

**THE ROLE OF INTEGRITY AND PERSONALITY IN COUNTERPRODUCTIVE
WORK BEHAVIOUR**

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DECLARATION

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ABSTRACT

Organisations attempt to select employees that will make an effective contribution towards organisational performance. Traditionally, the emphasis was on selecting new staff on the basis of cognitive and behavioural attributes, which are linked to positive constructs such as technical competence, involvement, commitment and productivity. More recently, the domain of staff selection has widened to include the selection of individuals who would avoid counterproductive work behaviours. Based on previous studies, this study investigated the three most dominant constructs in this domain, i.e. personality, integrity and counterproductive work behaviour.

The goal of this study was to investigate the relationship between selected personality dimensions and integrity, and how these personality dimensions and integrity are related to counterproductive work behaviour. Based on the existing literature, a theoretical model depicting how these constructs are related to one another was developed and a number of hypotheses were formulated.

The data for this study were obtained via questionnaires from a non-probability sample in the South African retail and security industries. The total sample size consisted of 1176 non-managerial employees and job applicants.

The postulated relationships were empirically tested using various statistical methods. Reliability analyses were done on all the measurement scales and adequate reliability was found. The content and structure of the measured constructs were investigated by means of confirmatory, and where necessary, exploratory factor analyses. The results indicated that reasonable fit was achieved for all the refined measurement models. Subsequently, Structural Equation Modelling (SEM) was used to determine the extent to which the conceptual model fitted the data obtained from the sample and to test the relationships between the constructs. In line with previous research, the results indicated positive relationships between conscientiousness and integrity, and adjustment and integrity. Negative relationships between neuroticism and integrity and fearfulness and integrity were found. Contrary

to the literature, agreeableness showed a negative relationship with integrity and external locus of control and personalised power showed non-significant relationships with integrity.

In line with the literature, positive relationships were found between neuroticism and counterproductive work behaviour, external locus of control and counterproductive work behaviour, personalised power and counterproductive behaviour. Negative relationships were found between conscientiousness and counterproductive work behaviour, and integrity and counterproductive work behaviour.

Contrary to the literature, positive relationships were found between adjustment and counterproductive work behaviour, and agreeableness and fearfulness showed non-significant relationships with counterproductive work behaviour.

The present study contributes meaningfully to existing literature on personality, integrity and counterproductive work behaviour by providing insights into the nature of the relationships amongst these constructs. The study also specifies practical implications to be considered by management in order to enhance integrity behaviour and to reduce counterproductive behaviour in organisations.

The limitations and recommendations provide additional insights and opportunities to be explored through future studies.

OPSOMMING

Organisasies poog om werknemers aan te stel wat 'n doeltreffende bydrae tot organisatoriese werkverrigting sal lewer. Voorheen was die klem hoofsaaklik op die keuring van personeel aan die hand van positiewe konstruksies soos vakkundige bedrewenheid, sowel as kognitiewe en gedragseienskappe, byvoorbeeld betrokkenheid, verbondenheid en produktiwiteit.

Die fokusgebied van personeelkeuring het egter onlangs verder uitgebrei sodat teen-produktiewe werksgedrag as 'n bykomende konstruksie ingesluit is. Hierdie studie fokus op die drie mees prominente konstruksies op hierdie terrein, naamlik persoonlikheid, integriteit en teen-produktiewe werksgedrag.

Die doel van hierdie studie was om die verwantskap tussen bepaalde persoonlikheidsfaktore en integriteit te ondersoek en vas te stel hoe die gekose persoonlikheidsfaktore en integriteit met teen-produktiewe werksgedrag verband hou.

'n Teoretiese model wat aandui hoe die verskillende konstruksies met mekaar verband hou, is op grond van die bevindings wat in bestaande literatuur vervat is, ontwikkel. Verskeie hipoteses is geformuleer. Die data vir hierdie studie is deur middel van vraelyste ingesamel. 'n Nie-waarskynlikheidsteekproef in die Suid-Afrikaanse kleinhandel- en veiligheidsektore is gebruik. Die totale steekproef het bestaan uit 1176 persone in nie-bestuursposes asook werkaansoekers.

Die gepostuleerde verwantskappe en die konseptuele model is empiries met behulp van verskeie statistiese metodes getoets. Betroubaarheidsontleding van die relevante meetinstrumente is gedoen en voldoende betroubaarheid is gevind. Die inhoud sowel as die struktuur van die konstruksies is ontleed aan die hand van bevestigende en, waar nodig, verkennende faktorontleding. Die resultate het redelike goeie passings vir al die hersiene metingsmodelle getoon. Vervolgens is Struktuur-Vergelykings-Modellering (SVM) aangewend om te bepaal in hoeverre die konseptuele model die data pas, en om die verwantskappe tussen die verskillende

konstrukte te toets. Ooreenkomstig vorige navorsing is positiewe verwantskappe gevind tussen toegewydheid en integriteit, en tussen aanpassing en integriteit; negatiewe verwantskappe tussen neurotisme en integriteit, en vrees en integriteit; positiewe verwantskappe tussen neurotisme en teen-produktiewe werksgedrag, eksterne lokus van kontrole en teen-produktiewe werksgedrag; verpersoonlikte mag en teen-produktiewe werksgedrag; negatiewe verwantskappe tussen toegewydheid en teen-produktiewe werksgedrag, en integriteit en teen-produktiewe werksgedrag.

Teenstrydig met vorige navorsing is 'n negatiewe verwantskap gevind tussen insiklikheid en integriteit. Ook teenstrydig met vorige navorsing is onbeduidende verwantskappe gevind tussen insiklikheid en teen-produktiewe werksgedrag, eksterne lokus van kontrole sowel as verpersoonlikte mag en integriteit, asook tussen insiklikheid, vrees, en teen-produktiewe werksgedrag, en aanpassing en teen-produktiewe werksgedrag.

Hierdie studie vul die bestaande literatuur aan ten opsigte van persoonlikheid, integriteit en teen-produktiewe werksgedrag deurdat dit insig verskaf betreffende die aard van die verband tussen hierdie konstrunkte. Die studie noem ook praktiese implikasies wat deur bestuur oorweeg kan word om bestuurspraktyke te verbeter ten einde integriteitsgedrag te verhoog, asook teen-produktiewe werksgedrag te verminder.

Die beperkings van die studie wat uitgelig word en aanbevelings wat gemaak word, verskaf bykomende insig en moontlikhede wat in toekomstige navorsing ondersoek kan word.

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CHAPTER ONE

INTRODUCTION, BACKGROUND AND OBJECTIVES OF THE STUDY

1.1 Introduction

Most of the literature in organisational psychology and management has concentrated on positive constructs (Baruch, 2005; Gruys & Sackett, 2003). Notably, conceptual frameworks focusing on positive elements with regard to job attitudes (satisfaction, commitment, and involvement) and behaviour (organisational citizenship behaviour) have evolved, but studies on negative constructs (such as aggression or misconduct) have been rare (Baruch, 2005). More recently, the criterion space for evaluating worker effectiveness has extended beyond job performance to incorporate behaviours that are counterproductive (e.g. tardiness, theft and misbehaviour toward co-workers) (Kelloway, Francis, Prosser & Cameron, 2010; O'Neill & Hastings, 2011;).

During the late 1990s, extended literature on negative behaviours in organisational context emerged. Initially the construct was ill-defined, with taxonomies such as “deviant behaviour”, “misbehaviour in organisations”, “anti-social behaviour”, “dysfunctional behaviour”, “mistreatment in organisations” and “incivility” emerging to indicate negative, anti-social and, occasionally, destructive behaviour by members of organisations towards managers, colleagues and subordinates (Baruch, 2005). To date, the term counterproductive workplace behaviour (CWB) has gained popularity and is used to denote a myriad negative behaviours that impact on productivity.

Robinson and Bennett (1995, p. 556) define counterproductive work behaviour as “... voluntary behaviour that violates significant organisational norms and in so doing threatens the well-being of an organisation, its members or both”. This broad definition includes behaviour such as theft (Kelloway *et al.*, 2010).

Counterproductive work behaviour (CWB) continues to stimulate interest among researchers. A recent proliferation of studies bears testimony to this fact (see Hastings & O'Neill, 2009; Kelloway, Francis, Prosser & Cameron, 2010; MacLane &

Walmsley, 2010; O'Neill & Hastings, 2011; O'Neill, Lewis & Carswell, 2011; Stewart, Bing, Davison, Woehr & McIntyre, 2009; Spector, 2011; Workman, 2012).

This blooming interest has been due to the awareness and forthcoming evidence that CWB is a pervasive phenomenon associated with very significant negative consequences for organisations, their members, customers, suppliers and the economy as a whole. According to Colbert, Mount, Harter, Witt and Barrick (2004), the study of CWB has theoretical, as well as practical significance. With regard to the theoretical importance, CWB has been isolated as one of the three dimensions of overall job performance, together with task performance and organisational citizenship behaviour (OCB). With regard to the practical consequences, surveys have indicated that CWB is a pervasive and expensive dilemma for organisations.

MacLane and Walmsley (2010) stated that research regarding CWB emerged via two separate routes: one principal route has focused on investigating the constructs underlying CWB, while the other has primarily been involved in the development of pre-employment tests to identify applicants who were inclined to take part in various types of CWB.

1.2 The antecedents and consequences of counterproductive work behaviour

Counterproductive work behaviour (CWB) has a great number of antecedents, as outlined in Table 1.1, consisting of individual, situational and interactional variables.

1.2.1 Moderators and mediators of CWB

A wide range of variables has been studied in relation to counterproductive work behaviour. These have included individual differences, such as cognitive ability; personality, as well as demographic factors; job characteristics; work group characteristics; organisational culture; security controls; leader mistreatment; career variables; and other variables. A summary of these variables appears in Table 1.1.

Table 1.1: Summary of the correlates of CWB

Group of Variables	Variables	Authors
Cognitive Ability:		Postlethwaite, Robbins, Rickerson & McKinniss (2009) MacLane & Walmsley (2010) Kuncel, Ones & Sackett (2010)
Personality & Related Variables:	Machiavellianism	Wu & Lebreton (2011) Williams, Nathanson & Paulhus (2010) Kish-Gephart, Harrison & Travino (2010) O'Boyle, Forsyth, Banks & McDaniel (2012)
	Integrity	Ones, Viswesvaran & Schmidt (2012) Van Iddekinge <i>et al.</i> (2012)
	Psychopathy	Wu & LeBreton (2011) Williams, Nathanson & Paulhus (2010)
	Aggression	Michel & Bowling (2012) Mayer, Thau, Workman, Van Dijke & De Cremer (2012)
	Self-esteem	Ferris, Brown & Heller (2009)
	Competing Motives	Credé & Niehorster (2009)
	Effectivity	Kaplan, Bradley, Luchman & Haynes (2009) Bowling & Eschleman (2010)
	Attribution	Spector & Fox (2002) Yang & Diefendorff (2009)
	Power	Popowitz & Warren (2010)
	Job attitudes & employee engagement	Fine, Horowitz, Weigler & Bisi (2010)
	Job satisfaction	Bowling (2010)
	Competing motives	Credé & Niehorster (2009)
	Anger & anxiety	De Jonge & Peeters (2009) Karasek (1979) Yang & Diefendorff (2009)
	Narcissism	Campbell, Hoffman, Campbell & Marchicio (2011) Brunel, Staats, Barden & Hupp (2011) Wu & Lebreton (2011) Williams, Nathanson & Paulhus (2010) Michel & Bowling (2012) O'Boyle, Forsyth, Banks & McDaniel (2012)
	Honesty-humility	O'Neill, Lewis & Carswell (2011)
	Frustration	Ménard, Brunet & Savoie (2011) De Jonge & Peeters (2009)
	Emotion & power	Levine (2010) Spector & Fox (2002)
	Sensation-seeking	Jackson (2011)
	Emotional intelligence	Jung & Yoon (2011)
	Conventionality	O'Neill & Hastings (2011)
	Egotism	O'Neill & Hastings (2011)
	Femininity	O'Neill & Hastings (2011)
	Humorousness	O'Neill & Hastings (2011)
	Manipulativeness	O'Neill & Hastings (2011)
	Risk-taking	O'Neill & Hastings (2011)
	Conscientiousness	Postlethwaite, Robbins, Rickerson & McKinniss (2009) Dilchert, Ones, Davis & Rostow (2007)
	Locus of control	Kish-Gephart, Harrison & Travino (2010) Zettler (2011)
	Seductiveness	O'Neill & Hastings (2011)
	Thriftness	O'Neill & Hastings (2011)
	Self-control	Gottfredson & Hirschi (1990)

