryan & Ford, 2010). There are therefore contestations associated with how well known the profession of I/O psychology is. Furthermore, there are debates about how easy it is to distinguish between I/O psychology relative to similar working professions like human resource management.

Arguments also exist about I/O psychology being subjected to a competitive image. This is because the occupation may be viewed less favourably over other professions like business science in the world of work (Ryan, 2003). If this is the case, then the very existence of I/O psychology could be threatened as the benefits of employing I/O psychologists is apparently not preferred or even to some extent, acknowledged in organisations. Indeed, this relates strongly to the controversies around the theme of relevance and benefits in I/O psychology. The implication of this is that the significance and advantages of employing an I/O psychologist can be questioned. This is especially true during turbulent changes in globalisation and economisation (Renecke, 2001; Schreuder, 2001).

Lastly, I/O psychology's identity may be challenged with respect to the ethical principles the profession employs, which arguably aids in capitalism (Suffla & Seedat, 2004). Whose interest's do I/O psychologists' serve between the welfare of their employers in various industries versus their professional responsibility as psychologists' in supporting employee wellbeing has indeed been questioned (Hook et al., 2005). Figure 1 presents a framework of the various identity themes in I/O psychology that have been discussed:

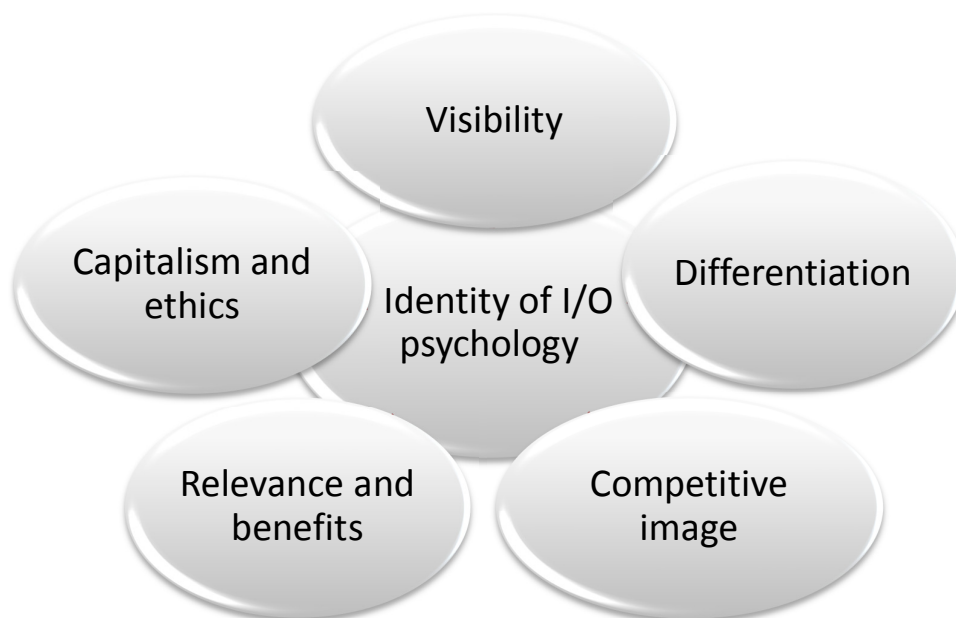


Figure 1. Representation of identity themes

2.9 Research Question

How do I/O psychologists' perceive the identity of their profession?

2.10 Rationale and Aims

Previous research has considered how I/O psychology is different and similar in identity roles to closely related professions such as human resource management or business sciences (Barnard & Fourie, 2007; Benjamin & Louw-Potgieter, 2008; Rothmann & Cilliers, 2007;

Ryan & Ford, 2010; Veldsman, 2001). It is research by Benjamin and Louw-Potgieter (2008) for example, that discusses the roles and responsibilities of an I/O psychologist that are distinct such as psychological assessments. However, their findings additionally highlight a vast amount of overlap and similarity in terms of daily tasks in I/O psychology which are much the same as that of a human resource practitioner. This may lead to confusions about the specific value-add that an I/O psychologist brings to the world of work and how related professions identify themselves differently.

Based on these confusions, this research report aims to explore and understand what premises inform the identity of I/O psychology in order to better grasp the full dynamics surrounding the profession. In considering the overlaps and distinctness of these professions, this research study further aims to investigate how I/O psychology as a profession is advantageous, relevant and significant to the South African workplace.

It should also be noted that there is a substantial amount of literature that also considers the direction the profession should take in future practice and research (Islam & Zyphur, 2006; Veldsman, 2001; Watkins, 2001). Such challenges arise from postulations that I/O psychology aids in South African work exploitation. This in turn affects the values held by I/O psychologists in term of ethics. Therefore, this research also aims to explore what ethical or capitalistic challenges the profession faces and how the profession can develop from these identity critiques.

Chapter Three: Methodology

3.1 Introduction

This section aims to give a detailed account of how the subjective opinion of I/O psychologists' on the identity of their profession has been researched. Hence, the research design and methodology will report on the particular technique that has been employed, why this method is suitable and the sample that has been used for this study. Also, the research instruments which have been operationalized and the statistical techniques which have been used for data analysis will be discussed. The researcher has provided an overview of the sampling and procedure which has been applied followed by the benefits and limitations of the Q methodology technique. In concluding this section, the ethical considerations that formed a part of this study will be outlined.

3.2 Why Q Methodology?

It is fundamental that appropriate techniques are used to measure the constructs under consideration (Earp & Ennet, 1991). Furthermore, the research design of the study must complement the research objectives. Given that this research study aimed to explore the current identity of I/O psychology as perceived by I/O psychologists', a methodology that will allow participants to represent their subjective opinions and thoughts was pertinent. Whilst much focus has been placed on allowing participants the latitude to voice their perceptions, it was also fundamental that their views relate in some sense to the identity themes that are apparent in I/O psychology.

Hence, Q methodology has been chosen as a suitable methodology to employ. This technique offers the benefit of allowing participants the opportunity to represent their subjectivity in a manner that allows inter-related themes to emerge from the respondents

(Ward, 2009). For this particular research study, I/O psychologists' were able to express their opinions and consequently, identity themes that relate to I/O psychology emerged. Moreover, the researcher was able to compliment the exploratory objectives of this study through analysing interview responses from participants.

3.3 What is Q Methodology?

Q methodology was pioneered by William Stephenson in 1935, and was developed as a simple and innovative modification of factor analysis (Watts & Stenner, 2005). Discussing the intricacies around factor analysis is beyond the scope of this research study. However, it is important to note that factor analysis is concerned with revealing patterns of association between items or measures taken from a sample of people. Factor analysis therefore associates commonalities between measures that exist between people (Van Exel & de Graaf, 2005). Factor analysis is also referred to as R methodology.

Q methodology, on the other hand, is different to R methodology because this technique is interested in detecting commonalities between clusters of people based on their opinions about a certain topic. One of the main differences between traditional factor analysis and Q pattern analysis is that the beliefs of respondents cause factors to become prominent rather than the items being grouped into factors. The examination of similar themes in people's opinions is referred to as by-person factor analysis. Q methodology encompasses a set of four procedures. A general account of the steps involved in conducting a Q methodology study is presented below. Thereafter, the sampling and data collection procedures that were employed in this research report will follow.

3.4 Conducting Q Methodology

Step 1 – Developing a concourse of statements; developing a concourse of statements is a crucial step in Q methodology. A concourse is a pool of statements that are developed to cover the breadth of opinions on a particular subject matter. It is important to include as many statements as possible to give participants the latitude to match their responses as closely as possible to their opinions (Van Excel & de Graaf, 2005). For this particular study, it was fundamental for the researcher to develop a concourse of statements that relates to the identity of I/O psychology as fully as possible. The researcher may use previous literature or opinions of an independent sample of people who have qualities which are similar to the studies sample to develop the concourse statements.

Step 2 – Developing the Q set; the next step involved in Q methodology is developing the Q set. During this process the concourse of statements are refined and reduced (Shinebourne, 2009). The final Q set of refined statements that was used in this research study is presented in appendix A. An important aspect of this procedure is to revise the concourse of statements such that any duplications or irrelevant claims are eliminated. The manner in which the concourse of statements was refined for this study is reflected upon in the procedure section. It is important to note, however, that the Q set can also be created and finalised from different sources like interviews or adapted from previous scale items in relevant literature.

Step 3 – Selecting and acquiring the P set; the third step involved in Q methodology is to establish a P set. The P set is the intended sample the researcher will use for the research project at hand (Van Excel & de Graaf, 2005). For Q methodology, the general guideline for an acceptable number of participants is a minimum of forty subjects. This number is not a restricted minimum and is merely a guideline for the researcher. It should be further noted

that Q methodology is a study that is concerned with understanding qualitative differences for which quantity has no bearing on the outcome of the study (Ward, 2009, p.76). Of more importance than the quantity of participants is establishing a sample that is big enough for factors to emerge and be compared. Ideally, each factor should be defined by between two to five participants.

Furthermore, the P set is purposely chosen so that participants can provide detailed responses in relation to the concourse of statements they receive in the study (Van Exel & de Graaf, 2005). In order for the researcher to gain a sample that is large enough for factors to emerge, purposive sampling was employed. Purposive sampling is defined as the process in which individuals are purposely selected from a predetermined population because they possess specific qualities (Tongco, 2007). The intention of using purposive sampling was to receive sound information from knowledgeable subjects in order to gain results that will be meaningful to the research study.

Step 4 – Conducting the Q sort; the Q sorting process follows through after the P set is established. This step is essentially meant to capture the subjectivity of the participants by allowing them to arrange the Q set according to their views. In order to arrange the Q set, the statements are printed on cards, an example of which is presented in appendix B. The statements are randomly numbered. Additionally, the cards are small enough for participants to arrange/ rank according to their opinion on a matrix grid. Figure 2 is a mini version of the matrix grid which illustrates the layout of the squares that were used in this study. On the continuum, -4 represents statements for which participants most strongly disagreed with, 4 represents statements for which respondents most strongly agreed with and 0 are the neutral statements.

-4	-3	-2	-1	0	+1	+2	+3	+4

Figure 2. Matrix grid

As can be seen, the matrix grid is designed in a way that allows participants to sort cards in whichever fashion they please, however, only one statement can be placed per block. If there are thirty eight blocks like in figure 2, then participants will have exactly thirty eight cards to sort into the blocks. This leads participants into a “forced choice” where they have to feel more or less strongly about certain statements on the identity of I/O psychology as a profession.

The essential idea is to get respondents to rank and arrange their belief relative to a particular research topic on the matrix grid. This will allow the researcher to capture participant’s subjective opinions on the research study. Although participants are restricted by the number of blocks in the matrix grid, they have control over how they sort the cards and the results of the responses they give (Shemmings, 2006). In this case, the Q sorting process gives respondents the opportunity to relay their views, from their own standpoint, on the identity of I/O psychology.

In this step, participants may also be interviewed after the Q sorting process is completed. The researcher conducts open ended interviews in order to better understand why participants responded in the manner that they did. In so doing, the researcher is able to gain a more

robust account of why participants feel a certain way on the subject matter at hand. The short, open-ended interview questions that were asked in this study are shown in appendix D.

Step 5- Q pattern analysis and data interpretation; the last step of Q methodology is the Q pattern analysis. The researcher records the order of the statements of each Q sort using the assigned numbers on the cards. This information is entered into the PQ method program and analysed using statistical factor analysis. William Stephenson devised this process so that the participants themselves become the variable of interest as opposed to the test items (Watts & Stenner, 2005). Once clusters of individuals who have similar perceptions and opinions are established, factors emerge and the items that define these factors are analysed and interpreted.