		Zettler (2011) Credé & Niehorster (2009) Marcus & Uwe (2007)
	Affectivity	Kaplan, Bradley, Luchman & Haynes (2009) MacLane (2010)
	Trait interactions	Penney, David & Witt (2011) Jensen & Patel (2011) Bowling & Eschleman (2010) Peng (2012)
	Propensities	Credé & Niehorster (2009)
Demographics:	Gender	Fine, Horowitz, Weigler & Bisis (2010) Peng (2012) Ménard, Brunet & Savoie (2011)
	Age	Fine, Horowitz, Weigler & Bisis (2010) Peng (2012) Ménard, Brunet & Savoie (2011)
	Education	Peng (2012)
	Part-time employment status	Fine, Horowitz, Weigler & Bisis (2010) Ménard, Brunet & Savoie (2011)
Job Characteristics:	Job stressors	Fox, Spector & Miles (2001) Spector & Fox (2002) Bowling & Eschleman (2010)
	Performance monitoring	Smithikrai (2008)
	Task ambiguity	Yang & Diefendorff (2009)
	Job-related factors i.e. routinisation, complexity, inter-dependence & Psychological states associated with the job	Peng (2012)
Work Group Characteristics:	Workplace exclusion (the extent to which an employee or group of employees perceive that they are being ignored, rejected or ostracized by another individual or group within their workplace).	Hitlan & Noel (2009)
	Inter-personal conflict	Spector & Fox (2002)
	Group norms	Smithikrai (2008)
Organisational culture	Organisational norms	Fine, Horowitz, Weigler & Bisis (2010) Smithikrai (2008)
	Organisational culture	Martin, Brock, Buckley & Ketchen (2010) Hershfield, Cohen & Thompson (2012)
	Ethical leadership	Brown & Treviño (2006) Einarsen, Aasland & Skogstad (2007) Mayer, Thau, Workman, Van Dijke & De Cremer (2012)
	Formal & informal communication systems	Hershfield, Cohen & Thompson (2012)
	Lack of continuity/job insecurity	Hershfield, Cohen & Thompson (2012) Probst, Stewart, Gruys & Tierney (2007)
	Organisational constraints/job conditions	Spector & Fox (2002)
Security controls:		Fine, Horowitz, Weigler & Bisis (2010)

Leader Mistreatment:		Mayer, Thau, Workman, Van Dijke & De Cremer (2012)
Career Variables:	Career stage	Martin, Brock, Buckley & Ketchen (2010)
	Organisational tenure	Martin, Brock, Buckley & Ketchen (2010)
Other:	Severity perceptions	Credé & Niehorster (2009)
	Psychological contract	Spector & Fox (2002)
	Protest	Kelloway, Francis, Prosser & Cameron (2010)
	Reciprocity	Lyons & Scott (2011)
	Abundance	Gino & Pierce (2009)

The study of counterproductive work behaviour has theoretical as well as practical importance (Colbert, Mount, Harter, Witt & Barrick, 2004). Regarding the theoretical significance, deviant work behaviour has been isolated as one of three dimensions of overall job performance together with task performance and citizenship performance (Rotundo & Sackett, 2002).

With regard to the practical consequences, surveys have indicated that deviant work behaviour is a pervasive and expensive dilemma for organisations (Colbert *et al.*, 2004). According to Aquino, Lewis and Bradfield (1999), it has often been proposed that unethical, violent and destructive behaviours are astoundingly common in organisations. These authors referred to a study by Harper in 1990 which found that 33 to 75 percent of employees were involved in some kind of unexcused absenteeism, theft, fraud, embezzlement, vandalism or sabotage. Another study suggested that more than two million employees had been physically assaulted at work; approximately six million employees had been threatened; and about sixteen million were harassed. According to them, research indicates that companies suffer substantial economic losses due to deviant work behaviour. For example, the National Safe Workplace Institute calculated that reduced productivity and legal fees cost employers \$4.2 billion in 1992. Other expenses included weakened employee morale, damaged reputations, damage and waste of property and insurance losses.

Mikulay, Neuman and Finkelstein (2001) stated that theft by employees has resulted in annual losses of at least \$40 billion and may be the cause of 10% to 30% of business failures. The direct monetary consequences of other forms of counterproductive work behaviour is harder to measure, but estimates encompass \$28 billion per annum due to substance abuse at work and approximately fifty hours per annum per employee wasted from unauthorised extended work breaks.

Hakstian, Farrell and Tweed (2002) stated that counterproductive work behaviour has a significant impact on the effectiveness of organisations. According to Slora (as cited in Hakstian *et al.*, 2002), theft by employees and other counterproductive work behaviours have affiliated costs with regard to morale, inventory, image and profit. In addition, CWB also results in indirect costs such as increased insurance premiums and lawsuits. Murphy (1993) estimated that deviant and delinquent employee behaviours have been linked to organisational losses of between \$6 and \$200 billion.

Ones and Viswesvaran (2003) stated that the magnitude of tangible, psychological and societal costs to organisations can be better appreciated when one considers the many different types of counterproductive work behaviour. According to Geddes and Baron (as cited in Ones & Viswesvaran, 2003), 69% of managers reported verbal aggression by employees. Wimbush and Dalton (1997) found that, depending on the level of theft included, estimates of theft rates were over fifty percent. According to DeCreste, Mazura, Lifshitz and Tilson (as cited in Ones & Viswesvaran, 2003) it is believed that substance abuse has cost the United States in excess of \$135 billion per annum. Harwood, Fountain and Livermore (as cited in Ones & Viswesvaran, 2003) estimated that, in the United States economy, \$82 billion in productivity losses were attributable to alcohol and drug abuse in 1992.

According to Parks and Mount (2005), a Society for Human Resource Management (SHRM) Ethics Report showed that 45% of those surveyed had observed lying to supervisors, 36% had observed lying on reports or falsifying records and 20% had observed theft. A subsequent report estimated that the annual monetary losses by American business due to employee theft range from \$15 billion to \$25 billion and approximately 30% of all business closures are due to employee theft. Sandberg (as cited in Dineen, Lewicki & Tomlinson, 2006) reported estimated annual losses due to employee fraud of over \$50 billion.

It is evident from the above that the estimated adverse impact of employee deviance varies substantially, depending on the source. This is probably to some extent due to how deviance is defined and which direct and indirect costs are included in the estimates. Despite these differences, it is clear that employee deviance is a pervasive problem consisting of many manifestations and is very costly to business

and society in general. Accordingly, there has been an increase in research interest regarding employee deviance in recent years (Acquino & Lamertz, 2004; Colbert *et al.*, 2004; Dineen *et al.*, 2006; O'Neill, Lewis & Carswell, 2011; Workman, 2012).

The relative importance of counterproductive behaviour in global ratings of work performance has also been investigated. Rotundo and Sackett (2002) found that managers gave significant consideration to task, citizenship and counterproductive behaviour when evaluating overall job performance. Generally, task and counterproductive behaviour received more weight than organisational citizenship behaviour.

Coffin and Canada (as cited in Ménard, Brunet & Savoie, 2011) state that workplace deviance is the most rapidly growing crime in the United States. Shulman (as cited in Restubog, Garcia, Wang & Cheng, 2010) reported that the U.S. Chamber of Commerce estimates that 75% of employees steal from their employer at least once. Thirty-five percent of Australian employees reported verbal abuse by co-workers and 31% by their supervisors (Chappell, as cited in Restubog *et al.*, 2010). According to Rioux, Roberge, Brunet, Savoie and Courcy (as cited in Ménard *et al.*, 2011), 90% of all workers reported that they had committed at least one kind of workplace deviance, and Björkqvist, Osterman and Hjelt-Bäck (1994) established that 32% percent of workers observed verbal harassment at work. Gino, Schweitzer, Mead and Ariely (2011) reported that U.S. organisations lose approximately seven percent of their annual profit, equal to \$1 trillion, due to various types of unethical behaviour.

According to Ottinot (2010), research supports the relationship between different types of negative interactions at work and a drop in employee performance, job satisfaction and organisational citizenship behaviours. Research also indicates that employees who experience hostile interactions at work, either directly as a target or indirectly as a witness, are inclined to experience an increase in withdrawal behaviours such as absenteeism and turnover (Lutgen-Sandvik, 2006; Rayner, 1997). Furthermore, these employees have a higher chance of experiencing a great number of physical illnesses (Björkqvist, Osterman & Hjelt-Bäck, 1994; Limm, Cortina & Magley, 2008; Rospenda, 2002).

Abusive workplace behaviour often results in involuntary or voluntary termination of employment of good employees who become targets of abuse (Namie, as cited in Ottinot, 2010).

Namie (as cited in Ottinot, 2010) found that about 40% of targets of bullying leave their jobs voluntarily. However, according to Lutgen-Sandvik (2006), this often happens after the victims have made a number of attempts to stop the abuse, by which time their productivity has declined significantly. According to Hoel, Cooper and Faragher (2004), the targets of abuse have often spoken to many people inside and outside the organisation by the time they leave. This can be very harmful to the organisation's reputation (Lutgen-Sandvik & McDermott, 2008).

According to the Open Democracy Advice Centre (ODAC) (2011), the cost of corruption and fraud in South Africa amounts to more than R100 billion each year. According to them, a Washington-based research group, Global Financial Integrity, has estimated that R185 billion has left South Africa illegally since 1994. This figure does not include losses due to illegal activities such as money laundering and smuggling.

In 2011, The Economist (in My News 24, 2013) reported that 20 to 25% (\pm R30 billion) of South Africa's state procurement is wasted through corruption and overpayment. The auditor-general believes that R26 billion is wasted or spent "irregularly" every year. One third of government departments grant contracts to officials and close family members.

According to Marais (2012), almost 80% of South Africans think that there is corruption at senior government levels, while 70% believe it is equally bad in the private sector.

Klynveld Peat Marwick Goerdeler (KPMG) (in SA NEWS, 2012) reported that South Africa has the highest number of reported fraud cases on the continent and that government employees are the biggest offenders, followed by professional and business services, retail banking and infrastructure sectors.

Various other scholars have highlighted the widespread occurrence of counterproductive work behaviour and its implications for employers, employees and the economy (Christian, Bradley, Wallace & Burke, 2009; Ferris, Brown & Heller, 2009; Ferris, Brown, Lian & Keeping, 2009; Fine, Horowitz, Weigler & Basis, 2010; Gino, Schweitzer, Mead & Ariely, 2011; Harris & Ogbonna, 2009; Hastings & O'Neill, 2009; Kelloway, Francis, Prosser & Cameron, 2010; Martin, Brock, Buckley & Ketchen, 2010; O'Neill & Hastings, 2011; Popowitz & Warren, 2010; Postlethwaite, Robbins, Rickerson & McKinniss, 2009; Stewart, Bing, Davison, Woehr & McIntire, 2009).

1.3 Defining the research domain

As seen in the previous section, the literature indicates that many diverse variables correlate with CWB (Fine *et al.*, 2010; Martin *et al.*, 2010). For theoretical and practical reasons, as well as to confine the scope of the present study to a governable and meaningful level, a selection of variables had to be made. The aim of the present study therefore was to select antecedents of CWB in the personality and integrity domains.

A number of studies have shown the validity of personality in the prediction of work performance (Barrick & Mount, 1991; Hastings & O'Neill, 2009) and at least two meta-analytic studies have examined the relationship between personality and CWB (Berry, Ones & Sackett, 2007; Salgado, 2002). Personality dimensions of the Big Five have been shown to correlate with CWB, with conscientiousness being regarded as the strongest predictor, followed by Agreeableness and Emotional Stability (Penney, Hunter & Perry, 2011).

According to Costa and McCrae (1992), a large part of personality theory, especially psychodynamic theory, is about the control of impulses and the ability to resist temptations. Self-control can also refer to the actions of planning, organising and completing tasks. Differences in this tendency between individuals form the basis of conscientiousness. Conscientious individuals are determined, strong-willed and purposeful. High scorers on conscientiousness are punctual, reliable and scrupulous.

Low scorers do not necessarily lack moral principles, but they are less stringent in applying them and more careless in working towards goals.

Agreeableness essentially is a dimension of interpersonal disposition. Agreeable individuals are primarily altruistic. They are sympathetic and keen to help others. Disagreeable individuals are competitive, egocentric, antagonistic and sceptical of others' opinions. Low scorers on Agreeableness are associated with narcissistic, anti-social and paranoid personality disorders. In contrast, high scorers on this dimension are associated with the dependant personality disorder (Costa & McCrae, 1992).

According to Costa and McCrae (1992), the most prevalent domain of personality measures differentiate between emotional stability or adjustment, and neuroticism or maladjustment. The core of this domain concerns the inclination to experience negative feelings such as sadness, fear, anger, guilt, embarrassment and distrust. Individuals who score high on Neuroticism are also inclined to have irrational ideas, cope more inadequately with stress, and are less able to control their impulses. Individuals who score low on Neuroticism are emotionally more stable, calm, relaxed, even-tempered and do not easily become upset.

In addition to the role that personality plays in predicting work performance, integrity has recently emerged as a prominent predictor of work performance in the literature on selection. It is considered that the use of integrity tests provide various advantages for staff selection inclusive of criterion-related validity for predicting several different criteria (Ones, Viswesvaran & Schmidt, 1993). According to Schmidt and Hunter (1998), integrity tests may yield the largest degree of incremental validity, after cognitive ability tests, across a range of selection procedures. In addition, integrity tests are cost-effective and easy to administer and score (Van Iddekinge, Roth, Raymark & Odle-Dusseau, 2012).

Despite the widespread use of integrity tests, the use of these tests has been criticised by a number of authors. These criticisms are discussed in detail in the chapter presenting the literature review. One line of criticism of particular relevance to this study concerns the fact that the construct of integrity remains vague and ill-

defined, reflecting a mixture of various multi-faceted conceptualisations of the construct which encompass attitudes, values and personality characteristics (Barnard, Schurink & De Beer, 2008).

1.4 Research goal and objectives of this study

Global competition continues to expand, which puts increased pressure on the operating expenses of organisations. As indicated earlier, CWB is a widespread and costly phenomenon. This has direct adverse impact on profits.

In some cases, the continued survival of businesses is threatened by CWB. Considering this, it was hoped that the development of an integrity test validated in South Africa will make a meaningful contribution toward the selection of honest, reliable, trustworthy employees, i.e. employees with integrity.

Furthermore, taking into account the confusion regarding the construct validity of integrity tests, it was hoped that this study can enhance our understanding of the integrity construct, thereby contributing to the global body of knowledge about this complex construct. This was a particularly challenging objective, considering the diverse nature of South Africa's multi-cultural workforce.

Considering the importance and need for this research, as well as the research objectives, the general goal of this research was: to investigate the relationship between selected personality dimensions and integrity, and how these personality dimensions and integrity are related to counterproductive work behaviour. The specific objectives were:

1. To analyse the relationship between Conscientiousness, Agreeableness, Neuroticism and counterproductive work behaviour;
2. To analyse the relationship between Conscientiousness, Agreeableness, Neuroticism and Integrity;
3. To identify other personality correlates of integrity based on the literature study;
4. To analyse the relationship between integrity and counterproductive work behaviour;

5. To analyse the relationships between integrity and selected other personality correlates of integrity;
6. To analyse the relationships between other personality correlates of integrity and counterproductive work behaviour
7. To develop a reliable and valid integrity test for use in the South African context.

1.6 Overview of the study

Chapter 1 has dealt with the antecedents of counterproductive work behaviour, as well as the widespread prevalence and costly consequences of this phenomenon. It also focused on the definition of the research domain, the objectives of the study and the importance of this research.

Chapter 2 provides a comprehensive review of the literature, with the main concepts of the study being discussed in detail. Definitions and conceptualisations of integrity, counterproductive work behaviour, and the personality correlates of integrity are provided.

Chapter 3 provides a detailed description of the research design, the sample and the data collection procedure. The measuring instruments for each of the variables considered in the study are defined and described. Furthermore, the statistical analyses used to analyse the data are discussed.

Chapter 4 presents the research results. It outlines the data analysis in detail, provides the results of the analyses and reports on testing the proposed hypotheses.

In Chapter 5, the research results are interpreted and discussed. The limitations and suggestions for future research are also addressed in this chapter. Finally, managerial implications and concluding remarks are presented.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter one argued the importance of CWB in the organisational context and presented an accurate understanding of the manner in which personality and integrity are interrelated for the purpose of influencing the employee's CWB. This chapter provides a review of the literature that deals with the constructs focused on in this study. In this chapter, each of the constructs will be discussed in terms of their definition and measurement. The chapter concludes by proposing the theoretical structural model by hypothesising specific causal relationships between the latent variables of integrity, personality and CWB.

2.2 Definition and measurement of counterproductive work behaviour

Over the years several researchers (scholars) have studied, analysed and defined the concept of counterproductive work behaviour or deviant behaviour in the workplace (Aquino & Lamertz, 2004; Berry, Ones & Sackett, 2007; Douglas & Martinko, 2001; Gruys, 2000; Hakstian, Farrell & Tweed, 2002; Ho, 2012; Jensen & Patel, 2011; Marcus, Schuler, Quell & Humpfner, 2002; Miles, Borman, Robinson & Bennett, 1995; Neuman & Baron, 1998; Ones, Viswesvaran & Schmidt, 2012; Sackett & Devore, 2001; Spector & Fox, 2002; Spector & Fox, 2002; Stewart *et al.*, 2009; Workman, 2012).

2.2.1 Definition of counterproductive work behaviour

According to Spector and Fox (2002), the differences in terminology in this domain stem from the theoretical bases of the work produced by the various researchers. Spector, O'Leary-Kelly, Griffin and Glew, and Neuman and Baron based their research on social aggression literature (Spector & Fox, 2002). Hollinger and Robinson, and Bennett used a criminological base (Spector & Fox, 2002). Skarlicki and Folger based their research on an organisational justice approach, while Bies, Tripp and Kramer included emotion in their perspective (Spector & Fox, 2002). They argued that particular organisational incidents or circumstances cause negative

emotions (e.g. anger) and cognition, which will result in revenge actions under the right circumstances.

Rotundo and Sackett (2002) define counterproductive performance as “voluntary behaviour that harms the well-being of the organisation” (Rotundo & Sackett, 2002, p. 69).

According to Murphy (1993), the ethical theories that guide work behaviour in organisational settings are not formal theories, but rather practical definitions of good or bad, or in a general sense, acceptable and unacceptable behaviour at work. If behaviour is tolerated by custom or accepted by superiors, co-workers, or both, as appropriate and justifiable, the behaviour is unlikely to be regarded as dishonest, wrong or unethical. This means that, to conceptualise integrity in the workplace, the norms, customs and assumptions of individuals in the organisation, as well as the information conveyed by the organisation about the range and limits of unacceptable behaviour, must be studied.

Robinson and Bennett (1995) assert that the study of deviance in the workplace is different from the study of ethics because the former focuses on behaviour that violates organisational norms, whereas ethics emphasise behaviour that is right or wrong when judged in terms of justice, law or other guidelines in society which determine the morality of behaviour. Therefore, although a particular act can be both deviant and unethical, the two qualities are not necessarily similar.

Wheeler (1976) classified deviant work behaviour into serious and non-serious offences.

According to Gruys (2000), the literature contains at least nine distinct terms to refer to this domain of work behaviour, namely (1) antisocial behaviour; (2) workplace deviance; (3) employee vice; (4) organisational misbehaviour; (5) workplace aggression; (6) organisational retaliation behaviour; (7) non-compliant behaviour; (8) organisation-motivated aggression; and (9) organisational delinquency (see Table 2.1). Bies, Tripp and Kramer (Miles, Borman, Spector & Fox, 2002) referred to the construct as revenge. Ackroyd and Thompson, and Vardi and Wiener (Hakstian,

Farrell & Tweed, 2002) labelled the construct organisational misbehaviour. According to Aquino and Lamertz (2004, p. 1023), other terms which have been used for the same construct are petty tyranny (Ashford), workplace harassment (Björkvist, Österman & Hjelt-Bäck), workplace victimisation (Aquino, Grover, Bradfield & Allen), bullying (Einarsen), mobbing (Leymann), social undermining (Duffy, Ganster & Pagou), emotional abuse (Keashly), and abusive supervision (Tepper). Fox and Spector (as cited in Spector & Fox, 2002) referred to the construct as counterproductive behaviour.

Table 2.1***Definitions of Workplace Deviance***

Construct	Author(s)	Definition
Organisational misbehaviour	Vardi & Wiener (1996)	Any intentional action by members of organisations that violates core organisational and/or societal norms.
Workplace aggression	Baron & Neuman (1996); Folger & Baron (1996)	Any form of behaviour by individuals that is intended to harm current or previous co-workers or their organisation.
Organisation-motivated aggression	O'Leary-Kelly, Griffin & Glew (1996)	Attempted injurious or destructive behaviour initiated by either an organisational insider or outsider that is instigated by some factor in the organisational context.
Anti-social behaviour	Giacalone & Greenberg (1997)	Any behaviour that brings harm or is intended to bring harm to the organisation, its employees, or its stakeholders.
Workplace deviance	Robinson & Bennett (1995, 1997)	Voluntary behaviour of organisational members that violates significant organisational norms and in so doing, threatens the wellbeing of the organisation and/or its members.
Organisational vice	Moberg (1997)	An act that betrays the trust of either individual or the organisational community.
Organisational retaliation behaviours	Skarlicki & Folger (1997)	Adverse reactions to perceived unfairness by disgruntled employees toward their employer.
Non-compliant behaviour	Puffer (1987)	Non-task behaviours that have negative organisational implications.
Organisational delinquency	Hogan & Hogan (1989)	No formal definition provided said to be a syndrome which is the result of employee "unreliability". Counterproductive acts are elements of the syndrome.

(Gruys, 2000, pp. 21-23)

Fox, Spector and Miles (2001) stated that the above behaviours can also be categorised as active versus passive. Active acts are focused immediately on the target, e.g. yelling at a supervisor. Such behaviours will, however, probably be

punished and the employee will often rather choose a passive approach such as absence, lateness or withholding performance.

Two other forms of counterproductive behaviour have recently received increasing attention, i.e. workplace bullying and cyber loafing (see Table 2.2, compiled from different sources).

Table 2.2

Workplace Bullying and Cyber Loafing as two new forms of counterproductive work behaviour

Construct	Author(s)	Definition
Workplace bullying	Baruch (2004)	Bullying is verbal aggressive behaviour which inflicts pain, an (aggressive behaviour arising from deliberate intent to cause physical or psychological distress to others).
	Hansen, Høgh & Persson (2011)	Definitions of bullying at work commonly entail descriptions that emphasise prolonged exposure to interpersonal acts of a negative nature, with which the target is unable to cope.
	Saunders, Huynh & Goodman-delahunty (2007)	Definitions differ between researchers, practitioners, unions, private sector organisations and the legal profession. However, five elements are usually present (1) targets experience negative behaviour; (2) behaviours are experienced persistently; (3) targets experience some harm, either psychological or physical; (4) targets perceive they have less power than the bully and, thus, have difficulty defending themselves; and (5) targets label themselves "bullied".
Cyber loafing/cyber deviance	Liberman, Seidman, McKenna & Buffardi (2011)	Cyber loafing is the act of employees who use their employers' internet access for personal purposes during working hours.
	Blanchard & Henle (2008)	Cyber loafing is the personal use of email and the internet while at work.
	Weatherbee (2010)	The scope of information and communication technologies and cyber deviancy is quite wide and ranges from relatively mild behaviours, such as internet surfing during working hours to more harmful or illegal behaviours with profound negative potential for harming such as fraud, identity theft, sexual harassment or interpersonal aggression. Between these two poles are other mid-range behaviours, i.e. general internet abuse, software piracy, intellectual property theft, unauthorised entry into others' computers or corporate databases or

Workman (2012)

payroll/financial records.
Cyber smearing is an intentional effort to damage the reputation of an individual or corporation using the internet as the medium.

Neuman and Baron (1998, p. 395) defined workplace aggression as “efforts by individuals to harm others with whom they work, or have worked, or the organisations in which they are presently, or were previously employed”. Giacalone and Greenberg (Douglas & Martinko, 2001, p. 548) referred to antisocial behaviour at work as “... employee behavior that is intended to bring harm to co-workers or the employing organisation”. Martinko and Zellars (Douglas & Martinko, 2001, p. 548) described workplace aggression as “... employee behavior that is intended to harm co-workers or the employing organization”. Douglas and Martinko (2001, p. 548) define workplace aggression as “... the frequency of acts by employees to harm (actual or potential) others with whom they work or the employing organisation”. Marcus (Marcus, Schuler, Quell & Hümpfner, 2002, p. 19) defined workplace counterproductivity as “... any act by a member of an organization that is obviously likely to do harm but no benefit to other members of the organisation or the organisation as a whole”.

According to Gruys and Sackett (2003), it is essential to be aware that Robinson and Bennett’s framework is based on workers’ opinions about the similarity of behaviours. In the Robinson and Bennett (1995) study, respondents were not restricted regarding the basis for their judgements. However, the results showed that respondents used the two dimensions of other person as target versus organisation

as target and minor offences versus serious offences as the starting point for their similarity appraisals. Gruys and Sackett (2003) proposed that a crucial point in understanding the relationships between heterogeneous facets of counterproductive behaviour is the covariance of occurrence between these behaviours. The issue is whether individuals who are involved in one kind of counterproductive behaviour are also inclined to be involved in others. They suggested that behaviours may be similar on a certain dimension but diverge on a variety of other dimensions. For example, verbal abuse of a customer and theft from a co-worker are situated close together in the multidimensional space in Robinson and Bennett's study because both are serious forms of wrongdoing of an interpersonal nature. Despite this, these two behaviours may be dissimilar on other dimensions (e.g. a planned versus unplanned dimension and a public versus private dimension).