3.5 Sampling

For the current study, the respondents that were purposively used consisted of a sample of forty one qualified I/O psychologists who are registered with the HPCSA. By exploring opinions of participants who are registered, this study made use of subjects who engage more deeply and have a stronger relationship with the profession. This benefited the research in that participants are well informed professionals. As such, data that is strongly supported by or opposed to the subject of I/O psychology's identity was received.

3.5.1 Suitability of purposive sampling

In gaining participants through purposive sampling, the researcher was able to use participants who have attributes that are of importance to the research studies interests (Lindlof & Taylor, 2002). For example, all participants were required to have at least one year of experience as HPCSA registered and qualified I/O psychologists.

By using participants who have specific attributes, the researcher was able to gain rich data that could answer questions relating to how I/O psychology's identity is perceived or why the profession is viewed in a particular manner (Marshall, 1996). Moreover, the researcher did not seek to investigate how the identity of I/O psychology is perceived in general. Rather, the researcher aimed to explore how I/O psychologists' in particular perceive the identity of their profession. Given the focus of this research report, it was important to receive information from a specific group of participants as opposed to a random sample (Teddlie & Yu, 2007).

The use of the purposive sampling technique was also appropriate because it allowed the researcher to gain an adequate data size within the required time frame of this study. Furthermore, given the exploratory approach that this methodology study undertook, it was more important to receive consistent and robust data rather than information which assumed generalizability (Tongco, 2007). It should be noted however, that the reliability of results in terms of consistency was highly dependent on the honesty of participants.

3.5.2 Limitations of purposive sampling

There were however, some negative consequences that resulted from using the purposive sampling technique. Once the researcher gained an initial contact base of participants, there was often very little information to ensure referrals were eligible in terms of their qualifications. Furthermore, participants tended to refer people from the same circle, with similar academic training or working experiences. This may have led to receiving repetitive information with little variation. The study is also not free from bias because participants were conveniently and purposely chosen (Tongco, 2007). Results in such a methodology may

also only be valid and applicable to the realm for which participants represent rather than a general population.

3.5.3 About the sample

All the participants of this study were required to be qualified and registered I/O psychologists with at least one year of relevant experience in banking, corporate or consulting. This is not only because I/O psychologists are frequently employed within these sectors, but also to carry out a more focused and contextually defined study. Participants were mostly obtained from candidates who met the criteria of the study and agreed to participate in the research. However, the researcher also approached working institutions where I/O psychologists were likely to be employed.

Participants were asked to fill out a demographic questionnaire before they engaged in the Q sorting process. The demographic sheet which participants were required to fill out is presented in appendix E. A high proportion (76%) of the participants in this research study was female. The mean age of the participants was thirty three years old. Furthermore, White participants constituted the majority of subjects for this study as there are thirty four (83%) individuals who were categorised in this group. In this regard the remainder of respondents are four (10%) Black and three (7%) Indian. Twenty two (54%) participants reported being employed in consulting, whereas sixteen (39%) and three (7%) are employed in corporate and banking respectively. A clearer account of the group statistics based on the demographic elements of participants is represented in Table 1.

Table 1

<i>Demographics of participants</i>							
Gender		Race			Industry		
Male	Female	White	Indian	Black	Banking	Consulting	Corporate
10	31	34	3	4	3	22	16
24%	76%	83%	7%	10%	7%	54%	39%

3.6 Procedure

In following with the Q methodology steps discussed previously, the researcher compiled a concourse of statements. The concourse of statements was devised with the intention of reflecting on the nature of the identity of I/O psychology as a profession as fully as possible. In order to capture the subjectivity of the I/O psychologist's opinions on the identity of their profession, the researcher compiled an initial list of sixty five concourse statements based on the identity themes discussed in the literature review.

. Ultimately, the researcher compiled a total of thirty eight statements relating to the identity of I/O psychology for the Q set. This was achieved by revising the initial concourse of statements with the supervisor of this study as well as three other I/O psychologists who have distinct and independent research interests within the profession. These I/O psychologists had at least seven years of relevant experience in the field which meant that the concourse of statements had been revised by knowledgeable experts.

The researcher ensured the Q set was easy to work with and interpret by conducting a pilot study with an I/O psychologist masters student. The master's student had neither been exposed to a Q methodology study before nor the concourse of statements for this research.

The student had received the same standard condition of instruction that all participants would receive, i.e. to rank the final Q set into an order that most represents their feelings and opinions. The student had read through the statements, arranged them into categories “agree,” “neutral” and “disagree” and had then proceeded to engage in the Q sorting process. These categorical blocks can be seen on the A1 scoring sheet on appendix C. Thereafter, the student was given an A4 sheet which replicated the A1 scoring sheet in order to document the response. There was no report of technical jargon that confused the student, so no further adaptations to the Q set was required. The pilot study also assisted and prepared the researcher to become more familiar with the procedures involved in Q methodology and data collection.

After this, the researcher established a P set. Once details of email addresses of I/O psychologists who met the study’s requirements were obtained, they were invited to participate in the current research with an attached information sheet as shown in appendix F. This sheet was presented in order to brief participants on the requirements, intentions as well as procedures of the current research study. Additionally, the ethical rights and the ethical considerations of this study were highlighted to participants. Upon acceptance to participate in the research study, the researcher arranged to meet with the I/O psychologists via email or telephonically. Meetings were held at the convenience of participants at their work premises or any other suitable place that would allow participants to engage in Q sorting.

Before Q sorting, participants received the demographic questionnaire to fill out as is apparent in appendix E. This allowed for a more pronounced and contextual presentation regarding the background of participants that were employed in this study. Afterwards, participants followed the same procedure as the master’s student. The ability to arrange the Q set was made easy by maximising the size of the matrix grid on an A1 size scoring sheet.

Additionally, the A1 scoring sheet and the Q set were composed in a manner that allowed for easy reading and arranging of statements among participants. This was achieved by ensuring the deck of cards was large enough to print statements that are clearly visible and by laminating both the A1 scoring sheet and the set of cards so that they could be re-ordered and swapped around easily. When the participants were satisfied with the manner in which they had responded they were required to document the number that was randomly assigned to each card on the A4 scoring sheet. Once subjects were finished doing this, the Q sorting process was completed.

Lastly, the researcher conducted a short interview with the participants. Participants were asked questions regarding their responses in order to better understand why they had arranged the statements in the manner that they did. All forty one participants Q sort responses were entered into the PQ method program (version 0.74) in order to receive the by-person correlation and factor analysis output. Analysis occurred through Q pattern analysis or by-person factor analysis (Ward, 2009). In so doing, it was possible to decipher if there were any inter-correlations or shared variance between the participant's opinions through the responses in the Q sorts.

3.7 Benefits and Limitations of Q Methodology

As with any research design, the Q methodology technique has its strengths and weaknesses. Based on the Q sorting and Q pattern analysis processes, this Q methodology study combined elements of both qualitative and quantitative research (Brown, 1972). Certain benefits and limits inherent in both approaches will be highlighted when discussing this technique.

3.7.1 Strengths of q methodology

This technique is unique and distinctive in being highly interactive because as participants engaged in Q sorting they may become immersed and involved in their responses. Much like qualitative research, this approach sought to gain a full, subjective understanding of participant's feelings and views on the identity of I/O psychology. Due to their engagement when administering the study, respondents were able to give a thorough reflection of their opinions.

As fewer participants are required for a Q methodology study compared to quantitative studies, the researcher was able to gain richer and deeper data from the participants. It is also important to note that using fewer subjects in this study allowed the researcher to have more control over the data in terms of missing data, contrasting responses and so forth. The researcher was also able to administer the Q sorting process in environments that were suited to the participants of the study. Hence, the 'emic' data was received in a natural setting free from manipulations or distortions. As participants responded to the same Q set, information received from them in the by-person factor analysis could be directly compared (Latvala, Mondolesi, Nicholas & Zanolli, 2013).

3.7.2 Limitations of q methodology

Due to the face-to-face presence of the researcher with participants some responses may have been reported on in a socially desirable manner. Collecting data is also highly time-consuming in Q methodology (Babbie & Mouton, 2001). This is because data is often received on a one-to-one basis and is dependent on the availability of participants.

Furthermore, conveying instructions, the method itself and granting time for Q sorting is taxing. As is the case with qualitative data, small groups cannot be generalized or applied to other I/O psychologists outside of this study. Although the subjective, free thoughts of respondents are emphasized, the limitation of the matrix grid does lead participants into a forced choice. Similar to quantitative research, respondents had to fit their opinion into a limited amount of categories (Creswell, 1988). This may pose as a difficulty for participants if they felt similarly on certain statements but were forced to choose different categories when placing them in the matrix grid.

Furthermore, the Q methodology study depends heavily on the concourse of statements and the refinement thereof for the results to be meaningful (Shinebourne & Adams, 2007). The concourse of statements was subject to interpretation amongst different reviewers, multiple participants and the researcher. The interpretation and understanding of the concourse of statements may vary significantly, impacting upon the reliability of the instrumentation used. Additionally, the validity of the concourse of statements in terms of adequately capturing the full ambit of possibilities re the identity of I/O psychology is questionable as this is also a subjective process. The concourse of statements was self-composed which means that the study does not have instrumentation that has been “tried and tested,” and cannot report on validity or reliability.

3.8 Ethical Considerations

Upon obtaining ethical clearance (MORG/13/003 IH) and acceptance to participate in the research study from qualified I/O psychologists, subjects had received the researchers contact details. This included an email address and cell-phone number, so that participants could direct queries pertaining to the study to the researcher. The researcher also advised subjects

that no individual participating in the research study would be advantaged or disadvantaged in any way. Descriptive statistics had been taken with regards to participants demographics on a demographic questionnaire which has been reported on at the group level. All participation in this study was voluntary with subjects having the option to withdraw from the research study at any given point, prior to the submission of the Q sorting sheet. Participants had been informed that all results will be available in the form of a précis. The researcher met with the participants face-to-face so that they can engage in the Q sorting process, hence, anonymity could not be guaranteed. However, anonymity and confidentiality precautions in the actual research report write-up has been ensured to participants as only the researcher and supervisor of this study has access to the raw data. This data has been securely and safely locked away in storage.

% of variance explained	48	7	5	4	4	4	3	3
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Although all eight factors are above one, it is necessary to extract the most defining factors. In extracting the most defining factors, the Q sorts will not only load high, but also be more interpretable, distinct and stable (Webler et al., 2009). For this end to be fulfilled the researcher conducted a scree test. In figure 3, the screeplot graph indicates that the most defining factors are factors one to four.

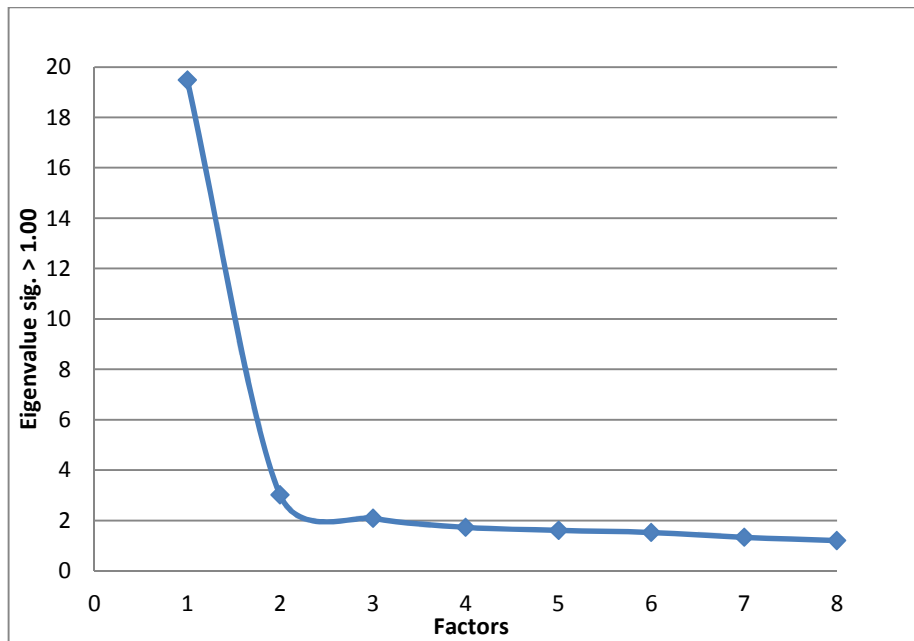


Figure 3. Screeplot graph

It is apparent from this illustration that from factor five onwards, additional value with respect to the variance explication in the data set decreases in the scree test. In this regard, figure 3 indicates that the factors begin to level off and it is on this basis that a four factor solution was deemed best and carried forward to the varimax rotation. Incidentally, the PQ method program allows the researcher to rotate up to eight factors. However, it is

fundamental to bear in mind that the varimax rotation is a procedure which moves factors around so that the individuals can be linked to just one factor (Webler et al., 2009). This link was supported in a four factor rotation. Rotations of more than four factors had indeed led to data which became less interpretable.

Moreover and just as importantly in terms of rotation standards, is the accepted norm of having at least two significant factors loadings in order to interpret the data output (Latvala et al., 2013). One reason for this is because having at least two significant loadings per factor allows data to be more reliable and valid. In attempting to load five factors, it was clear that factor loadings became less robust whereby varimax rotation identified fewer significant factor loadings. According to Watts and Stenner (2005) eigenvalues that are less than one explains less variance compared to a single Q sort. Q sorts that loaded on factor one, two, three and four produced the most distinguishing factors with eigenvalues greater than one. However, factor five up to eight did not display such value and was therefore excluded from the analysis.

The four factor solution chosen explained a total of forty eight percent of the variance. Factor one had ten (24%) Q sorts whilst factor two displayed fourteen (34%) Q sorts that loaded significantly in the data set. Factor three had seven and factor four had three Q sorts that loaded significantly. Thus, out of the forty one Q sorts, thirty four (83%) loaded in the four factor solution. These Q sort loadings for the four factors are presented in appendix H.

4.3 Analysing Factors

Van Exel and De Graaf (2005) point out that the analytical aspect within a Q methodology study should be conducted as objectively as possible in order to retain a scientific grounding.

The factor scores will be the first point of reference for the interpretation of the four individual factors. The factor scores are one of the most crucial aspects of interpretation in Q methodology as this is the average score of a statement based on the Q sorts (Du Plessis, 2005).

The factor scores relate closely to the next step, which involves interpreting the Q sort information relative to the factor arrays. The factor arrays give an overview of the general response pattern of participants (Du Plessis, 2005). Those statements in the factor array with z-scores over 1.5 are generally viewed as holding a substantial amount of power in Q methodology. These z-scores within the factor arrays are a report of the basic thinking and consensus amongst Q sorts, giving a broad understanding of a particular factor as opposed to isolated perspectives. The factor arrays will be reported on by making reference to the number assigned to the statement followed by the ranking received to the statement from individuals in the P set. Therefore, (1: +4) would refer to statement number one that received a ranking of positive four from participants on the matrix grid in the factor array (Van Exel & de Graaf, 2005).

Lastly, the researcher will make use of the distinguishing or distinctive statements for each factor in the analysis by specifically analysing the difference score. The difference score may be defined as the difference in a concourse of statements score relative to two factors that is needed for it to be deemed as statistically significant (Van Exel & De Graaf, 2005). Therefore, if one statement loads on two separate factors, the difference between the scores for each loading will represent the difference score.

4.4 Factor One – We are Important

For this factor, the significant loadings generally relate to participants belief about the importance of I/O psychologists' in South African organisations which defines their identity. The factor scores in this grouping do reveal that participants agreed very strongly and positively with statements that describe the essential need for professions relative to the world of business.

Furthermore, participants in this factor displayed a very strong disagreement regarding the minimalistic value-add in the role of I/O psychologist's professional identity to business. They believe the professions' important benefits are key in terms of characterizing the identity of I/O psychology. There are also very strong loadings regarding clarity in the professions' role whereby I/O psychologists in this factor disagree to a high extent that the occupations identity is well understood. This haziness distorts the professions' identity. Table 3 highlights the most defined statements in factor one.

Table 3

<i>Factor array for factor one</i>			
No.	Statement	Ranking	Z-Score
12	I/O psychologists' need to continuously update their theoretical knowledge to compete with related professions such as human resources.	+4	1.784
3	I/O psychologists have diverse roles in the workplace which makes the profession's core function in practice unclear.	+3	1.720
35	There is a need to employ I/O psychologists in organisations in South Africa.	+3	1.645
9	I/O psychologists should be more active in promoting the well-being of the workforce in South Africa.	+3	1.346
20	I/O psychology plays a role in ensuring a democratic workforce in South Africa.	+2	1.027
24	People clearly understand the function of an I/O psychologist in private practice.	-2	-1.139
19	Employees easily recognise the responsibilities specific to an I/O psychologist in the workplace.	-2	-1.164

4	People generally have a clear understanding of the profession of I/O psychology in South Africa.	-2	-1.227
31	The positive contributions made by I/O psychologists within the South African context are minimal.	-3	-1.503
32	The difference between the function of an I/O psychologist and human resource management is understood in South African corporate settings.	-3	-1.536
8	Giving "I/O psychology" a different title, such as a "workplace assessment specialist" would allow for a clearer understanding of the role of the profession in business.	-3	-1.697
15	The value-add of an I/O psychologist in South Africa is minimal in business.	-4	-2.032

The roles relating to I/O psychologists' feature highly in factor one, with one defining responsibility in the identity of the profession being the need for such professionals to continuously update their theoretical knowledge in order to remain competitive. This factor demonstrates a strong perception regarding the importance of practicing I/O psychologists to constantly keep abreast with theory which informs the profession in order to compete with closely related professions such as human resources (12: +4).

Participants who fall within factor one's loadings agree strongly on the lack of clarity regarding the function of I/O psychology's identity. They note that there are diverse roles which feed into the ambiguity of the professions' core function (3: +3). It must be noted that interview responses also indicate that participants in this factor endorse research claims about I/O psychology as a profession being unknown. This perception was largely informed by participants own, personal working experiences. The lack of recognition of the profession led participants to believe that the full function of I/O psychology's identity is misconstrued.

Regardless of how unclear the professions' identity is in various industries, I/O psychologists in factor one still have consistent perceptions about the contributions of the profession in South Africa. For example, participants in this factor strongly believe there is a

need to employ I/O psychologists within the South African context (35: +3). This line of thought is exemplified further and supported in the statements for which participants disagree with. For example, I/O psychologists' do not support the view that the value-add (15: -4) or positive contributions (31: -3) of I/O psychologists are minimal in terms of the role they play in South African business.

The idea that there is a clear understanding between the functional differences in human resources compared to I/O psychology is highly opposed (32: -3) in this factor. This again relates to the idea that the distinguishing roles of I/O psychologists are unknown but the true identity of the profession has many important benefits to offer. The idea that a name change in the profession to "workplace assessment specialist" for example, is also disfavoured as a proposed method for better clarity on the identity of I/O psychologists (8: -3). This by implication suggests that the professions' role in business is viewed as unclear by participants.

4.4.1 Distinguishing statements for factor one

Factor one is differentiated from all the other factors based on the strong ranking that has been placed on the important need for I/O psychologists' to keep their knowledge and theory up-to-date in order for their identity to remain competitive (12: +4). Participants who load on factors two to four do not feel as strongly towards this statement compared to factor one. However, all the participants load positively in their ranking for this statement. This factor is also differentiated in ranking particularly high compared to other factors regarding positive feelings about I/O psychology's identity playing a role in ensuring a democratic workplace in South Africa (20: +2). Table 4 highlights the most distinguishing statements for factor one.

Table 4

<i>Distinguishing statements for factor one</i>									
		Factor 1		Factor 2		Factor 3		Factor 4	
No	Statement	Rank	Score	Rank	Score	Rank	Score	Rank	Score
12	I/O psychologists need to continuously update their theoretical knowledge to compete with related professions such as human resources.	4	1.78*	1	0.62	2	0.96	1	0.64
20	I/O psychology plays a role in ensuring a democratic workforce in South Africa.	2	1.03*	0	-0.08	1	0.32	0	0.16
22	It is difficult to determine what tasks are exclusive to the role of an I/O psychologist which makes this a challenge to the professions identity.	1	0.54	3	1.36	-1	-0.59	-1	-0.23
38	I/O psychologists' have concerns about how well understood their profession is in business.	0	0.25	2	1.15	2	1.38	2	0.93
6	I/O psychology is viewed more favourably than closely related professions such as business science.	0	-0.29*	-2	-1.49	-2	-0.93	-2	-1.45
36	I/O psychology is more focused on business rather than psychological wellbeing.	-2	-0.95	0	-0.29	3	1.43	0	-0.21

Note. Asterisk (*) indicating significant statements at $P < 0.01$

4.5 Factor Two – We are Misunderstood

The factor scores in factor two are defined by the misconceptions in the identity of I/O psychology that derives from the blurred lines in the profession. The factor scores in this category show clearly that participants agreed very strongly and positively with statements that describe their belief in a state of misunderstanding in the workplace on the identity of the profession. Furthermore, and closely linked to this idea of “misunderstandings”, is the fact that participants in this factor exemplified a very strong disagreement that laypersons have a clear general knowledge of I/O psychology’s identity as a profession in South Africa.

There are also very strong rankings within this factor which display a common disagreement amongst I/O psychologists that the functional difference between I/O psychology and human resources is understood in South Africa. Participants show a strong consensus that the aforementioned professions merge in practice in the workplace which consequently subjects I/O psychology to competing for its own identity. In this factor, participants highlight agreement that the diverse roles within I/O psychology make the main function of the professions' identity ambiguous. It may be due to such diversity that participants believe people misconceive or lack knowledge on the identity of the profession.

Statement rankings in this group also relay agreement that a challenge in the identity of I/O psychology is the ability to determine what tasks are exclusive to the profession. This falls in line with the thinking pattern in this factor loading as I/O psychologists disagree that employees are able to recognize the roles which are exclusive to I/O psychology's identity. Lastly, I/O psychologists in this factor strongly negate statements that speak to corporate recognizing the importance of employing I/O psychologists. Table 5 shows the most defined statements for factor two.