Mount, Rencus and Erin (2006) stated that, although counterproductive work behaviour can also be categorised in terms of other dimensions, e.g. seriousness (Robinson & Bennett) and task relevance (Gruys & Sackett), the interpersonal-organisational dimensions has steadily appeared in recent conceptual and empirical work on counterproductive behaviour and, in their opinion, is most appropriate for research aimed at explaining the mechanism through which personality affects counterproductive work behaviour.

In their meta-analysis, Berry *et al.* (2007, p. 413) found support for the applicability of categorising self-reports of workplace deviance into interpersonal (ID) and organisational deviance (OD) dimensions. Their study yielded a correlation (corrected for sampling error and unreliability) between *ID* and *OD* of $p = 0.62$. This is slightly lower than Dalal's (2005, p. 1248) corrected estimate of 0.70. However, the mean observed correlations in the studies of both Berry *et al.* and Dalal was 0.52.

Berry *et al.* also analysed the common antecedents of *ID* and *OD*. In a number of instances, *ID* and *OD* had comparable relationships with their common antecedents. However, there were also a significant number of differences in the relationships of *ID* and *OD* with many other antecedents. Although *ID* and *OD* demonstrate some very similar relationships with a range of common antecedents, it seems that *ID* and

OD correlate differently with some personality traits. This supports the notion that *ID* and *OD* are related but separate constructs.

According to Spector and Fox (2002, p. 3), counterproductive work behaviour "... is intended to hurt the organisation or other members of the organisation".

According to Sackett and Devore (2002, p. 5), counterproductive work behaviour at the broadest level can be defined as "... any intentional behaviour on the part of an organisation member viewed by the organisation as contrary to its legitimate interests". Lau, Au and Ho (2003) defined counterproductive behaviour as "... any voluntary organisational behaviours that affect an individual's job performance or undermine organisational effectiveness".

Robinson and Bennett (1995, p. 556) defined employee deviance as "... voluntary behaviour that violates significant organisational norms and in so doing threatens the well-being of an organisation, its members or both". The behaviour is voluntary because employees either lack the motivation to conform to norms of the social environment or become motivated to violate those normative expectations. Organisational norms or those prescribed by formal and informal organisational policies, rules and procedures are accentuated, because deviant behaviour must be defined in terms of the standards of a specified social group rather than in terms of absolute moral standards.

The common themes that characterise the definitions of counterproductive work behaviour are: the behaviour is voluntary, intentional, it violates significant organisational norms, and is harmful to both the organisation and its employees.

2.1.3 Antecedents of Counterproductive Work Behaviour

According to Sackett and Devore (2001), researchers who study counterproductive behaviour differ with regard to the goals they have in mind. They propose two important dimensions. The first dimension is the level of analysis: whether the focus is on the behaviour of an individual or the behaviour of several individuals. The

second dimension is time period, moving from concentrating on a single behaviour at a particular point in time to sequences of behaviour over a longer period of time. Mixing these two dimensions creates four combinations.

Different theoretical approaches to counterproductive behaviour focus on different cells in this two-dimensional grid. Researchers who concentrate on individual differences as causes of counterproductive behaviour focus on the individual level of analysis. If the interest is in individual variables that are stable over time (e.g. personality variables), the inclination will be to concentrate on outcome variables over an extended time period (e.g. investigating whether individuals high in conscientiousness are inclined to demonstrate lower levels of absenteeism over time). If the interest is in individual variables that are perceived as changing over time (e.g. mood), the inclination will be to concentrate on short-term outcome variables (Sackett & Devore, 2001).

Contrary to the above, approaches that concentrate on the situational causes of counterproductive behaviour tend to focus on an aggregate level of analysis. Approaches focusing on the influence of relatively stable attributes (e.g. company policies concerning the consequences of uncovered counterproductive behaviour) are inclined to concentrate on outcome variables over extended time periods. Approaches concentrating on triggering incidents (e.g. a labour dispute) are inclined to focus on short-term outcome variables (Sackett & Devore, 2001).

Bennett and Robinson (as cited in Judge, Scott & Ilies, 2006) identified three separate research trends in the literature regarding the antecedents of counterproductive work behaviour: (1) studies in which counterproductive work behaviour is conceptualised as a response to experiences at work; (2) studies that investigate counterproductive behaviour as a consequence of employees' personality; and (3) studies that examine counterproductive behaviour as adjustment to the social setting at work.

Most hypothetical antecedents of counterproductive work behaviour can be categorised within the following structure: (1) triggers (situation – motivation); (2)

opportunity (situation – control); (3) internal control (person – control); and (4) propensity (person – motivation) (Marcus & Schuler, 2004).

Martinko, Gundlach and Douglas (2002) integrated various approaches regarding the antecedents of counterproductive work behaviour into a causal reasoning model. In addition to the situational and individual difference variables that play a role in the enactment of CWB, the outcome of the cognitive processing, subsequent interpretation and the resulting attributions formed determine whether the individual engages in either self-destructive or retaliatory CWB behaviours, as depicted in Figure 2.

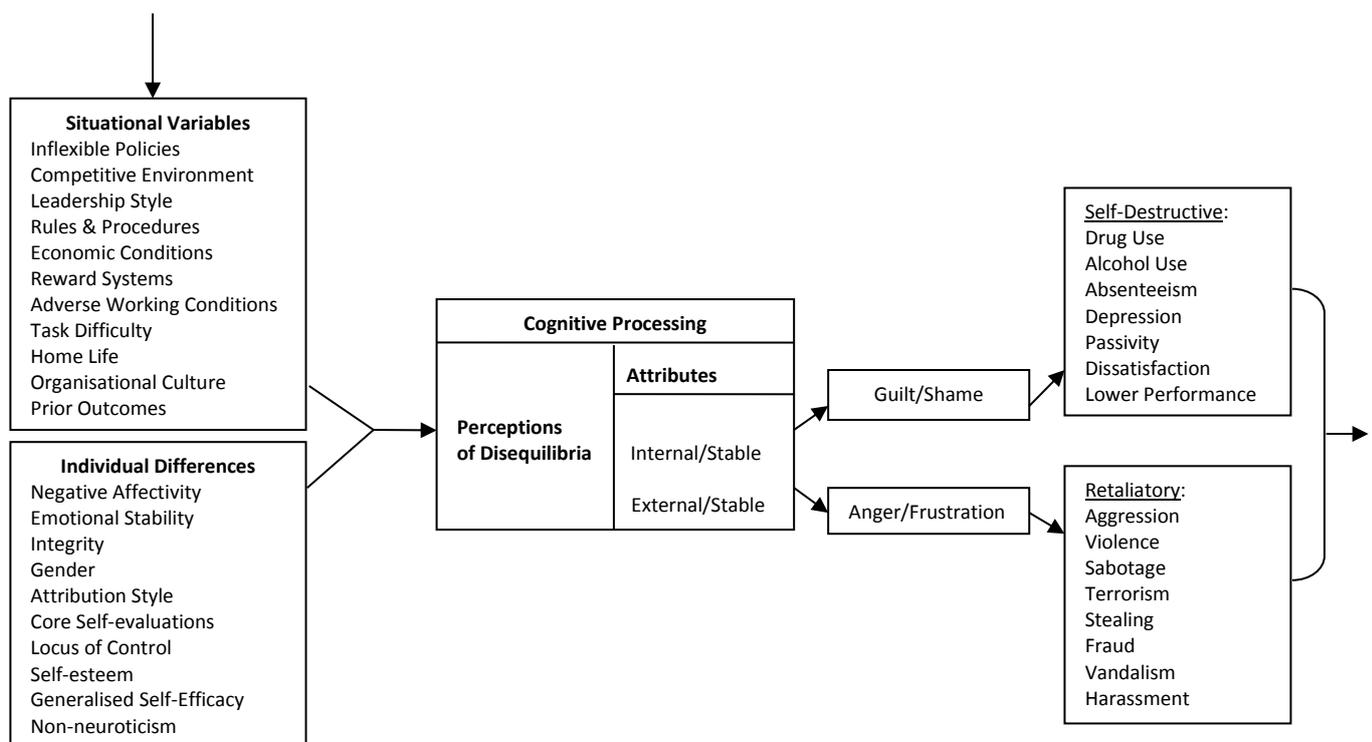


Figure 2.1: A Causal Reasoning Model of Counterproductive Behaviour (Martinko, Gundlach and Douglas, 2002, p.43)

According to Neuman and Baron (1998), counterproductive behaviours are caused by the interaction between a broad range of social, situational and personal factors. These researchers presented a theoretical model of workplace aggression, a general term used by them which includes all facets of harmful behaviours in the workplace. Griffen, O'Leary-Kelly and Collins (as cited in Sackett & Devore, 2001, p. 153) referred to six categories of antecedents of counterproductive work behaviour:

“individual evaluative criteria, pathological characteristics, norms of the organisation and group, culture, the reward system and the control system”.

In their chapter on counterproductive behaviours at work, Sackett and Devore (2001) concluded that the main broad categories of antecedents of counterproductive work behaviours have appeared repetitively in the literature. These broad categories appeared across different categories of counterproductive behaviours. They suggested that the pattern of positive intercorrelations between counterproductive behaviours and the recurrence of similar groups of antecedents point towards an integrative approach to counterproductive behaviour. They furthermore concluded that both individual and situational antecedents are important in the study of counterproductive work behaviour.

Sackett and Devore (2001, p. 153) expanded on previous conceptualisations and suggested the following main categories of antecedents: “(1) personality variables, (2) job characteristics, (3) work group characteristics, (4) organisational, culture, (5) control systems, and (6) injustice.”

A major characteristic of the abovementioned categories is hypothesised to be relevant to multiple manifestations of counterproductive behaviour. Sackett and Devore noted that there is a number of idiosyncratic antecedents, i.e. antecedents that are applicable to a single kind of counterproductive behaviour.

2.1.4 Typologies of Counterproductive Work Behaviour

According to Gruys and Sackett (2003) and Robinson and Bennett (1995), the domain of counterproductive work behaviour encompasses a wide range of behaviours. Before the 1980s there was a substantial volume of research on individual counterproductive work behaviours, such as absenteeism, sexual harassment, unethical decision-making, tardiness, sloppy and slow work performance, theft, pilferage, sabotage. However, because of the absence of an acknowledged framework or theory for analysing such behaviours, each of these studies were perceived as research regarding a specific type of behaviour rather than an attempt to investigate counterproductive work behaviour in a broader sense.

According to Robinson and Bennett (1995), the pervasiveness of counterproductive work behaviour and its associated consequences for organisations make it necessary to establish a well-defined, organised, theoretically focused programme of research into this behaviour. Robinson and Bennett argued that the development of theories about counterproductive work behaviour would give direction to previous isolated research efforts and assist researchers with the formation of complementary research agendas.

According to Gruys and Sackett (2003), two lines of research are relevant to examining the underlying structure of counterproductive work behaviour. The first line consists of efforts to use psychological tests to predict theft by employees.

The second line encompasses efforts to develop taxonomies of counterproductive work behaviours (Bennett & Robinson, 2000; Gruys & Sackett, 2003; Hollinger & Clark, 1983; Mangione & Quin, 1975; Robinson & Bennett, 1995; Spector & Fox, 2002; Wheeler, 1976).

According to Robinson and Bennett, and Roznowski and Hulin (Bennett & Robinson, 2000), deviant acts fall into families or clusters. Any individual deviant act can be put into one of these behavioural clusters. They made this assumption because research indicates that, although there is an indefinitely great number of dissimilar manifestations of deviant acts, some of these manifestations are comparable in nature, have similar causes and, therefore, may be useful substitutes for one another.

Bennett and Robinson (2000) stated that deviant organisational behaviour is unique because it is restricted to the workplace. Employees are very limited regarding the kind of deviant acts in which they can engage in a specific time period or specific work context. Therefore, the constraints of the situation will result in different manifestations of deviance. Bennett and Robinson (2000) argued that an employee may select from the range of functionally equivalent deviant behaviours in a family, the one that is the least costly, least constrained and most feasible. They furthermore argued that, if an employee commits one act from a family, he or she will

probably commit another act from that family rather than committing an act from another family. Bennett and Robinson (2000) assumed that employees may participate in behaviour switching within families, since the acts within each family are functionally equivalent and substitutable.