Table 5

<i>Factor array for factor two</i>			
No	Statement	Ranking	Z-Score
16	There is confusion in the workplace regarding the purpose of I/O psychology.	+4	1.714
11	I/O psychology and human resource management merge in practice which subjects the profession to competing for its identity.	+3	1.415
3	I/O psychologists have diverse roles in the workplace which makes the profession's core function in practice unclear.	+3	1.376

22	It is difficult to determine what tasks are exclusive to the role of an I/O psychologist which makes this a challenge to the professions' identity.	+3	1.357
10	The function of an I/O psychologist is relatively unknown to working professionals.	+2	1.336
26	I/O psychologists have official authorization to interpret psychometric tests which differentiate them from similar professions.	+2	1.260
38	I/O psychologists' have concerns about how well understood their profession is in business.	+2	1.151
24	People generally have a clear understanding of the profession of I/O psychology in South Africa.	-2	-1.095
1	The distinct contributions of an I/O psychologist to organisations are well known.	-2	-1.455
6	I/O psychology is viewed more favourably than closely related professions such as business science.	-2	-1.488
19	Employees easily recognise the responsibilities specific to an I/O psychologist in the workplace.	-3	-1.515
27	Organisations in South Africa recognize the importance of employing I/O psychologists.	-3	-1.527
4	People generally have a clear understanding of the profession of I/O psychology in South Africa.	-3	-1.640
32	The difference between the function of an I/O psychologist and human resource management is understood in South African corporate settings.	-4	-1.936

The significant loadings for factor two are exemplified to a great extent by the confusion in I/O psychology's identity in terms of the purpose of the profession in the workplace (16: +4). This stance may hold true for corporate, banking and consulting sectors as there was a fair balance of participants employed in these industries who loaded on this factor. There is also a strong belief that the functional identity of I/O psychology and human resources is poorly understood in business (32: -4). It makes sense that because I/O psychologists believe such differences in closely related professions are often misconstrued there will in turn be confusion in identifying the purpose of I/O psychology.

Another salient view in the factor scores is a perception from I/O psychologists that laypersons also have an unclear understanding on the identity of I/O psychology in the South African context (4: -3). It may be deduced that participants in this factor have had encounters

with people in society or the workplace that display a lack of clarity on the professions' identity. This may be another reason for why I/O psychologists perceive that there is a high amount of misconceptions regarding the professions' purpose (16: +4). It is also apparent that I/O psychologists feel they have diverse roles in the workplace which contributes to the core function of practicing psychologists' identity being unclear amongst employees in the workplace (3: +3). It is likely that because I/O psychologists' believe their core function is misunderstood, they reject the idea that employees recognise the responsibilities that identify I/O psychologists (19: -3) and that organisations themselves, recognise the importance of employing I/O psychologists in South Africa (27: -3).

Another strong stance held amongst I/O psychologists in this factor is that determining what tasks are exclusive in the profession is difficult, which poses as a challenge to the identity of I/O psychology (22: +3). One reason for why I/O psychologists in this factor believe determining exclusivity is difficult may be due to the consensus that I/O psychology and human resources merge in practice, which subjects the profession to competing for its identity (11: +3).

4.5.1 Distinguishing statements for factor two

Factor two is additionally distinct from all the other factors because respondents in this category have stronger beliefs that determining what tasks are exclusive to the role of I/O psychologists are difficult, which challenges the professions' identity (22: +3). This supports participant's feelings that I/O psychology is largely misunderstood which impacts on the identity of their profession. Table 6 illustrates the distinguishing statements discussed for factor two.

Table 6

<i>Distinguishing statements for factor two</i>									
		Factor 1		Factor 2		Factor 3		Factor 4	
No	Statement	Rank	Score	Rank	Score	Rank	Score	Rank	Score
11	I/O psychology and human resource management merge in practice which subjects the profession to competing for its identity.	2	0.89	3	1.42	1	0.64	1	0.68
22	It is difficult to determine what tasks are exclusive to the role of an I/O psychologist which makes this a challenge to the professions' identity.	1	0.54	3	1.36*	-1	0.59	-1	-0.23
25	To be more relevant to political changes in South Africa, I/O psychologists must refocus the practice of the profession.	-1	-0.41	1	0.55*	-1	-0.52	-2	-1.03
18	I/O Psychology plays a role in ensuring fair organisational practices in South Africa.	2	0.89	1	0.41	2	1.17	3	1.43
15	The value-add of an I/O psychologist in South Africa is minimal in business.	-4	-2.03	-1	-0.34*	-3	-1.21	-4	-1.87
31	The positive contributions made by I/O psychologists within the SA context are minimal.	-3	-1.50	-1	-0.34*	-2	-1.01	-3	-1.71
8	Giving "I/O psychology" a different title, such as a "workplace assessment specialist" would allow for a clearer understanding of the role of the profession in business.	-3	-1.70	-2	-0.98*	-3	-1.97	2	1.05
27	Organisations in South Africa recognize the importance of employing I/O psychologists.	0	0.36	-3	-1.53	0	-0.06	-2	-0.86

Note. Asterisk (*) indicating significant statements at $P < 0.01$

4.6 Factor Three – We have Individuality

The factor scores in this category are largely defined by participant's belief in I/O psychology's individuality which informs the identity of their profession. Within this factor, participants are characterised by high agreement in the official authorization that I/O psychologists have to interpret psychometric tests which differentiates the professions' identity from other similar occupations. Participants in this factor also believe very strongly that there are roles that identify I/O psychologists as distinct from a human resources practitioner. Whilst participants in this factor strongly agree that the identity of I/O

psychology is generally defined by applying principles that are ethical there are also significantly strong rankings based on the idea that I/O psychology's identity is more focused on business rather than psychological wellbeing.

Furthermore, in factor three participants most strongly disagree with the idea that people have a clear understanding of I/O psychology's identity within the South African context. In terms of clarifying the distinctiveness in I/O psychology, participants strongly negate the idea that a name change to titles such as workplace assessment specialist, would bring about a better understanding in the professions' identity. Participants in this factor also believe that even though employees do not easily recognise the roles that are exclusive to an I/O psychologist, the value-add of an I/O psychologist is not minimal. Table 7 illustrates the most defined exemplar statements for factor three.

Table 7

<i>Factor array for factor three</i>			
No	Statement	Ranking	Z-Score
26	I/O psychologists have official authorization to interpret psychometric tests which differentiate them from similar professions.	+4	1.726
37	I/O psychology generally applies ethical principles as a profession.	+3	1.639
14	The role of an I/O psychologist is distinct from a human resource practitioner.	+3	1.578
36	I/O psychology is more focused on business rather than psychological wellbeing.	+3	1.430
30	It is important for I/O psychology to maintain context specific practice in order for it to be beneficial to business.	+2	1.399
38	I/O psychologists' have concerns about how well understood their profession is in business.	+2	1.379
18	I/O psychology plays a role in ensuring fair organisational practices in South Africa.	+2	1.166
35	There is a need to employ I/O psychologists in organisations in South Africa.	+2	1.060
31	The positive contributions made by I/O psychologists within the SA context are minimal.	-2	-1.010

1	The distinct contributions of an I/O psychologist to organisations are well known.	-2	-1.011
15	The value-add of an I/O psychologist in South Africa is minimal in business.	-3	-1.208
19	Employees easily recognise the responsibilities specific to an I/O psychologist in the workplace.	-3	-1.230
8	Giving "I/O psychology" a different title, such as a "workplace assessment specialist" would allow for a clearer understanding of the role of the profession in business.	-3	-1.974
4	People generally have a clear understanding of the profession of I/O psychology in South Africa.	-4	-2.050

The high ranking statements for factor three are explicated by the strong emphasis on the individuality of an I/O psychologist's identity, which are often stressed as requirements in academic training. The strongest ranking statement characterising this factor is that I/O psychologists have official authority to interpret psychometric tests, which makes I/O psychology's identity distinct from closely related professions (26: +4). In relation to this, an emergent theme from the interview responses was that participants believed that this statement was "factual" and not really a subjective opinion that can be contested.

Respondents also felt very strongly that I/O psychology's identity applies ethical principles (37: +3). A factor of "general requirements" had also emerged in the interview responses in this respect. Participants felt that the identity of I/O psychology and human resources is distinct due to the ethical regulations stipulated by the HPCSA (14: +3). Ironically, whilst participants in this group believe ethics distinguished the professions' identity (37: +3) they also strongly perceive less focus in the professions' identity on psychological wellbeing in favour of business (36: +3).

Respondents in this factor most strongly disagreed with the statement that people have a clear understanding of the identity of I/O psychology within the South African context (4: -4). This is probably why respondents in this group also strongly believe that employees do not easily recognise the responsibilities that identify I/O psychologists in the workplace (19: -

3). Their feelings represent a general consensus that people are not aware of or lack knowledge on the distinctive features of I/O psychology's identity. The participants in this group also believe that a name change would not help clear the understanding of an I/O psychologist's role (8: -3). Even though participants in this category don't believe people have a clear understanding of the professions' identity, they hold strong views about the value-add of I/O psychologists in South Africa being high (15: -3). It is for this reason, that the professions' identity holds value in business, that participants feel I/O psychology is unique.

4.6.1 Distinguishing statements for factor three

Participants in factor three rank distinctly high in agreement compared to other factors on the claim that I/O psychologists' have official authorization to interpret psychometric tests differentiates their identity from closely related profession (26: +4). Factor three is further distinguished from all the other factors as it is only within this factor that participants agreed that the identity of I/O psychology is more focused on business as opposed to psychological wellbeing (36: +3). In comparison to all the other factors, participants ranking in this statement were either on the neutral or disagree continuum. This shows that participants in this factor hold high beliefs about the distinct skillset that I/O psychologists have in managing businesses and psychometric interpretation.

Although PQ method has not highlighted this distinction, it is interesting to note that this factor is also distinct by virtue of being the only factor where participants disagreed that the diverse roles that I/O psychology's identity has in the workplace makes the professions' core function unclear (3: -1). Participants who loaded on factor three are also the only respondents who felt neutrally about there being confusion in the workplace regarding the purpose of I/O

psychology's identity (16: 0). All other participants in the other factors agreed to various degrees with this statement. Table 8 highlights the four statements reflected upon.

Table 8

<i>Distinguishing statements for factor three</i>									
		Factor 1		Factor 2		Factor 3		Factor 4	
No	Statement	Rank	Score	Rank	Score	Rank	Score	Rank	Score
26	I/O psychologists have official authorization to interpret psychometric tests which differentiate them from similar professions.	1	0.40	2	1.26	4	1.73	2	0.88
14	The role of an I/O psychologist is distinct from a human resource practitioner.	1	0.69	0	0.30	3	1.58	1	0.82
36	I/O psychology is more focused on business rather than psychological wellbeing.	-2	-0.95	0	-0.29	3	1.43*	0	-0.21
30	It is important for I/O psychology to maintain context specific practice in order for it to be beneficial to business.	2	0.80	1	0.78	2	1.40	1	0.57
13	The HPCSA ensures that the core duties of an I/O psychologist remain distinct from other professions such as personnel management.	-2	-0.95	-2	-0.95	1	0.63	0	-0.14
16	There is confusion in the workplace regarding the purpose of I/O psychology.	1	0.71	4	1.71	0	-0.32*	3	1.26
3	I/O psychologists have diverse roles in the workplace which makes the professions core function in practice unclear.	3	1.72	3	1.38	-1	-0.39*	1	0.59
32	The difference between the function of an I/O psychologist and human resource management is understood in South African corporate settings.	-3	-1.54	-4	-1.94	-2	-0.80	0	-0.02
31	The positive contributions made by I/O psychologists within the SA context are minimal.	-3	-1.50	-1	-0.34	-2	-1.01	-3	-1.71
15	The value-add of an I/O psychologist in South Africa is minimal in business.	-4	-2.03	-1	-0.34	-3	-1.21	-4	-1.87

Note. Asterisk (*) indicating significant statements at $P < 0.01$

4.7 Factor Four – We Add Value

Factor four is largely related to the actual value-added attributes perceived to exist in the identity of I/O psychology amongst respondents. Participants were most strongly in agreement regarding the identity of I/O psychology being defined by applying ethical principles as a profession. Respondents also believed very strongly that the function of I/O psychologist's identity is somewhat unknown to working professionals. They also were in positive high agreement that the purpose of I/O psychology's identity is confused in the workplace but that the profession does play a role in ensuring fair organisational practices in the South African context. Participants who loaded on this factor disagreed most strongly with the claim that the value-add of I/O psychologists are minimal.

In line with this, the respondents that are common to this factor also negated the statement that the identity of I/O psychologists offers minimal positive contributions. Furthermore, participants who loaded significantly strongly on this factor did not perceive that the distinct contributions of I/O psychology's identity are well known. They loaded similarly in opposed beliefs that laypersons have a clear understanding of the identity of I/O psychology in the South African context. The most defining statements for this factor are presented in table 9.

Table 9

<i>Factor array for factor four</i>			
No	Statement	Ranking	Z-Score
37	I/O psychology generally applies ethical principles as a profession.	+4	2.063
10	The function of an I/O psychologist is relatively unknown to working professionals.	+3	1.675
18	I/O Psychology plays a role in ensuring fair organisational practices in South Africa.	+3	1.434
16	There is confusion in the workplace regarding the purpose of I/O psychology.	+3	1.258

30	I/O psychologists should be more active in promoting the well-being of the workforce in South Africa.	+2	1.053
35	There is a need to employ I/O Psychologists in organisations in South Africa.	+2	1.032
25	To be more relevant to political changes in South Africa, I/O psychologists must refocus the practice of the profession.	-2	-1.032
24	People clearly understand the function of an I/O psychologist in private practice.	-2	-1.273
6	I/O psychology is viewed more favourably than closely related professions such as business science.	-2	-1.449
4	People generally have a clear understanding of the profession of I/O psychology in South Africa.	-3	-1.485
1	The distinct contributions of an I/O psychologist to organisations are well known.	-3	-1.507
31	The positive contributions made by I/O psychologists within the SA context are minimal.	-3	-1.712
15	The value-add of an I/O psychologist in South Africa is minimal in business.	-4	-1.873

This factor is epitomized by the contributions or valuable attributes of the identity of I/O psychology perceived to exist by participants. The highest, positive significant loading is represented by participant's agreement in the ethical principles that is applied by I/O psychology's identity as a profession (37: +4). It is in line with this consensus that participants also loaded positively and significantly on the claim that I/O psychology's identity ensures fair practices in organisations in South Africa (18: +3). Based on these loadings it seems participants in this category have high views regarding the fair and ethical value they bring to business in terms of the identity of I/O psychology in the workplace.

On the opposite end of the matrix continuum, there exists strong opposition by respondents that the identity of I/O psychology is epitomized by minimalist value-add (15: -4). Participants in this category therefore believe to a large extent that the profession offers many benefits as they also strongly negate the statement that the positive contributions made by I/O psychology's professional identity are minimal in South Africa (32: -3). In keeping with this, respondents in this factor loading also agree that there is a need to employ I/O

psychologists in organisations (35: +2). This belief that organisations do need to employ I/O psychologists is probably held due to the high views respondents have on the professions' beneficial attributes.

Regardless of the opinions participants hold in agreement in this factor re the value of employing I/O psychologists, participants also believe that the function of I/O psychology's identity is not well known (10: +3). Indeed, they disagree with statements relating to people clearly understanding the professions' identity in South Africa (4: -3) or that the contributions which distinguish I/O psychologists in organisations are salient (1: -3). These rankings from participants are sensible because in believing that the function of an I/O psychologist is unknown (10: +3), what such professionals do (4: -3) and their distinct contributions (1: -3) will be viewed to be unclear. This claim is further supported as participants in this factor loading also negate the notion that people clearly understand the functional identity of an I/O psychologist in private practice (24: -2).

Participants felt that a name change in the profession would help in clarifying the role of I/O psychology in business (8: +2). Despite the patterned consensus regarding a lack of clarity amongst I/O psychologists' about the identity of their profession, statement rankings are negative amongst participants in this group who oppose the belief that the profession is viewed more favourably over closely related occupations such as business science (6: -2).

4.7.1 Distinguishing statements for factor four

Participants in this factor were the only group to load significantly in agreement regarding a name change in the title of I/O psychology to workplace assessment specialist. They believed that this change would allow for a clearer understanding of the roles that identify the

profession in business (8: +2). This statement certainly served as a distinguishing exemplar for this factor as participants who loaded on this statement in every other factor negated this belief. With regards to this item, a theme of “mismatching” arose in the interview responses between factors one to three. It seems that this suggested name change did not provide better explication or was not a true reflection of I/O psychology as a profession for participants in all the other factors.

Whilst not marked as a distinguishing factor by PQ method, it is worth noting that the participants who loaded on factor four were the only group to feel neutrally about the functional difference between I/O psychologists and human resource practitioners being understood in corporate settings (32: 0). Table 10 highlights these findings.

Table 10

<i>Distinguishing statements for factor four</i>									
No	Statement	Factor 1		Factor 2		Factor 3		Factor 4	
		Rank	Score	Rank	Score	Rank	Score	Rank	Score
8	Giving “I/O psychology” a different title, such as a “workplace assessment specialist” would allow for a clearer understanding of the role of the profession in business.	-3	-1.70	-2	-0.98	-3	-1.97	2	1.05*
3	I/O psychologists have diverse roles in the workplace which makes the professions core function in practice unclear.	3	1.72	3	1.38	-1	-0.39	1	0.59
32	The difference between the function of an I/O psychologist and human resource management is understood in South African corporate settings.	-3	-1.54	-4	-1.94	-2	-0.80	0	-0.02
13	The HPCSA ensures that the core duties of an I/O psychologist remain distinct from other professions such as personnel management.	-2	-0.95	-2	-0.95	1	0.63	0	-0.14
19	Employees easily recognise the responsibilities specific to an I/O psychologist in the workplace	-2	-1.16	-3	-1.52	-3	-1.23	-1	-0.42
27	Organisations in South Africa recognize the importance of employing I/O psychologists.	0	0.36	-3	-1.53	0	-0.06	-2	-0.86

Note. Asterisk (*) indicating significant statements at $P < 0.01$

Based on the aforementioned individual factor considerations, it may be concluded that there are four themes that have arisen from this study's results. These are noted in table 11.

Table 11

<i>Emergent identity themes for factor loadings based on results</i>	
Factor	Theme
One	We are Important
Two	We are Misunderstood
Three	We have Individuality
Four	We add value

4.8 Demographics of Q Sorts in Each Factor

In order to provide a framework that contextualises the results of participants who participated in this study, the demographics of respondents will be reported on at the group level.

In factor one, there were ten (24%) participants who loaded significantly which explained 20% of the variance in this research study. Nine (90%) of these participants were female. Hence, this factor is largely dominated by opinions of female I/O psychologists on the identity of I/O psychology. Six (60%) of the participants in this factor are employed in the corporate sector. As such, three (30%) of the participants reported being employed in consulting while only one (10%) of them is working in banking. Participants varied in terms of their roles in industry with reports of two (20%) human resource practitioners and four (40%) private consulting subjects dominating this factor. There were no Black participants who loaded on this factor. However, eight (80%) of the subjects that dominated this factor were White while the remainder of the participants designated themselves as Indians. This meant that two thirds of the Indians that participated in this study loaded in this factor.

Factor two contains fourteen (34%) participants who loaded significantly. This explained 19% of the variance in this research study. Eleven (79%) of these participants were female. Participants were balanced between the corporate and consulting industry as six (43%) and seven (50%) of subjects fell into this category. Five (36%) of the participants reported being employed in a consulting function. In this respect, the same statistics were reported as three (21%) participants categorised themselves in organisational development and three (21%) in talent management roles. Lastly, just one (7%) Black participant and thirteen (93%) White participants loaded in this factor. Opinions in this factor were therefore highly dominated by White I/O psychologists on the identity of I/O psychology as a profession.

Factor three contributed to explaining 14% of the variance in this study, with seven (17%) participants loading significantly. Of the seven participants, five (71%) were female. The consulting industry dominated this factor as five (71%) of the seven participants reported being employed in this function. The remainder of the participants were evenly split between the banking and corporate sector. There were also two (29%) Black participants and five (71%) White participant's that loaded on this factor. Based on these statistics, it is clear that factor three represents the complete ambit of demographics that dominated this study, i.e. White, female participants who are employed in consulting.

Factor four contributed to explaining 11% of the variance in this study. There were three (7%) participants who loaded significantly on this factor. Of the three participants, two (67%) were female. Two (67%) of the three participants are employed in the corporate sector. Participant's functions varied between consulting, human resources and organisational effectiveness. All three (100%) of the participants in this factor are White. Responses in this

factor may once again be viewed as dominated by the opinions of White, female participants on I/O psychology's identity.

In this particular algorithm, a total of seven (17%) Q sorts did not load on any of the four factors. A relatively balanced proportion of participants were found in this category in terms of gender as there were reports of three males and four females. It was found, however, that the majority of this group (six of the seven) categorised themselves into the consulting industry, of which four worked in a pure consulting role and two worked as assessment specialists. Overall, this comprised of two thirds of reported assessment specialists who participated in this study. Assessment specialists in this study may hence have very little in common with other participant's subjective opinion on the identity of I/O psychology based on their work experience.

Five of the participants who did not load on any factor are White, with one Black and one Indian respondent. It has further been noted from the interview responses that all these Q sorts relate their responses to their particular working experiences and social incidences. This suggests their life encounters may be markedly different in terms of employment experiences compared to other consultants whose Q sorts do load significantly. This is also true for subjects from the banking or corporate sector who also load significantly. Table 12 provides a summary of the demographics in each factor. As participants varied in their job roles, the researcher has only provided statistics for dominant roles that were meaningful to each factor.

Table 12

<i>Demographics of Q Sorts in Each Factor</i>					
	Factor one	Factor two	Factor three	Factor four	Undefined factor
Gender					
Female	9	11	5	2	4

Male	1	3	2	1	3
Race					
White	8	13	5	3	5
Indian	2	-	-	-	1
Black	-	1	2	-	1
Industry					
Banking	1	1	1	-	-
Consulting	3	7	5	1	6
Corporate	6	6	1	2	1
Work role					
Human resources	2	-	-	-	-
Private consulting	4	-	-	-	-
General consulting	-	5	5	-	4
Organisational development	-	3	-	-	-
Talent management	-	3	-	-	-
Assessment specialists	-	-	-	-	2

4.9 Consensus Statements for Factors One to Four

The consensus statements are a reflection of the similarities that are present amongst the four significant factors. There were a total of four consensus statements in this research study as shown in Table 13. Two of these consensus statements were not significant at $p > 0.05$ indicated with an asterisk (*).