Robinson and Bennett (1995) asserted that a typology of deviant work behaviour would be a useful first step for building an organised, theory-based study of employee deviance. They considered such a typology helpful to develop broader, more extensive theories of counterproductive work behaviour, providing meaning and structure to the heterogeneous group of behaviours that constitute workplace deviance. This would help to establish the relationships between the separate deviant acts. They also regarded a typology as helpful for developing more comprehensive measures of counterproductive work behaviour to facilitate empirical tests of their theories of deviance. They argued that aggregated measures are more reliable and valid than specific measures and deal more effectively with the problems caused by the low base rate usually associated with measuring deviant behaviour.

Robinson and Bennett (1995) proposed that a comprehensive typology of workplace deviance should take into account behaviour causing the organisation harm, as well as behaviour aimed at individuals. They developed an inductively and empirically derived typology of employee deviance, using multidimensional scaling techniques. The results of their study show that workplace deviance can be classified into four distinctly different categories (see Figure 2.2).

The first quadrant in this figure contains deviant behaviours that are serious and harmful to the organisation. The quadrant is labelled “property deviance”. According to Robinson and Bennett (1995), this quadrant is similar to Mangione and Quinn’s (1974) counterproductive behaviour and Hollinger and Clark’s (1983) property deviance. This category of deviance refers to incidents where employees acquire or damage property or assets of the organisation without permission.

The second quadrant was labelled “production deviance” and consists of relatively minor acts, but which are still harmful to the organisation. This quadrant is consistent with Mangione and Quinn’s (1974), doing little or nothing, and Hollinger and Clark’s (1983) production deviance. This category of deviance refers to acts

Blaming co-workers
Competing non-beneficially

Personal Aggression: Sexual harassment
 Verbal abuse
 Stealing from co-workers
 Endangering co-workers

Neuman and Baron (1998, p. 393) distinguished between workplace aggression and workplace violence. They defined workplace aggression as “a general term encompassing all forms of behaviour by which individuals attempt to harm others at work or their organisations” and workplace violence as “... instances involving direct physical assaults”.

O’Leary-Kelly *et al.* (Neuman & Baron, 1998) suggested that there should be differentiation between behaviours that are “organisation-motivated” and those that have their origin in circumstances that are not controlled by the organisation. This approach achieves the following: first, the underlying motivation for the behaviour becomes the important point, in contrast with the location in which the behaviour occurs. Second, this viewpoint concentrates on individuals inside the organisation (current employees and those previously employed by the organisation) and in this way restricts and articulates the nature of the relationship between perpetrator and victim. Third, this approach delineates workplace aggression/violence as a distinctive phenomenon by defining the variables of interest.

Robinson and Bennett (2000) suggested that a significant differentiation between types of deviance was whether the deviance was aimed at either the organisation (organisational deviance) or at members of the organisation (interpersonal deviance). They argued that the target of deviance is a critical aspect of deviance for several reasons. First, it is postulated that this element of deviance indicates a significant qualitative differentiation between deviant acts; there are likely to be differences between individuals inclined toward deviance aimed at the organisation and deviance aimed at other individuals. The majority of conceptual views of workplace deviance have clearly recognised that deviance may be aimed at either

the organisation, its members or both (Baron & Neuman, Giacalone & Greenberg, O’Leary-Kelly, Griffin & Glew, Robinson & Greenberg, & Skarlicki & Folger) (as cited in Bennett & Robinson, 2000).

CWB: Organisational Target	
<p>Identification: Low id. with org Injustice: High perceived injustice (self, maybe others) Instrumentality: Restore equity, harm org.</p> <p>Examples: Organisational theft, sabotage, withdrawal</p> <p style="text-align: center;">Individual Action</p>	<p>Identification: Low with org. & high with other group (e.g. union, work team) Injustice: Group or member of group treated unfairly Instrumentality: Improve group status, harm organisation</p> <p>Examples: Strike, reduced team performance</p> <p style="text-align: center;">Collective Action</p>
CWB: Individual Target	
<p>Identification: High with org. or low with target Injustice: Someone has treated you or org unfairly Instrumentality: Restore equity, harm individual</p> <p>Examples: Incivility, aggression, individual theft</p>	<p>Identification: High with org or high with “in group” and low with target Injustice: Someone treats in group member or org unfairly Instrumentality: Restore equity, harm individual</p> <p>Examples: Mobbing, bullying</p>

Figure 2.3: Framework of counterproductive behaviour as protest. (Kelloway, Francis, Prosser and Cameron, 2010, p. 22)

Kelloway, Francis, Prosser and Cameron also classified counterproductive work behaviour in terms of targets, i.e. organisation versus individual (See Table 2.3). They propose that the targets must be viewed as a source of injustice to the perpetrator or others in the workplace. They also proposed that the perpetrator or actor of the counterproductive work behaviour must have a low level of identification with the target of the behaviour, but a high level of identification with the victim. They, furthermore, hypothesised that counterproductive work behaviour can either be conducted by an individual or as a collective action.

Green, Turner and Stephenson (Bennett & Robinson, 2000) also conceptualised workplace deviance in terms of targets. An equivalent differentiation has been drawn with regard to conceptualisations of more specific deviant behaviours as well. Greenberg and Scott (Bennett & Robinson, 2000), for example, have differentiated between employee theft aimed at other employees (e.g. stealing money from a colleague’s wallet) and that aimed at the organisation (e.g. taking money from the cash register). Considering this example, it seems logical not to label both

behaviours as forms of theft (Snyder, Blair & Arndt, as cited in Bennett & Robinson, 2000) and analysing them in a similar way. In fact, regardless of similarities between them, it makes sense to argue that these two manifestations of deviant behaviour are driven by different forces (Bies, Tripp & Kramer; Giacalone, Riordan & Rosenfield, as cited in Bennett & Robinson, 2000).

The question of how broadly violence should be defined is also addressed by conceptualising violence as workplace aggression. According to Neuman and Baron (1998, p. 395) “human aggression involves any act in which one individual intentionally attempts to harm another”. Consequently, all kinds of intentional harm-doing in organisations would be considered as workplace aggression and the label violence would be used only in serious cases of physical assault.

Wu and LeBreton (2011) differentiated between eleven categories of counterproductive work behaviour (see Table 2.3 and Table 2.4). Robinson and Bennett (1995) proposed a framework which categorised CWB into four major categories which vary in terms of the severity of the behaviour and the target of the behaviour. According to this framework, *production deviance* refers to minor organisationally directed offenses; *property deviance* refers to serious organisationally directed offenses; *political deviance* refers to an interpersonally directed but minor offenses; and, *personal aggression* refers to a serious interpersonally directed offenses. However, Gruys and Sackett (2003) presented a similar hierarchical conceptualisation of CWBs in which an all-encompassing construct of CWB may be further defined into 11 unique categories of CWBs (see Table 2.3 and Table 2.4).

Table 2.3

Eleven categories of counterproductive work behaviours (CWB) from Gruys and Sackett (2003)

CWB dimensions	Examples
Poor attendance	Going to work late, missing work without notifying the company
Poor quality of work	Intentionally performing below standard, intentionally completing work carelessly
Alcohol use	Having work performance influenced by alcohol consumption, consuming alcohol at work

Drug use	Selling drugs on company property, arriving at work under the influence of drugs
Misuse of information	Intentionally neglecting to tell others necessary information, providing false information to the company
Unsafe behaviours	Not following safety procedures, endangering the safety of other employees
Inappropriate verbal actions	Arguing with other employees, verbally abusing other employees
Inappropriate physical actions	Physically attacking another employee, making unwanted sexual advances toward another employee
Theft and related behaviours	Giving away services for free, inappropriately using employee discounts
Destruction of property	Deliberately sabotaging company production, defacing or destroying the property of other employees
Misuse of time and resources	Conducting personal business at work, working unnecessary overtime

(Wu and LeBreton, 2011, p. 3)

Table 2.4

Eleven categories of counterproductive work behaviours (CWB) from Gruys and Sackett (2003) categorised using Robinson and Bennett's (1995) typology

	Organisational	Interpersonal
Severe	Property deviance (A) Destruction of property	Personal aggression (B) Inappropriate verbal actions Inappropriate physical actions
Minor	Production deviance (C) Alcohol use Drug use Misuse of time and resources Poor attendance Poor quality work Theft and related behaviours	Political deviance (D) Misuse of information Unsafe behaviours

(Wu & LeBreton, 2011, p. 3)

MacLane and Walmsley (2010) adapted Gruys and Sackett's typology of counterproductive work behaviours as shown in Figure 2.4.

Table 2.5

Behaviour categories and examples of counterproductive work behaviours

Behaviour category	Example behaviours
Theft and related behaviour	Theft of cash or property; giving away of goods or services; misuse of employee discount
Destruction of property	Deface, damage, or destroy property; sabotage production
Misuse of information	Reveal confidential information; falsify records
Misuse of time and resources	Waste time, alter time card, conduct personal business during work time
Unsafe behaviour	Failure to follow safety procedures; failure to learn safety procedures
Poor attendance	Unexcused absence or tardiness; misuse sick leave
Poor quality work	Intentionally slow or sloppy work

Alcohol use	Alcohol use on the job; coming to work under the influence of alcohol
Drug use	Possess, use, or sell drugs at work
Inappropriate verbal actions	Argue with customers; verbally harass co-workers
Inappropriate physical actions	Physically attack co-workers; physical sexual advances toward co-worker

Note: Adapted from Gruys as reported by Sackett: (2002).

(MacLane & Walmsley, 2010, p. 65)

Neuman and Baron (1998) exclude behaviours such as armed robberies, domestic violence and terrorism from their definition of workplace aggression. They do not propose that these behaviours be ignored, but see no practical advantage or theoretical support for studying these acts as workplace aggression/violence. Along the same line, violence associated with the location and or nature of the work being performed would, in their opinion, be better conceptualised as “occupational violence” (Mullen, 1997) rather than as workplace violence. “Occupational violence” would include attacks by emotionally disturbed patients on healthcare professionals and assaults against law enforcement officers.

Baron (Neuman & Baron, 1998) proposed that human aggression at work takes place at three levels: (1) the use of offensive language, consistent arguing and aggression, spreading rumours or gossip and withholding of cooperation; (2) verbal threats and feelings of persecution, sabotage and intense arguments with co-workers, supervisors and customers; and (3) frequent demonstration of extreme anger leading to destruction of property, physical fights, use of weapons, suicidal threats and the commitment of rape and/or arson and murder. Mantell (Neuman & Baron, 1998) suggested a range of workplace violence that takes into account the extent to which employees are inclined to take part in covert (e.g. anonymous letter writing, vandalism), overt (e.g. intimidation), or dangerous acts (e.g. assault, sabotage). Neuman and Baron commented that, although these classification models are helpful in considering a wide range of aggressive acts that may occur in organisations, they are not based on extensive empirical research. However, they proposed a three-factor model of workplace aggression.

Deviant behaviour has the potential to harm organisations. The term deviant is normally used when referring to behaviour that violates significant norms, and is considered unacceptable, because it is believed that the behaviour poses a threat to the organisation or society. In keeping with this description, minor infractions of

social norms are not considered as deviance because they are not usually harmful to the organisation (Robinson & Bennett, 1995).

Neuman and Baron (1998, p. 393) distinguished between workplace aggression and workplace violence. They defined workplace aggression as “a general term encompassing all forms of behaviour by which individuals attempt to harm others at work or their organisations” and workplace violence as “... instances involving direct physical assaults”.

A relatively new area under investigation in the CWB domain is the misuse of information and communications technologies (ICTs). This includes behaviours such as internet surfing during working hours, computer fraud, identity theft, sexual harassment, interpersonal aggression, software piracy, illegal downloading, hacking or the unauthorised entry into other employees’ or managers’ computers, corporate databases or payroll and financial records (Weatherbee, 2010, p. 36).

Weatherbee (2010) categorised information and communications technologies (ICTs) as counterproductive work behaviours according to the Robinson and Bennett typology (see Figure 2.4). Their framework of cyber deviancy incorporates the distributive and mediating effects of ICTs, for example, workplace blogging may be conceptualised not only as property deviance but also as interpersonal aggression. Similarly, a harmful internal e-mail can be classified as political deviance, but if released to the public it can cause property deviance.