Table 13

<i>Consensus statements</i>									
		Factors							
		1		2		3		4	
No	Statement	Rank	Score	Rank	Score	Rank	Score	Rank	Score
17*	The previous contribution of I/O psychology to inequalities in South African work is a major challenge to the professions' reputation.	0	-0.08	0	0.05	0	-0.38	-1	-0.23
21	I/O psychology has always valued fair practices in business, even during the apartheid regime.	0	0.07	-1	-0.35	0	-0.19	-1	-0.43
24*	People clearly understand the function of an I/O psychologist in private practice.	-2	-1.14	-2	-1.10	-1	-0.78	-2	-1.27
33	I/O psychologists should be more grounded in the broader field of psychology to avoid comparisons with other business professions.	1	0.56	1	0.37	1	0.25	-1	-0.25

With regards to statement seventeen, participants in factors one to three remained neutral whilst respondents in factor four slightly disagreed. Based on the short, open-ended interviews with participants, it seems that most I/O psychologists remained neutral on the basis of not being able to identify with this statement. Moreover, it is possible that participants felt they could not be opinionated on the identity of I/O psychology for this statement as they had not been practitioner's pre democracy.

For statement 21, participants remained neutral in factor one to three. In factors two and four, however, participants chose to slightly disagree with the identity of I/O psychology always valuing fair practices, even in apartheid. From a demographics trajectory, factor two and four was dominated by White, female participants, who did in fact constitute the majority of participants in this study. Feelings of disagreement in I/O psychology's ethical practices are nonetheless represented by participants who categorised themselves in this manner.

For statement 24, there was mutual disagreement across all four factors that laypersons have a clear understanding of the identity of an I/O psychologist's role in private practice. They believed that regardless of the place an I/O psychologist is employed in, their function still remains highly misconceived or unknown. It can be asserted that for the most part, statement 24 was defined by White female participants as well as all of these factors were dominated by this demographic.

Every factor loading except factor four slightly agreed with statement 33. This statement postulated that I/O psychologists must be grounded in the broader psychological field in order to avoid being compared with other professions. This meant that participants felt a stronger foundation in psychology was needed in the identity of I/O psychology for the profession to be distinct and not associated with other occupations. Based on loadings in the factor scores, however, it seemed greater emphasis has been placed on the functional identity that I/O psychologists have in business as is apparent in factor three (36: +3).

The following discussion chapter will provide a broader analytical consideration of the preceding factors and what the interpretation thereof means from an identity perspective for I/O psychology.

Chapter Five: Discussion

5.1 Introduction

This research study has aimed to gain a better understanding of how I/O psychologists' perceive the identity of their profession. As noted, contestations and claims exist in literature regarding the professions' identity with respect to themes such as visibility and ethics. By exploring these themes, the results of the current Q methodology study have shown common and distinctive response patterns amongst participants. The common and different response patterns amongst participants in the four factor solution are discussed below according to the four themes that emerged. The response patterns in each factor are a reflection of how different participants who are practitioners of the profession feel about the identity of I/O psychology based on the Q sorting that they engaged in.

5.2 Synopsis of Factor One to Four

In general, factor one is largely informed by participant's belief in the vital part that I/O psychology plays within South African business. Participants in this factor believe the contributions and value-add of I/O psychology are not minimal and as such, hold strong perceptions about the importance of the identity of their profession. To further support this theme of importance, factor one confirms that participants feel strongly about the necessity of employing I/O psychologists in South African organisations. I/O psychologists' who participated in this study may believe in the need to hire practitioners of the field because they agree on the benefits the profession brings to business.

However, participants strongly agree that the work of an I/O psychologist is not clearly understood even if their role in business is important. In the corporate environment for example, I/O psychologists in this factor do not agree that the distinguishing function and

purpose of I/O psychology and human resources is understood. Businesses may hence not always have clarity on the beneficial objectives which make the above mentioned professions different from one another. Furthermore, participants attribute the lack of clarity in the profession to the diverse roles of I/O psychologists and do not feel that changing the name of the profession would assist the profession in creating understanding around the role of I/O psychology in business.

It would seem that participants support postulations by Cooper-Thomas and Wright (2008) for example, who relay that the profession is still not well known in terms of the activities performed by an I/O psychologist. This “foggy patch” creates challenges in understanding the important roles and responsibilities of an I/O psychologist in South Africa. If the roles that define the identity of I/O psychology are not understood by laypersons, it is also possible that people outside of the profession do not understand the need to employ and the importance of practitioners within South African businesses.

Indeed, if the work of an I/O psychologist is not understood, than the pragmatic benefits of practitioners may not always be fully appreciated. Although participants have responded from a South African vantage point, it seems that I/O practitioners in this factor agree with postulations by Cooper-Thomas and Wright (2008), Cunningham (2010) and Ryan and Ford (2010) about visibility and differentiation challenges in I/O psychology’s identity.

Broadly speaking, participants in factor two feel that the work of an I/O psychologist is often misconceived. There is strong support from participants who loaded in this factor indicating that both laypeople and corporate do not understand the role and purpose of I/O psychology. Moreover, the theme of misunderstanding in I/O psychology’s identity is

supported amongst participants because they feel that the functional difference between I/O psychology and human resources is not well known. As such, I/O practitioners in factor two had the opinion that the specific responsibilities of I/O psychology in the workplace are not easily recognised amongst employees.

This research therefore supports the theme of misunderstandings in terms of the professional identity of I/O psychologists within the workplace. Chamda (2013) highlighted that I/O psychologists are often mistaken for human resource professionals. I/O psychologists who loaded in factor two feel similarly to Chamda (2013) based on the strong ranking of disagreement that the functional role between I/O psychology and human resource management is understood in business. Moreover, Chamda (2013) claims that the tasks and roles between I/O psychologists and human resources are in close proximity as both professions focus on employees which create ambiguity. Participants who loaded in the theme of misunderstanding also felt that the practical work of I/O psychology and human resources fuse in practice. However, further to the idea of ambiguity, participants also believe the practical merger of I/O psychology and human resources creates competition for the identity of the profession.

The general response pattern for participants who loaded on the third factor was largely driven by their beliefs on the exclusivity of an I/O psychologist's skillset which sets the precedence for the professions' identity. In factor three participants paid attention to what makes the identity of I/O psychology distinct. The theme of individuality was therefore informed by participants focus on practitioner's official authority to interpret psychometric assessments and apply ethical principles. This theme was further supported by participant's opinion that I/O psychology is distinct from human resources.

I/O psychologists in factor three also have strong views that the identity of I/O psychology is not understood in South Africa. Strumpher (2007) posits that I/O psychology is first and foremost a psychology and that this link may no longer be clear in South Africa. People may hence not have clarity on the individuality of I/O psychology, i.e. how I/O psychology is different, relative to other psychological fields such as clinical psychology. Opinions about professional identity are often based on multiple sources such as the relationships people share with laypersons or the organisations that they are employed in (Dobrow & Higgins, 2005). Indeed, participants in this factor have opinions about individuality relative to people and business as opinions largely relate to these two aspects. Hence, it is possible that their perceptions are informed by previous interactions with laypeople in society and their places of employment.

The interpretation of factor four is characterised by participant's beliefs in their valuable contributions to I/O psychology's identity. Participants believe that the function of I/O psychology is generally not known in the professional world. Ethical standards do indeed, form part of this functional role. I/O psychologists in this factor may believe that the application of fair and ethical standards is not always recognised in business.

In terms of value-add, professionals who loaded on factor four believe that there are distinct and positive contributions in the identity of I/O psychology. Such benefits may lie in the fair and ethical practices of the profession in business. Participants in this factor believe such advantages are certainly relevant to the South African context. In this respect, it seems that participants negate research by Lefkowitz (2005) and Renecke (2001) for example,

because the relevance of I/O psychology's fair and ethical identity in South Africa is highly supported in this factor.

Participants in this factor revealed that business and laypeople do not generally understand the true function and purpose of I/O psychology. As such, whilst I/O practitioners in this factor believe the professions' value-add isn't negligible, they do not believe these benefits are known. The technical acumen that define the professions' identity lie in inter alia, counselling, assessments and strategic interventions (Van Zyl, Deacon & Rothmann, 2010). Participants felt, however, that the advantages that I/O psychologists bring to organisations are often not easily recognised or even acknowledged.

5.3 Shared Perceptions Across Factors One to Four

Whilst certain participants have held common perceptions in each factor, it is also clear that there is a general shared response pattern of opinions amongst I/O psychologists' who participated in this study on the identity of their profession. A broad overview of how participants generally felt across factors about the professional identity of I/O psychology is represented below. This analysis is anchored on the findings from the consensus statements.

5.3.1 Practice in history

Participants in this research study took a more conservative approach when it came to facets that relate to the practice of I/O psychology in the historical context as their beliefs were either neutral or in slight disagreement. This indicates that respondents did not feel as strongly on themes that relate to I/O psychology's identity in the historical context.

I/O psychologists who loaded on factors one to three had neutral feelings about I/O psychology's previous contributions to inequalities being a major challenge to the professions' identity. This indicates that participants had much weaker feelings or beliefs about I/O psychology during the apartheid regime relative to other statements in the Q set. Their perceptions are somewhat impartial about the impact that previous contributions of unfairness in the South African workspace has on the professions' character. It is only participants who loaded on factor four that do not share this perception. I/O psychologists in factor four do not view the historic contributions of their profession to biases in the employment sector within the South African context as a big challenge to the field's reputation. It is possible that participants in factor four believe the professions' identity has moved beyond this historical critique.

Participants in factor one and three also have feelings of neutrality about the I/O profession always valuing fair practices, even during apartheid. On the other hand, participants in factor two and four feel slight disagreement about I/O psychology always valuing just practices even in consideration the apartheid regime. This highlights that I/O psychologists in factor two and four have beliefs that professionals of the field may have practiced in an unequal manner in South Africa. Research by Painter, Terre Blanche and Henderson (2006) posits out that various fields of psychology, including I/O psychology, have been accused of previously supporting inequalities in South Africa. Whilst participants in factor one and three have opinions that neither negate nor support accusations that I/O psychology's identity has previously been unequal or unfair, it is clear that participants in factor two and four do have feelings of agreement with such allegations.

5.3.2 Functionality

A salient overarching theme that was supported from participants is opinions about the lack of clarity on the function of I/O psychology in private practice. Participants expressed feelings of disagreement that the function of I/O psychologists who operate independently is clearly understood. Participants in factor three disagree to a slightly lesser extent than the participants in the other factors. However, there was strong support for this perception as all participants who loaded on the four factor solution disagreed.

As such, participants may believe that the functional identity of I/O psychology is also challenged with regards to the clarity of the profession in instances where practitioners are self-employed. From a broader point of view, some participants could believe that if the function of private practice I/O psychology is not clearly understood, then people may not have clarity on the work they do, the unique benefits they add and the important purposes they seek to fulfil.

Based on factor loadings, it can be asserted that in general, participants believe that there may be a lack of clear understanding on the nature of the professions' identity, whether it operates independently from business or within the working environment. It has been pointed out that marketing and advertising I/O psychology may be beneficial in terms of clarifying the profession (Gasser et al., 2004). Therefore, functional identity challenges can be addressed if the profession invests more time in making its presence stronger within the context of South African universities, large businesses and esteemed conferences. If I/O psychology's functional identity is better understood, it is possible that other challenges such as the roles of I/O practitioners will be easily recognised and their individuality may become known as participants also perceived this to be a challenge.

5.3.3 Psychological grounding

Although respondents held strong views on the value-add of the profession, it is apparent from the consensus statements that some practitioners believe that I/O psychology needs to be more grounded in the field of psychology. These suggested identity concerns may reflect broader opinions that participants have on why the profession may be challenged.