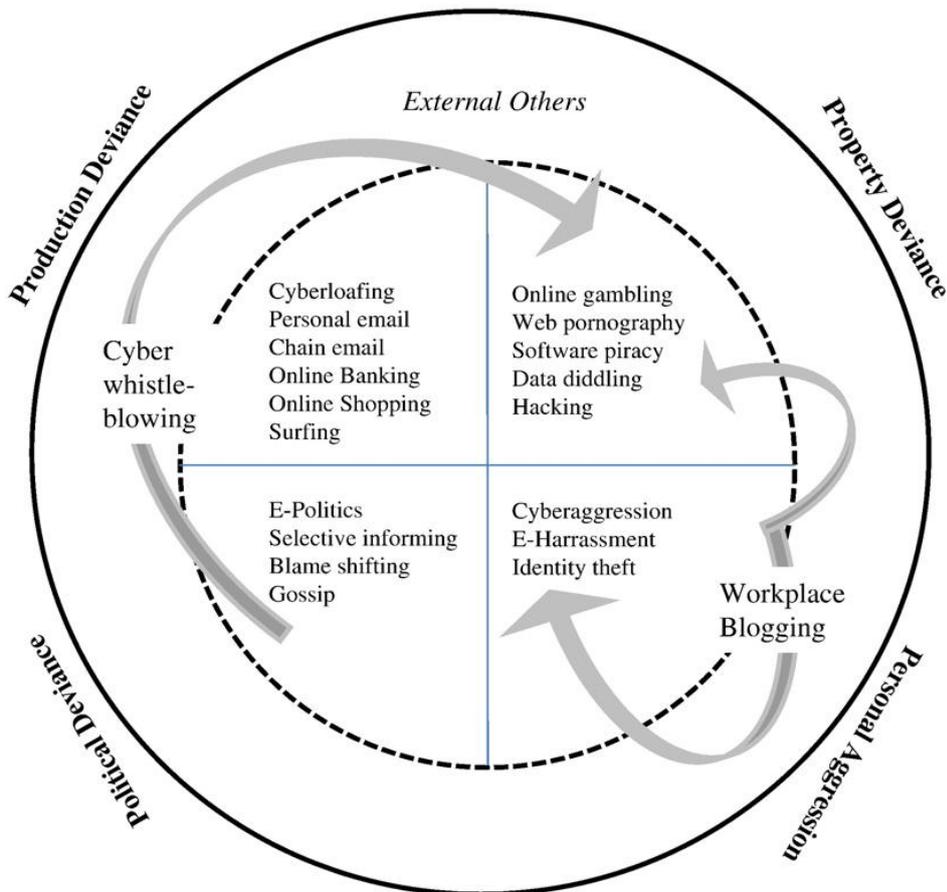


Figure 2.4: Cyber deviancy Typology and Effect-Shifts. Adapted from Robinson and Bennett (1995) and Weatherbee (2010, p.36).

Another form of CWB is the tendency of employees to spend time on non-work-related activities during working hours (time banditry). Martin, Brock, Buckley and Ketchen (2010) classify time bandits in terms of their level of engagement and productivity (see Figure 2.5).

		<i>Productivity</i>	
		Modest	Poor
<i>Engagement</i>	Modest	Weasel: Engaged-Productive	Sandbagger: Engaged-Unproductive
	Poor	Mercenary: Unengaged-Productive	Parasite: Unengaged-Unproductive

Figure 2.5: Types of time bandits

(Martin, Brock, Buckley and Ketchen Jr., 2010, p. 31)

2.1.5 The Measurement of Counterproductive Work Behaviour

Exploratory factor analysis by Neuman and Baron (1998) yielded thirty-three variables categorised in the following three dimensions: expressions of hostility, obstructionism, and overt aggression. Expressions of hostility comprise behaviours that are fundamentally symbolic or verbal in nature (e.g. facial expressions, gestures and verbal assaults). These behaviours cause emotional distress in the long run. Obstructionism refers to acts that are intended to hinder an individual's ability to perform his or her job adequately or inhibit an organisation to meet its objectives. A large percentage of these behaviours consists of passive types of aggression (withholding some resource or behaviour) and are therefore very difficult to trace. Overt aggression consists of behaviour that is normally associated with workplace violence such as workplace homicide, non-fatal physical or sexual assault, property damage and theft. The Three-factor model of workplace aggression (Neuman & Baron, 1998) is presented in Table 2.6.

Table 2.6

Three-factor Model of Workplace Aggression

Workplace Aggression Factors	Factor Loading	Ranking
Expressions of Hostility		
Staring, dirty looks, or other negative eye-contact	.73	8
Belittling someone's opinions to others	.66	4
Giving someone the silent treatment	.62	6
Negative or obscene gestures toward the target	.61	14
Talking behind the target's back/spreading rumours	.60	1
Interrupting others when they are speaking/working	.59	2
Intentionally damning with faint praise	.58	9
Holding target, or this person's work, up to ridicule	.57	17
Flaunting status/acting in a condescending manner	.56	3
Sending unfairly negative information to higher levels in company	.55	19
Leaving the work area when the target enters	.54	11
Delivering unfair/negative performance appraisals	.52	21
Failing to deny false rumours about the target	.51	12
Verbal sexual harassment	.50	7
Failing to object to false accusations about the target	.45	22
Obstructionism		
Failure to return phone calls or respond to memos	.69	5
Causing others to delay action on important matters	.68	16
Failing to warn the target of impending danger	.68	24
Showing up late for meetings run by target	.61	10
Failing to defend target's plans to others	.60	15
Interfering with or blocking the target's work	.55	23
Needlessly consuming resources needed by the target	.54	18
Direct refusal to provide needed resources or equipment	.54	25
Intentional work slowdowns	.52	20
Overt Aggression		
Attack with weapon	.74	33
Physical attack/assault (e.g. pushing, shoving, hitting)	.73	31
Theft/destruction of personal property belonging to target	.68	26
Threats of physical violence	.68	27
Failing to protect target's welfare or safety	.60	29

Damaging/sabotaging company property needed by target	.52	30
Steals/removes company property needed by target	.51	28
Destroying mail or messages needed by the target	.47	32

(Neuman and Baron, 1998, p. 396)

Aquino, Lewis and Bradfield (1999) developed a deviance measure consisting of thirty five behavioural items which tap into the organisational and interpersonal dimensions of workplace deviance. The results are presented in Table 2.7.

Table 2.7***Principal components analysis of deviance measures***

Item	Factor	
	Organizational deviance	Interpersonal deviance
1. Intentionally arrived late for work	0.62	-0.01
2. Called in sick when I was not really ill	0.56	0.20
3. Took undeserved breaks to avoid work	0.72	0.10
4. Made unauthorized use of organizational property	0.49	0.18
5. Left work early without permission	0.68	-0.07
6. Lied about the number of hours I worked	0.74	-0.02
7. Worked on a personal matter on the job instead of working for my employer	0.43	0.16
8. Purposely ignored my supervisor's instructions	0.49	0.18
9. Intentionally slowed down the pace of my work	0.44	0.44
10. Made an ethnic, racial, or religious slur against a co-worker	0.10	0.60
11. Swore at a co-worker	-0.00	0.76
12. Refused to talk to a co-worker	0.33	0.55
13. Gossiped about my supervisor	0.39	0.47
14. Made an obscene comment or gesture at a co worker	0.10	0.68
15. Teased a co-worker in front of other employees	-0.06	0.66
Eigenvalue	4.11	1.98
% of variance explained	27.4	13.2

(Aquino et al., 1999, p. 1082)

Spector, Fox, Penney, Bruursema, Goh and Kessler (2006) categorised counterproductive work behaviours as follows: sabotage, withdrawal, production deviance, theft and abuse (see Table 2.8).

Table 2.8***Counterproductive work behaviours by subscale and percentage reported***

CWB item number and item	Dimension	% ^a
Purposely wasted your employer's materials/supplies	Sabotage	29.8
Purposely damaged a piece of equipment or property	Sabotage	3.0
Purposely dirtied or littered your place of work	Sabotage	7.9
Came to work late without permission	Withdrawal	54.1
Stayed home from work and said you were sick when you were not	Withdrawal	49.9
Taken a longer break than you were allowed to take	Withdrawal	61.6
Left work earlier than you were allowed to	Withdrawal	43.0
Purposely did your work incorrectly	Production deviance	11.2
Purposely worked slowly when things needed to get done	Production deviance	29.2
Purposely failed to follow instructions	Production deviance	12.7
Stolen something belonging to your employer	Theft	11.8
Took supplies or tools home without permission	Theft	26.1
Put in to be paid for more hours than you worked	Theft	15.4
Took money from your employer without permission	Theft	3.5
Stole something belonging to someone at work	Theft	2.6
Told people outside the job what a lousy place you work for	Abuse	48.7
Started or continued a damaging or harmful rumour at work	Abuse	10.1
Been nasty or rude to a client or customer	Abuse	32.5
Insulted someone about their job performance	Abuse	26.0

Made fun of someone's personal life	Abuse	28.0
Ignored someone at work	Abuse	50.1
Blamed someone at work for error you made	Abuse	15.7
Started an argument with someone at work	Abuse	26.0
Verbally abused someone at work	Abuse	10.7
Made an obscene gesture (the finger) to someone at work	Abuse	18.5
Threatened someone at work with violence	Abuse	2.8
Threatened someone at work, but not physically	Abuse	6.4
Said something obscene to someone at work to make them feel bad	Abuse	8.5
Did something to make someone at work look bad	Abuse	8.1
Played a mean prank to embarrass someone at work	Abuse	7.0
Looked at private mail/property of someone at work without permission	Abuse	12.2
Hit or pushed someone at work	Abuse	3.4
Insulted or made fun of someone at work	Abuse	26.4

(Spector, Fox, Penney, Bruursema, Goh and Kessler, 2006, p. 456)

Another form of CWB which receives increasing attention is bullying, an umbrella term used to conceptualise various manifestations of hostile behaviour and ill-treatment toward people at work. Fox and Stallworth (2005) distinguished between general bullying and ethnic bullying. The distinction between these two forms of bullying was supported by explanatory factor analysis (see Table 2.9). Ho (2012) further categorised interpersonal counterproductive work behaviour (ICWB) into task-focused and person-focused, as depicted in Table 2.10

Table 2.9

Frequency of respondents reporting experience of general and racial/ethnic bullying behaviours, and factor loadings

	% experiencing it at all	% quite or extremely often	Factor loading	
			General	Racial
<i>General bullying behaviour</i>				
Made aggressive or intimidating eye contact or physical gestures (e.g. finger pointing, slamming objects, obscene gestures)	47.9	8.3	.64	.08
Gave you the silent treatment	66.0	16.6	.53	.26
Limited your ability to express an opinion	59.6	16.2	.63	.20
Situated your workspace in a physically isolated location	17.7	5.7	.42	.36
Verbal abuse (e.g. yelling, cursing, angry outbursts)				
Demeaned you in front of co-workers or clients	51.3	9.4	.62	.03
Gave excessively harsh criticism of your performance	47.6	7.6	.74	.11
Spread false rumours about your personal life	43.8	9.4	.71	.28
Spread false rumours about your work performance				
Repeated things to others that you had confided	18.9	1.9	.37	.22
Made unreasonable work demands	39.6	7.2	.71	.26
Intentionally withheld necessary information from you	40.4	5.7	.47	.20
Took credit for your work	46.4	14.0	.62	.05
Blamed you for errors for which you were not responsible	58.1	20.4	.72	.35
Applied rules and punishments inconsistently				
Threatened you with job loss or demotion	58.1	18.1	.57	.26
Insulted you or put you down	53.2	14.7	.79	.23
Interrupted you while you were speaking				
Flaunted his/her status over you in a condescending manner	49.8	17.7	.73	.18
Intentionally left the area when you entered	24.2	5.3	.47	.25
Failed to return your phone calls, e-mails, etc.	40.4	9.1	.72	.17
Left you out of meetings or failed to show up for your meetings for no legitimate reason	76.2	19.3	.61	.11
Attacked or failed to defend your plans to others	50.9	13.6	.76	.16
Intentionally destroyed, stole, or sabotaged your work materials	28.7	5.7	.48	.27
Intentionally gave you no work or assignments below your job description—omit	42.6	6.0	.38	.16
	44.9	7.2	.52	.39
	42.6	11.3	.71	.34
	15.5	3.0	.50	.28

<i>Racial/ethnic bullying: Based on race or ethnicity</i>				
Made derogatory comments about your racial or ethnic group	33.2	7.2	.41	.46
Told jokes about your racial or ethnic group				
Used racial or ethnic slurs to describe you				
Excluded you from social interactions during or after work because of your race or ethnicity	15.5	1.1	.10	.71
Failed to give you information you needed to do your job because of your race or ethnicity	18.9	1.1	.03	.72
Made racist comments (for example, says people of your ethnicity aren't very smart or can't do the job)	7.6	0.8	.22	.41
Made you feel as if you have to give up your racial or ethnic identity to get along at work	18.9	4.9	.19	.64
	15.1	3.8	.28	.63
	15.9	1.1	.12	.69
	20.8	6.8	.19	.66

(Fox and Stallworth, 2005, p. 444)

Table 2.10***Factor loadings of ICWB items***

Item	Factor loadings	
	Task-focused ICWB	Person-focused ICWB
1. Failed to return someone's phone calls or respond to memos	.44	.03
2. Failed to defend someone's plans to others	.53	.26
3. Failed to warn someone of upcoming work problems or issues	.54	.12
4. Delayed work to make someone look bad or slow someone down	.57	-.08
5. Caused others to delay action to slow someone down	.55	.09
6. Repeatedly interrupted someone while he/she worked or spoke	.62	.02
7. Created unnecessary work for someone to do	.49	.09
8. Withheld or prevented someone's access to needed information	.41	.17
9. Refused to provide needed resources (e.g., equipment, supplies) to someone	.42	.08
10. Damaged or sabotaged resources that someone needed	.66	.00
11. Stole, removed, or hid resources that someone needed	.40	.18
12. Gave incorrect or misleading information to someone	.24	.29
13. Unnecessarily used resources that someone needed	.28	.21
14. Deliberately ignored someone	.23	.38
15. Acted rudely to someone	.11	.47
16. Started or continued a harmful rumor about someone	.19	.61
17. Made a religious, racial, or ethnic remark against someone	.10	.35
18. Insulted or made fun of someone	.11	.60
19. Started an argument with someone	.03	.22
20. Made an obscene gesture or comment to someone	.12	.56
21. Publicly teased or embarrassed someone	.10	.41
22. Looked at someone's private mail or property without permission	.05	.43
23. Threatened someone, but not physically	.03	.58
24. Threatened someone with physical violence	-.07	.72
25. Hit or pushed someone	-.01	.62
% of Variance explained	20.33	11.67

*Numbers in bold indicate dominant factor loadings

(Ho, 2012, p. 8)

Peng (2012) identified six factors underlying Chinese workers' counterproductive behaviour. Knowledge workers are defined as employees who use theoretical and analytical knowledge obtained through formal education to develop new products or services, and new continuous learning (see Table 2.11). The table indicates that knowledge workers' CWB can be treated as a six-dimensional construct.