I/O psychologists who load on factor one, two and three did not necessarily feel that I/O psychology has detracted away from the broader psychological sphere. Rather, they hold opinions of agreement that the I/O profession should be more entrenched in the roots of psychology. I/O psychologists may hence agree with Lefkowitz (2005) who contends that I/O psychologists are becoming more akin to business oriented mandates because they feel the field requires a deeper psychological basis.

Participants between factors one to three additionally believe that if the current relationship of I/O psychology becomes more grounded in the field of psychology, the profession can avoid comparison with other business professions. I/O psychologists' in these factors therefore believe more psychological depth in their profession could serve as an alternative to escape comparison with other business professions.

Participants who loaded on factor four, however, disagreed with participants who loaded between factors one through to three. They are therefore of the opinion that I/O psychology does not need further grounding in psychology. In other words, the current psychological foundation that I/O psychology shares with psychology is sufficient. Moreover, they feel that if the field is to become more entrenched in psychology, this may not necessarily avoid I/O psychology being measured relative to other business professions. Research has suggested

that I/O psychology's identity may be threatened because the field is compared with similar and/or related professions (Renecle, 2001; Ryan & Ford, 2010). Whilst certain participants may not necessarily feel professional "threat" it can certainly be argued that the majority of them can relate to the idea of comparison and attribute this to a lack of psychological depth in the professional identity of I/O psychology.

The proceeding chapter will conclude this research report by highlighting the research contributions of this study. Also, the limitations and strengths of the study coupled with the researcher's final thoughts and recommendations for future research will be presented.

Chapter Six: Conclusion

6.1 Research Contributions

The various subjective views on the identity of I/O psychology have emerged in this research report based on responses from practitioners of the profession themselves. These opinions have contributed towards understanding views on the current identity stance of I/O psychology as a profession in South Africa. Based on the factor arrays and demographic statistics, it should be noted that almost a quarter (24%) of the participants in this research support the notion that I/O psychology's identity is important. Additionally, just over one third (34%) of I/O psychologists' who participated in this study believe that the identity of their profession is misunderstood.

The short open-ended interviews coupled with the factor loadings revealed very strong perceived beliefs of respondents demonstrated a consensus that in general, laypeople and organisations do not understand the day to day functions of an I/O psychologist in South Africa. The implication of this is that the identity of I/O psychology needs to be more transparent in South Africa in order to create greater awareness of the profession and its purpose in business.

A further point to note is that critical aspects such as South African capitalism and its influence on the identity of I/O psychology remains reserved. I/O psychologists' who participated in this study often advised the researcher that they needed to relate their personal experiences, current training or academic knowledge to statements before having opinions on them. Due to historical elements being beyond the scope of many participants, this research showed that interpretation to historical aspects such as politics is often limited amongst participants who did not practice in this time.

Despite the participant's strong perception that the professions' identity is challenged with respect to differentiation and individuality, this research report revealed a strong consensus that I/O psychology's identity is, in fact, important and offers beneficial qualities to the business world. This perception is predicated on the individual characteristics participants believe distinguishes the identity of I/O psychology in South Africa such as ethical regulations or official authority to interpret psychometric tests. Furthermore, it was in such distinctive characteristics that participants felt the identity of I/O psychology has lots of valuable functions. This study highlighted then that due to participants strong beliefs in the value-add of I/O psychology, and despite difficulties participants believe exist in the professions' identity, there is still positive feelings about the field in South Africa from I/O psychologists.

6.2 Limitations of the Study

A high proportion of the sample consisted of White, female participants. A more balanced gender proportion may have provided different outcomes in the results as White women may experience the workplace differently to men and other racial groups. There were also very few participants involved in this research study who are employed in the banking sector. More participants came from the consulting or corporate field. Again, a more balanced sample in the three different industries may have produced more interesting results due to differences in working experiences.

This research report is also limited because as previously noted, it cannot assume generalizability or diverse applicability in the interpretations as the sample employed in this study is a subset of possibilities within a population. Although the final Q set was compiled

as rigorously as possible by making reference to I/O psychology literature and consulting with experts, a further limitation is that the Q set was self-composed and cannot offer figures of reliability and validity.

The interpretation of the study is further informed by the researchers own views and opinions which could be expressed differently by other researchers. The Q methodology process is time consuming and expensive to conduct if extensive travel is involved because data is often collected individually.

6.3 Strengths of the Study

Whilst the researcher was unable to report on the validity and reliability of the final Q set, expert opinions and existing literature was used in order to minimize using invalid and unreliable instrumentation. A pilot study was further conducted to ensure complicated jargon was eliminated and the Q set was easy to understand. Another advantage to this research is the hands-on approach the researcher used in the data collection process. The researcher was able to supervise the Q sorting process and clear up concerns the participants had experienced.

The use of both qualitative and quantitative methodology allowed the researcher to take advantage of the benefits that are inherit in these techniques. Cross checks were able to be conducted as short open-ended interviews allowed the researcher to further ensure responses were accurately matched to Q set responses. This research study received depth and detailed information from respondents on how they feel due to the subjective nature of the methodology employed.

6.4 Final Thoughts and Recommendations for Future Research

The research study offered a unique contribution to ascertaining how I/O psychologists' perceive the identity of their profession. This is especially true in terms of the methodology that was employed and was indeed found to be quite an interesting technique to most participants. Participants were highly intrigued by the research study and all the participants of this study were interested in receiving the final results.

This study provided as a good networking base and often resulted in post-discussion with participants. Many of the participants were intrigued by the topic, especially in relation to the critiques that form a part of the I/O psychology profession. Having given it thought, participants began to reflect a lot more on the identity of their profession compared to before they were approached on this topic. As a student of I/O psychology, the researcher also formed her own opinions and beliefs about the identity of the profession. This was largely influenced by investigating the literature on this subject matter as well as through the encounters with participants who have shared their experiences.

The researcher restricted the sample to participants employed in the banking, corporate and consulting sectors. However, the researcher found that these industries are quite broad and can range quite significantly. For example, the corporate sector alone can range from fields as diverse as commodity companies to that of technology sectors. The researcher suggests that a more focused or defined study may be useful in which industry specific comparisons can be made re the identity of I/O psychology. It may also be useful to consider the culture of the companies that participants are employed in as their responses seem to be highly correlated with their experiences in the workplace.

As this study has conducted an analysis from practitioners of the field itself, it may be useful to obtain data from an outside viewpoint. This can be done by conducting interviews with managers or work colleagues of I/O psychologists who participate in future research. This may assist in finding out if themes by I/O psychologists are endorsed or opposed from laypersons in South Africa. This may also serve as a useful vantage point to generate research and develop the profession if opinions by laypersons support practitioner's views.

It may be useful for future research on this subject matter to consider adopting a more rigorous demographic profile. For example, future research could compare variations in academic exposure and how such training may influence responses from participants. A consideration of participants first language is also recommended as this may influence the manner in which the Q deck was interpreted.

A broader and more rigorous set of concourse statements that may generate knowledge in themes that speak to the ethical and capitalistic concerns in I/O psychology's identity is suggested for future research as this topic was new to many participants of this study. In closing, the researcher highly recommends focus groups as a potential avenue to employ in order to gather a larger sample size. This is especially useful in research studies that have time constraints and to restrict repetitive travel costs.

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Appendix A

Q Set

1. People generally have a clear understanding of the profession of I/O psychology in South Africa.
2. It is difficult to determine what tasks are exclusive to the role of an I/O psychologist which makes this a challenge to the professions' identity.
3. The value-add of an I/O psychologist in South Africa is minimal in business.
4. I/O psychology has aided in the exploitation of workers in South Africa pre 1994.
5. People clearly understand the function of an I/O psychologist in private practice.
6. Employees easily recognise the responsibilities specific to an I/O psychologist in the workplace.
7. Giving "I/O psychology" a different title, such as a "workplace assessment specialist" would allow for a clearer understanding of the role of the profession in business.
8. The HPCSA ensures that the core duties of an I/O psychologist remain distinct from other professions such as personnel management.
9. The difference between the function of an I/O psychologist and human resource management is understood in South African corporate settings.
10. The distinct contributions of an I/O psychologist to organisations are well known.
11. The previous contribution of I/O psychology to inequalities in South African work is a major challenge to the professions' reputation.
12. I/O psychologists have diverse roles in the workplace which makes the professions' core function in practice unclear.

13. I/O psychologists have official authorization to interpret psychometric tests which differentiate them from similar professions.
14. I/O psychology is viewed more favourably than closely related professions such as business science.
15. There is a need to employ I/O psychologists in organisations in South Africa.
16. To be more relevant to political changes in South Africa, I/O psychologists must refocus the practice of the profession.
17. I/O psychology and human resource management merge in practice which subjects the profession to competing for its identity.
18. It is important for I/O psychology to maintain context specific practice in order for it to be beneficial to business.
19. The function of an I/O psychologist is relatively unknown to working professionals.
20. The positive contributions made by I/O psychologists within the SA context are minimal.
21. I/O psychology ensures effectiveness in the post-apartheid workplace.
22. The practice of I/O psychology is more advantageous to organisations compared to human resources or business science.
23. The role of an I/O psychologist is distinct from a human resource practitioner.
24. I/O psychology has always valued fair practices in business, even during the apartheid regime.
25. I/O psychology operates independently from other psychological disciplines such as clinical psychology.
26. I/O psychologists should be more grounded in the broader field of psychology to avoid comparisons other business professions.

27. I/O psychology is more focused on business rather than psychological wellbeing.
28. The lack of theory which specifically applies to the South African context threatens I/O psychology's identity as this informs the practice of the profession.
29. I/O psychology plays a role in ensuring fair organisational practices in South Africa.
30. I/O psychologists' have concerns about how well understood their profession is in business.
31. Organisations in South Africa recognize the importance of employing I/O psychologists.
32. I/O psychologists' need to continuously update their theoretical knowledge to compete with related professions such as human resources.
33. In post-apartheid South Africa, I/O psychology has been fundamental in developing employee wellbeing in the workplace.
34. I/O psychology generally applies ethical principles as a profession.
35. I/O psychology plays a role in ensuring a democratic workforce in South Africa.
36. I/O psychologists should be more active in promoting the well-being of the workforce in South Africa.
37. The role of SIOPSA is to ensure that the core duties of an I/O psychologist remain distinct from other professions such as personnel management.
38. There is confusion in the workplace regarding the purpose of I/O psychology.

Appendix B

Cards

**I/O psychologists
should be more active in
promoting the well-being
of the workforce in South Africa.**

9

**There is confusion in the workplace
regarding the purpose of
I/O psychology.**

16

**I/O psychology plays
a role in ensuring a democratic
workforce in South Africa.**

20

Appendix C

Scoring Sheet

Respondent Name _____

Respondent Number _____

	Most Strongly Disagree			Neutral			Most Strongly Agree		
	-4	-3	-2	-1	0	+1	+2	+3	+4

AGREE

Count: _____

NEUTRAL

Count: _____

DISAGREE

Count: _____

Appendix D

Interview Schedule

1. Why have you chosen to place that particular concourse statement from the Q-deck under “-4” as opposed to any other concourse statement?
2. Why have you chosen to place that particular concourse statement from the Q-deck under “4” as opposed to any other concourse statement?
3. Please explain what was the underlying premise that informed or influenced the manner in which you sorted the concourse statements that fall between “-3” and “-1” and “1” and “3.”
4. Summarise your opinion of the concourse statements which fall in the “neutral” category.