Table 2.11

Confirmatory factor analysis for the Chinese knowledge workers' counterproductive work behaviour measure (N = 161)

		1	2	3	4	5	6
1. Unethical behaviour	Sell important company information for personal gain.	.79					
	Steal others' information and products.	.72					
	Use personal knowledge and technology to threaten company.	.75					
	Provide others incorrect information.	.79					
	Impede others from finishing their tasks by using professional skills.	.72					
2. Resistant behaviour	Disobey supervisor's instructions.		.71				
	Conflict with supervisor or peers.		.70				
	Obeys superior's instructions passively.		.70				
	Quarrel with other departments.		.65				
3. Loophole seeking	Lower your performance levels to satisfy ambiguous performance standard minimums.			.92			
	Work slackly on tasks that are difficult to evaluate.			.88			
	Intentionally reduce efficiency.			.84			
4. Passive obedience	Go along with supervisor's direction and never express your professional opinion.				.66		
	Reluctant to innovate.				.95		
	Act according to established rules, standards, and procedures without analysing problems for better solutions.				.78		
	Reluctant to take on more responsibility.				.74		
5. Knowledge withholding	Do not want to transform personal knowledge and experience into organisational knowledge.					.77	
	Do not share innovative achievements.					.77	
	Do not share helpful information with others.					.78	
6. Storytelling	Hide mistakes at work.						.82
	Make excuses for mistakes at work.						.87
	Make false statements about your workload.						.86
Reliability	(Cronbach's alpha)	.97	.89	.93	.82	.91	.93

(Peng, 2012, p. 125)

Credé and Niehorster (2009) analysed Hakstian, Farrell and Tweed's measure of counterproductive student behaviours and found the factors reported in Table 2.12. The results indicated that the two factors are behaviours that cause harm to the self and behaviours that cause harm to others.

Table 2.12

Factor loadings for subscales of Hakstian, Farrell and Tweed's (2002) measure of counterproductive student behaviours

Variable	Factor	
	1	2
CP cheating	.950	-.141
CP misrepresentation	.771	-.002
CP petty personal gain	.574	.083
CP property theft	.458	.162
CP duplicity	.445	.041
CP low personal standards	-.102	.832
CP indolence	.110	.661
CP substance abuse	.045	.640
CP work avoidance	.056	.506

Note: Pattern Matrix factor loadings from factor analysis with principal axis factoring and oblimin rotation

(Credé and Niehorster, 2009, p. 772)

Stewart, Bing, Davison, Woehr and McIntyre (2009) conducted a factor analysis of Bennett and Robinson's 28-Self-Report deviance items and found three factors, i.e. production deviance, property deviance and personal aggression (see Table 2.13).

Table 2.13

Study 1 – Factor Loadings from Principal Axis Factoring with Promax Oblique Rotation of 28 Workplace Deviance Items

Item	Production deviance	Property deviance	Personal aggression
<i>Put little effort into their work.</i>	.81	.41	
<i>Intentionally worked slower than they could have worked.</i>	.78	.47	
<i>Spent too much time fantasising or daydreaming instead of working.</i>	.74	.45	
<i>Taken an additional or a longer break than is acceptable at their workplace.</i>	.73		.49
<i>Left their work for someone else to finish.</i>	.72	.44	.40
<i>Worked on a personal matter instead of working for [company name].</i>	.64		
<i>Came in late to work without permission.</i>	.52		
<i>Took property from work without permission.</i>	.47	.78	.40
<i>Used an illegal drug or consumed alcohol on the job.</i>		.75	
<i>Falsified a receipt to get reimbursed for more money than they spent on business expenses.</i>		.67	
<i>Played a mean prank on someone at work.</i>	.49	.67	.44
<i>Said something hurtful to someone at work.</i>	.42	.43	.85
<i>Acted rudely toward someone at work.</i>	.47		.83
<i>Lost their temper while at work.</i>	.45	.42	.66
<i>Made fun of someone at work.</i>	.45	.40	.56
<i>Left work early without permission.</i>	.64	.68	
<i>Neglected to follow their boss's instructions.</i>	.68	.52	.46
<i>Dragged out work in order to get overtime.</i>	.62	.56	
<i>Called in sick when they were not.</i>	.60	.61	
<i>Littered or dirtied their work environment.</i>	.56	.47	
<i>Repeated a rumor or gossip about a co-worker or manager at work.</i>	.54		.52
<i>Discussed confidential company information with an unauthorised person.</i>	.54	.67	.47
<i>Repeated a rumor or gossip about the company.</i>	.52	.42	.53
<i>Told someone about the lousy place where they work.</i>	.49	.56	.50
<i>Make an ethnic, religious, or racial remark or joke at work.</i>	.47	.51	.49
<i>Made an obscene comment at work.</i>	.46	.54	.52
<i>Publicly embarrassed someone at work.</i>	.41	.52	.70
<i>Cursed at someone at work.</i>	.40	.54	.55

Note: Items in italics were retained. Italicised numbers indicate dominant factor loadings. Loadings less than .40 were omitted. N = 1,154. Items adapted from "Development of a Measure of Workplace Deviance" by R.J. Bennett and S.L. Robinson, 2000. *Journal of Applied Psychology*, 85. Copyright 2000 by the American Psychological Association.

(Stewart, Bing, Davison, Woehr and McIntyre, 2009, p. 211)

According to Stewart *et al.* (2009), a three-factor structure provides the best representation of the underlying CWB construct and how organisational members perceive the deviant behaviours of others and this fits well with the bulk of Robinson and Bennett's (1995) four-category typology for workplace deviance. This suggests that perceptions of others' acts of workplace deviance are structured differently (i.e., in three factors), compared to self-perceptions (i.e., self-reports) because only two factors were found by Bennett and Robinson (2000).

Bennett and Robinson (2000) proposed that deviance may be distributed along a continuum of seriousness, from minor manifestations of deviance to more serious ones. This, however, is more of a quantitative than qualitative differentiation. Therefore, though one would believe that interpersonal and organisational deviance can be classified into separate families or clusters delineating two qualitatively dissimilar forms of deviance, both families of deviance include minor as well as serious forms of deviance. Minor and serious manifestations of deviance do not on their own indicate two distinct types of deviance.

Fox, Spector and Miles (as cited in Spector & Fox, 2002) gathered data from several earlier studies and compiled an extensive list of counterproductive work behaviours. Factor analysis yielded five dimensions, i.e. work sabotage (working incorrectly); overt acts (theft); abuse of others (e.g. insults and nasty comments); threats (threatening harm); and work avoidance (e.g. tardiness). Abuse of others and threats target people, work avoidance and work sabotage target organisations and overt acts target both individuals and organisations.

Marcus, Schuler, Quell and Humpfner (2002) developed and validated a self-report measure of counterproductivity. The instrument consists of subscales for dissimilar targets of counterproductive work behaviour (interpersonal and organisational deviance), as well as subscales for different forms of counterproductivity (absenteeism, substance use, aggression and theft individually). They concluded that counterproductive work behaviour can best be understood as a higher order behavioural construct that loads on sub-dimensions with unique variance. Sackett (2002) came to a similar conclusion. According to him, self-report, other report and direct judgements of counterproductivity confirm the concept of positive relationships

between various forms of counterproductivity. Self-report data show positive correlations of about 0.30 between individual forms of counterproductivity, but higher correlations of approximately 0.50 between composites of associated behaviour, a conclusion repeated with data where supervisory ratings were used (Sackett, 2002, p. 8). Sackett (2002) stated that it seems logical to consider an all-inclusive counterproductivity construct because the true score correlation between Bennett and Robinson's facets of interpersonal and organisational deviance is 0.86. Gruys' eleven behavioural domains of counterproductivity yielded a grand overall composite reliability of 0.92 and Hunt found a reliability of 0.83 across five behavioural domains. Sackett (2002) suggested a hierarchical model consisting of a composite counterproductivity factor at the top, a set of group factors, like interpersonal deviance and organisational deviance, and further down specific behaviour domains such as absence, safety, theft and drug and alcohol abuse. Practitioners and researchers may concentrate at separate levels of such a hierarchy for different purposes.

In their study, Gruys and Sackett (2003) compiled a list of more than two hundred and fifty counterproductive work behaviours, based on a literature study. The behaviours were sorted into eleven categories based on the similarity of the behaviours. The categories were as follows:

1. Theft and related behaviour
2. Destruction of property
3. Misuse of information
4. Misuse of time and resources
5. Unsafe behaviour
6. Poor attendance
7. Poor quality work
8. Alcohol use
9. Drug use
10. Inappropriate verbal actions
11. Inappropriate physical actions

The above categories and individual behaviours are listed in Table 2.14.

Table 2.14***Descriptive statistics for counterproductive work behaviour categories and items***

Category and Items	Number of items	Alpha Estimate	Composite Mean	Mean	Std. Dev.
Theft and Related Behaviour	10	.77	1.71		
Help another person or advise them how to take company property or merchandise.				1.15	0.52
Take cash or property belonging to the company.				1.66	1.12
Misuse business expense account.				1.55	0.99
Take cash or property belonging to a co-worker.				1.06	0.30
Take office supplies from the company.				2.76	1.65
Take petty cash from the company.				1.15	0.55
Take cash or property belonging to a customer.				1.06	0.25
Give away goods or services for free.				2.97	1.82
Provide goods or services at less than the price established by the company.				1.89	1.39
Misuse employee discount privileges.				1.82	1.23
Destruction of Property	4	.66	1.11		
Deface, damage, or destroy property belonging to a co-worker.				1.10	0.39
Deface, damage, or destroy property belonging to a customer.				1.07	0.29
Deface, damage, or destroy property, equipment, or product belonging to the company.				1.17	0.47
Deliberately sabotage the production of product in the company.				1.09	0.44
Misuse of Information	5	.71	1.57		
Destroy or falsify company records or documents.				1.34	0.68
Discuss confidential matters with unauthorised personnel within or outside the organisation.				2.06	1.29
Intentionally fail to give a supervisor or co-worker necessary information.				1.57	0.93
Provide the organisation with false information to obtain job (i.e. regarding education or experience).				1.20	0.51
Lie to employer or supervisor to cover up a mistake.				2.72	1.49
Misuse of Time and Resources	13	.90	2.81		
Conduct personal business during work time.				3.41	1.80
Spend time on the internet for reasons not related to work.				3.47	1.99
Take a long lunch or coffee break without approval.				3.12	1.98
Waste time on the job.				2.89	1.49
Waste company resources.				1.93	1.07
Use company resources you aren't authorised to use.				2.08	1.26
Make personal long distance calls at work.				2.86	1.85
Mail personal packages at work.				2.21	1.70
Make personal photocopies at work.				4.28	1.95
Use email for personal purposes.				4.66	2.17
Play computer games during work time.				2.14	1.58
Alter time card to get paid for more hours than you worked.				1.41	0.88
Work unnecessary overtime.				2.02	1.57
Unsafe Behaviour	4	.71	1.97		
Endanger yourself by not following safety procedures.				1.94	1.15
Endanger co-workers by not following safety procedures.				1.34	0.65
Endanger customers by not following safety				1.31	0.62