Appendix E
Demographic Questionnaire

Please answer the following questions:

Age in years: _____

Are you a qualified Industrial Psychologist: _____

If so, how many years of experience do you have: _____

Length of Tenure in this Organisation: _____

Department: _____

Please answer the following questions by marking an 'X' on appropriate line.

Gender: Female _____ Male: _____

Race: Black: _____ White: _____ Indian: _____
Other: _____

If *other*, please specify: _____

Your position in the organisation: Full Time: _____
Part Time: _____

If *other*, please specify: _____

Year of latest qualification received: _____

Appendix F

Research Participation Invite



UNIVERSITY OF THE WITWATERSRAND

**SCHOOL OF HUMAN & COMMUNITY
DEVELOPMENT**

PSYCHOLOGY

Private Bag 3, WITS, 2050

+2711 717 4503 (tel) +27 11717 4559 (fax)



Dear Participant

I am an Industrial and Organisational psychology masters student registered at the University of the Witwatersrand. I am interested in conducting research on the Subjective Opinions of Industrial/Organisational Psychologists' on the Identity of their Profession.

This study aims to explore the perceptions of I/O psychologists in order to gain a deeper understanding of the professions' current identity in the workplace. In doing so, the research will allow for a comprehensive reflection on how these identity views impacts upon I/O psychology.

The above study will be completed using Q methodology. As such, participants will be required to rank statements that will be numbered along a continuum from strongly disagree to strongly agree (9 points) on a scoring sheet. This raw data will form a matrix grid, which will be analysed using an appropriate Q methodology program. Hence, data received will be factor analysed to determine if there are similar response patterns or variations from participants themselves, followed by a short interview.

This procedure should take approximately 45-60 minutes long and will be conducted at the convenience of the participants at the premises of their employment.

Participants can be assured that whilst this will be a face-to-face exercise, all data reported on in the study will remain confidential. Additionally, no individual will be advantaged or disadvantaged in anyway due to this research. Participants are also entitled to withdraw from the study at any time prior to submission of the scoring sheet. It should be noted that

submission of the scoring sheet will be considered as informed consent to part-take in the research study.

Name: Miss. ShivaniChetty

Email: shivani@fundadreamfoundation.org

Supervisor: Prof. Gillian Finchilescu

Email: gillian.finchilescu@wits.ac.za

Appendix G

Correlation Matrix Between Sorts

SORTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1 1	100	24	31	57	61	20	35	28	-19	37	32	25	57	33	34	42	38	34	56	30	43	51	58	52	60	40	49	33	29	64
2 2	24	100	61	60	63	46	36	72	38	56	67	62	65	59	54	42	50	42	59	36	46	57	40	36	53	43	53	68	33	61
3 3	31	61	100	64	67	37	59	54	17	64	70	52	71	55	58	35	23	42	58	30	57	65	45	49	41	68	46	72	30	54
4 4	57	60	64	100	87	53	37	58	27	44	80	64	75	43	67	49	70	49	71	43	56	75	61	59	43	56	67	66	19	67
5 5	61	63	67	87	100	54	35	53	30	54	75	62	80	46	74	57	58	51	65	42	50	76	53	67	57	49	66	72	35	65
6 6	20	46	37	53	54	100	29	57	46	47	43	53	46	36	61	28	54	17	25	38	25	57	27	38	26	20	50	59	26	33
7 7	35	36	59	37	35	29	100	38	-1	50	31	28	41	59	30	17	13	43	57	13	51	62	46	43	42	57	33	49	41	46
8 8	28	72	54	58	53	57	38	100	34	56	54	63	58	68	54	53	55	46	60	30	40	56	57	37	49	55	54	62	33	66
9 9	-19	38	17	27	30	46	-1	34	100	22	25	32	18	21	27	3	33	10	-3	24	-7	22	8	14	2	23	16	30	-2	7
10 10	37	56	64	44	54	47	50	56	22	100	33	41	70	43	43	36	25	25	50	23	46	40	33	43	57	57	67	47	36	57
11 11	32	67	70	80	75	43	31	54	25	33	100	63	55	40	59	41	46	42	60	37	54	70	53	39	30	48	44	70	20	58
12 12	25	62	52	64	62	53	28	63	32	41	63	100	56	39	60	48	41	41	46	43	52	58	41	49	27	56	35	67	22	55
13 13	57	65	71	75	80	46	41	58	18	70	55	56	100	49	67	53	57	46	64	38	54	60	42	59	59	61	77	62	51	67
14 14	33	59	55	43	46	36	59	68	21	43	40	39	49	100	40	38	46	43	55	24	36	70	56	43	51	53	36	58	35	59
15 15	34	54	58	67	74	61	30	54	27	43	59	60	67	40	100	42	53	59	46	47	42	70	42	67	49	42	62	67	33	41
16 16	42	42	35	49	57	28	17	53	3	36	41	48	53	38	42	100	33	46	51	39	28	46	40	62	49	35	45	61	38	54
17 17	38	50	23	70	58	54	13	55	33	25	46	41	57	46	53	33	100	28	46	33	15	60	43	40	31	30	62	38	29	50
18 18	34	42	42	49	51	17	43	46	10	25	42	41	46	43	59	46	28	100	38	22	33	53	43	51	51	35	51	54	49	47
19 19	56	59	58	71	65	25	57	60	-3	50	60	46	64	55	46	51	46	38	100	24	57	64	64	57	57	61	50	47	30	63
20 20	30	36	30	43	42	38	13	30	24	23	37	43	38	24	47	39	33	22	24	100	13	45	25	57	38	48	36	51	34	18
21 21	43	46	57	56	50	25	51	40	-7	46	54	52	54	36	42	28	15	33	57	13	100	49	40	36	25	51	46	51	10	51
22 22	51	57	65	75	76	57	62	56	22	40	70	58	60	70	70	46	60	53	64	45	49	100	56	68	52	53	50	78	36	55
23 23	58	40	45	61	53	27	46	57	8	33	53	41	42	56	42	40	43	43	64	25	40	56	100	50	51	49	31	43	1	61
24 24	52	36	49	59	67	38	43	37	14	43	39	49	59	43	67	62	40	51	57	57	36	68	50	100	49	56	57	61	30	33
25 25	60	53	41	43	57	26	42	49	2	57	30	27	59	51	49	49	31	51	57	38	25	52	51	49	100	41	49	49	52	54
26 26	40	43	68	56	49	20	57	55	23	57	48	56	61	53	42	35	30	35	61	48	51	53	49	56	41	100	42	48	33	55
27 27	49	53	46	67	66	50	33	54	16	67	44	35	77	36	62	45	62	51	50	36	46	50	31	57	49	42	100	49	48	51
28 28	33	68	72	66	72	59	49	62	30	47	70	67	62	58	67	61	38	54	47	51	51	78	43	61	49	48	49	100	40	51
29 29	29	33	30	19	35	26	41	33	-2	36	20	22	51	35	33	38	29	49	30	34	10	36	1	30	52	33	48	40	100	36
30 30	64	61	54	67	65	33	46	66	7	57	58	55	67	59	41	54	50	47	63	18	51	55	61	33	54	55	51	51	36	100
31 31	20	43	52	67	59	47	16	43	30	17	70	57	39	32	48	38	47	36	41	44	31	59	23	33	6	38	37	57	30	36
32 32	36	38	29	38	49	28	37	33	4	44	20	21	49	41	36	45	39	58	41	17	20	41	25	38	49	14	64	38	59	42
33 33	31	52	43	57	60	43	14	46	51	32	64	51	43	33	61	22	36	46	29	25	41	49	47	36	38	35	41	54	9	39
34 34	38	51	42	51	62	33	2	41	4	43	54	50	57	17	42	60	25	30	39	38	31	39	15	27	60	24	38	52	44	53
35 35	45	38	42	62	55	41	63	40	6	38	46	23	47	33	49	43	46	47	70	34	33	64	49	64	43	38	57	48	34	34
36 36	51	42	62	59	54	38	49	57	14	53	48	43	59	58	38	54	42	39	59	30	51	55	68	60	42	64	56	53	25	56
37 37	54	60	58	66	71	45	48	54	15	49	54	47	63	61	59	52	51	53	57	46	43	62	61	56	61	49	57	63	43	74
38 38	33	42	59	43	57	45	49	39	4	59	42	34	56	35	49	54	21	40	43	47	35	51	33	57	47	52	51	55	47	40
39 39	37	45	61	74	75	49	27	35	38	23	68	59	59	42	64	31	51	38	36	47	38	72	32	43	27	46	38	67	32	42
40 40	43	49	68	73	71	39	46	50	41	59	67	42	64	35	51	42	37	47	52	36	44	56	61	51	54	64	57	62	22	54

Appendix H

Participant Q-Sort Factor Loadings

Factor Matrix with an X Indicating a Defining Sort				
Loadings				
QSORT	1	2	3	4
1 1	0.4259	-0.0256	0.2803	0.6056X
2 2	0.3699	0.5115	0.2333	0.3871
3 3	0.6786X	0.4210	0.2255	0.1000
4 4	0.4973	0.5996X	0.1978	0.4226
5 5	0.3889	0.5770X	0.3623	0.4785
6 6	0.1375	0.6522X	0.3134	0.0740
7 7	0.7913X	-0.0191	0.3696	-0.1564
8 8	0.4915	0.4171	0.2343	0.3082
9 9	-0.0210	0.7053X	-0.0692	-0.1252
10 10	0.4745	0.1571	0.3777	0.3251
11 11	0.4517	0.6686X	0.0438	0.3162
12 12	0.3500	0.6455X	0.1129	0.2450
13 13	0.4250	0.3731	0.4369	0.4991
14 14	0.6151X	0.2302	0.2865	0.1090
15 15	0.2835	0.6197X	0.4191	0.1923
16 16	0.2401	0.1959	0.5209X	0.3960
17 17	0.1528	0.5040X	0.2614	0.3731
18 18	0.3489	0.2196	0.5251X	0.1520
19 19	0.6894X	0.1351	0.2617	0.3989
20 20	0.0952	0.4786X	0.4633	-0.0141
21 21	0.6396X	0.2057	-0.0102	0.3020
22 22	0.5582X	0.5354	0.3850	0.1254
23 23	0.7298X	0.1608	0.0208	0.3248
24 24	0.4818	0.3011	0.5547X	0.0395
25 25	0.3448	0.0208	0.5404	0.5186
26 26	0.7249X	0.2781	0.1921	0.0519
27 27	0.2868	0.2911	0.5693X	0.3860
28 28	0.4411	0.6099X	0.4045	0.1286
29 29	0.0293	0.0732	0.7895X	0.1641
30 30	0.5404	0.1884	0.1908	0.6352X
31 31	0.1634	0.7184X	0.2309	0.0693
32 32	0.1335	0.0510	0.7254X	0.2694
33 33	0.2761	0.6492X	-0.0232	0.2858
34 35	-0.0147	0.3377	0.3447	0.6529X
35 36	0.5161	0.1822	0.5294	0.0199
36 37	0.6974X	0.2070	0.2526	0.2147
37 38	0.4761	0.3090	0.4538	0.3762
38 39	0.4082	0.2167	0.6269X	0.0282
39 40	0.2306	0.7733X	0.1916	0.1676
40 41	0.5810X	0.4281	0.1825	0.2610
41 42	0.0264	0.6388X	-0.0156	0.6158
% expl.Var.	20	19	14	11