procedures.					
Fail to read the manual outlining safety procedures.			3.28	1.66	
Poor Attendance	5	.77	2.06		
Be absent from work without a legitimate excuse.			1.87	1.30	
Intentionally come to work late.			1.86	1.32	
Use sick leave when not really sick.			2.70	1.80	
Leave work early without permission.			2.59	1.77	
Miss work without calling in.			1.25	0.69	
Poor Quality Work	3	.86	1.37		
Intentionally perform your job below acceptable standards.			1.34	0.76	
Intentionally do work badly or incorrectly.			1.24	0.63	
Intentionally do slow or sloppy work.			1.51	0.88	
Alcohol Use	3	.59	1.35		
Come to work under the influence of alcohol.			1.11	0.49	
Have your performance affected due to a hangover from alcohol.			1.48	0.91	
Engage in alcohol consumption on the job.			1.44	1.06	
Drug Use	4	.71	1.04		
Engage in drug use on the job.			1.03	0.16	
Come to work under the influence of drugs.			1.04	0.22	
Possess or sell drugs on company property.			1.02	0.15	
Have your performance affected due to a hangover from drugs.			1.07	0.33	
Inappropriate Verbal Actions	8	.82	1.83		
Argue or fight with a co-worker.			2.89	1.41	
Yell or shout on the job.			1.91	1.06	
Verbally abuse a customer.			1.29	0.65	
Verbally abuse a co-worker.			1.41	0.84	
Verbally abuse a supervisor.			1.27	0.72	
Use sexually explicit language in the workplace.			1.84	1.28	
Argue or fight with a supervisor.			2.28	1.38	
Argue or fight with a customer.			1.65	0.96	
Inappropriate Physical Actions	7	.82	1.08		
Physically attack (e.g. pushing, shoving, hitting) a co-worker.			1.11	0.33	
Physically attack (e.g. pushing, shoving, hitting) a customer.			1.04	0.20	
Physically attack (e.g. pushing, shoving, hitting) a supervisor.			1.06	0.27	
Make unwanted sexual advances toward a subordinate.			1.11	0.49	
Make unwanted sexual advances toward a supervisor.			1.07	0.36	
Make unwanted sexual advances toward a co-worker.			1.10	0.44	
Make unwanted sexual advances toward a customer.			1.07	0.28	

Note: The composite means are reported as a mean item for comparability.

(Gruys and Sackett, 2003, pp. 34-35)

The correlations between the categories of counterproductive work behaviours ranged from 0.17 to 0.71 and were all positive and significant at the $p < .01$ level. The average correlation was 0.43, which is close to the correlation of 0.46 (uncorrected) between interpersonal and organisational deviance reported by Bennett and Robinson (2000). Gruys and Sackett (2003) selected a one-factor

solution and found that all categories of counterproductive work behaviour loaded highly on one factor (see Table 2.15). The results, therefore, propose a powerful common dimension, i.e. general counterproductive work behaviour. These results indicate that, as the probability of an individual taking part in a particular counterproductive work behaviour increases, the probability of that individual taking part in a broad variety of other kinds of counterproductive work behaviour also rises.

Table 2.15

Alumni sample factor loadings for principal components analysis of counterproductive work behaviour categories

One Factor Solution	
Category	Factor Loading
Misuse of Information	.87
Theft and Related Behaviour	.83
Misuse of Time and Resources	.82
Poor Attendance	.76
Inappropriate Verbal Actions	.74
Destruction of Property	.71
Poor Quality Work	.70
Unsafe Behaviour	.63
Inappropriate Physical Actions	.60
Alcohol Use	.53
Drug Use	.48

(Gruys & Sackett, 2003, p. 38)

Using their empirical support for the eleven categories of counterproductive work behaviour, Gruys and Sackett (2003) analysed the co-occurrence of these categories of behaviours. They found two dimensions, i.e. an interpersonal-organisational dimension, similar to the interpersonal dimension suggested in Robinson and Bennett's (1995) typology and a task-relevant dimension. This latter dimension includes positive behaviours such as attendance, high quality work, using time and resources responsibly, and not taking part in activities that would endanger themselves or others (safety, alcohol and drug use). This dimension also includes negative behaviours that are not associated with tasks executed within the job context. Misuse of information, misuse of property, theft and related behaviour and inappropriate verbal and physical actions and interpersonal actions can all be seen as distinct, to a degree, from specific work activities that must be performed within jobs.

Gruys and Sackett's (2003) two-dimensional structure is different from Robinson and Bennett's (1995) two-dimensional typology. The one dimension, interpersonal-

organisational is similar to the same dimension determined by Robinson and Bennett, but the other is different. The other dimension found by Robinson and Bennett was a minor-serious dimension in comparison to Gruys and Sackett's (2003) dimension of task relevance.

The findings by Gruys and Sackett (2003) and other researchers, such as Robinson and Bennett, emphasise the need to be careful in reaching conclusions regarding the dimensionality of counterproductive work behaviour.

The research by Robinson and Bennett (2000) is an example of a self-report strategy. In this study, the mean correlation between organisational deviance items is 0.26 and the mean correlation between interpersonal deviance items is 0.34 (Sackett, *et al.*, 2001, p. 148).

2.1.6 Relationship among Counterproductive Work Behaviours

Ones and Viswesvaran (2003) estimated the relationships between individual item measures of counterproductive behaviours reported in the literature and composite measures of CWB and dimensions of CWB (see Table 2.16).

Table 2.16

Mean correlations among single, individual behaviours of counter productivity

<i>Variable</i>	<i>Study</i>	<i>Number of items</i>	<i>Internal consistency reliability</i>	<i>Mean correlation among CWB</i>
<i>Overall CWB measures</i>				
CWB	Duffy <i>et al.</i> (1998)	6	.71	0.29
CWB	Kelloway <i>et al.</i> (2002)	10	.72	0.20
CWB	Lee and Allen (2002)	23	.82	0.17
CWB	Miles <i>et al.</i> (2002)	45	.90	0.17
CWB	Penney and Spector (2002)	19	.96	0.56
			Mean (SD)	0.28 (.17)
<i>Dimensions and facets of CWB</i>				
Organizational deviance	Ashton (1998)	8	.77	0.30
Organizational deviance	Marcus <i>et al.</i> (2002)	32	.85	0.15
Organizational deviance	Bennett and Robinson (2000)	12	.81	0.26
Organizational retaliatory behaviour	Skarlicki and Folger (1997)	17	.97	0.66
			Mean (SD)	0.34 (.22)
Interpersonal deviance	Marcus <i>et al.</i> (2002)	16	.70	0.13
Interpersonal deviance	Bennett and Robinson (2000)	7	.78	.034
			Mean (SD)	0.23 (.15)
Interpersonal aggression	Chen and Spector (1992)	3	.80	0.57
Aggression	Marcus <i>et al.</i> (2002)	9	.73	0.23
Workplace aggression and conflict	Jockin <i>et al.</i> (2001)	4	.59	0.26
Antagonistic work behaviours	Lehman and Simpson (1992)	5	.60	0.23
Inappropriate verbal actions	Gruys (1999)	8	.82	0.36
Inappropriate physical actions	Gruys (1999)	7	.82	0.39
Hostility and complaints	Chen and Spector (1992)	6	.85	0.69

(Ones & Viswesvaran, 2003, p. 215)

Ones and Viswesvaran (2003, pp. 214-217) reported that individual indices of counterproductive work behaviour frequently used in omnibus measures of overall CWB correlate on average at 0.28 (SD = 0.17) (see Table 2.16). This indicates that single acts of counter-productivity correlate positively and significantly with each other. Individual behaviours that constitute organisationally focused counterproductive behaviours correlate on average at 0.34 (SD = 0.22). Specific antagonistic, hostile and aggressive acts correlate at 0.39 (SD = 0.14). Individual behavioural indices of absenteeism/withdrawal and substance abuse have mean correlations of 0.34 (SD = 0.09 for each). Items that measure having low personal standards at work and poor quality work correlate at 0.48 (SD = 0.27). Interpersonal deviance and theft related behaviour correlate at 0.23 (SD = 0.15). The somewhat lower correlations of the latter indicate that these measures tend to incorporate more diverse sets of items (Ones & Viswesvaran, 2003).

Different facets of counterproductivity correlate on average at 0.34 (SD = 0.14) (Ones & Viswesvaran, 2003, p. 217). Ones and Viswesvaran compared the magnitude of this correlation with other individual difference variables in psychology. In the domain of personality psychology, items that comprise scales such as extraversion, conscientiousness and agreeableness correlate on average at 0.12 to 0.18. Thus, the behaviours that underlie current CWB scales correlate approximately twice as highly as items measuring personality traits. Alternatively, the behaviours that comprise current CWB scales may be narrower in their specification of the domain of CWB.

Ones and Viswesvaran (2003) stated that single measures are inherently unreliable and construct-deficient because they do not completely evaluate relationships among facets of CWB at construct level.

Ones and Viswesvaran assessed the relationship between the absenteeism/withdrawal construct and other facets of CWB. The results are presented in Table 2.17.

Table 2.17**Relations of absenteeism/withdrawal and related constructs with other CWB**

Correlate	Absenteeism/withdrawal and related constructs	Study	N	R	rho
Aggression	Absenteeism/withdrawal	Marcus <i>et al.</i> (2002)	174	0.49	0.66
Alcohol use	Misuse of time & resources	Gruys (1999)	363	0.40	0.55
Alcohol use	Poor attendance	Gruys (1999)	363	0.29	0.43
Antagonistic work behaviours	Physical withdrawal	Lehman & Simpson (1992)	1,070	0.38	0.64
Antagonistic work behaviours	Psychological withdrawal	Lehman & Simpson (1992)	1,070	0.26	0.37
Destruction of property	Misuse of time & resources	Gruys (1999)	363	0.43	0.56
Destruction of property	Poor attendance	Gruys (1999)	363	0.38	0.53
Drug misuse ¹	Engaging in off-task behaviours	Hunt (1996) ¹	1,818	-	0.42
Drug misuse ¹	Tardiness/absenteeism	Hunt (1996) ¹	1,827	-	0.26
Drug use	Misuse of time & resources	Gruys (1999)	363	0.21	0.26
Drug use	Poor attendance	Gruys (1999)	363	0.27	0.37
Engaging in off-task behaviours ¹	Tardiness/absenteeism	Hunt (1996) ¹	5,931	-	0.76
Inappropriate physical actions	Misuse of time & resources	Gruys (1999)	363	0.36	0.42
Inappropriate physical actions	Poor attendance	Gruys (1999)	363	0.31	0.39
Inappropriate verbal actions	Misuse of time & resources	Gruys (1999)	363	0.54	0.63
Inappropriate verbal actions	Poor attendance	Gruys (1999)	363	0.47	0.59
Lateness ¹	Total absences	Koslowsky <i>et al.</i> (1997) ¹	8,013	0.29	0.40
Lateness ¹	Voluntary absences	Koslowsky <i>et al.</i> (1997) ¹	8,013	0.29	0.41
Low personal standards	Work avoidance	Hakstian <i>et al.</i> (2002)	1,019	0.31	0.44
Misuse of information	Misuse of time & resources	Gruys (1999)	363	0.71	0.89
Misuse of information	Poor attendance	Gruys (1999)	363	0.64	0.87
Misuse of time & resources	Poor attendance	Gruys (1999)	363	0.76	0.91
Poor attendance	Misuse of time & resources	Gruys (1999)	363	0.76	0.91
Poor-quality work	Misuse of time & resources	Gruys (1999)	363	0.50	0.57
Poor-quality work	Poor attendance	Gruys (1999)	363	0.53	0.65
Psychological withdrawal	Physical withdrawal	Lehman & Simpson (1992)	1,070	0.43	0.62
Substance abuse	Work avoidance	Hakstian <i>et al.</i> (2002)	1,019	0.13	0.17
Substance use	Absenteeism/withdrawal	Marcus <i>et al.</i> (2002)	174	0.58	0.83
Theft	Misuse of time & resources	Gruys (1999)	363	0.74	0.89
Theft	Poor attendance	Gruys (1999)	363	0.63	0.82
Theft of property	Work avoidance	Hakstian <i>et al.</i> (2002)	1,019	0.17	0.27
Theft/property violations	Absenteeism/withdrawal	Marcus <i>et al.</i> (2002)	174	0.40	0.68
Theft ¹	Engaging in off-task behaviours	Hunt (1996) ¹	2,280	-	0.70
Theft ¹	Tardiness/absenteeism	Hunt (1996) ¹	2,289	-	0.52
Unruliness ¹	Engaging in off-task behaviours	Hunt (1996) ¹	2,839	-	0.71
Unruliness ¹	Tardiness/absenteeism	Hunt (1996) ¹	4,102	-	0.66
Unsafe behaviour	Misuse of time & resources	Gruys (1999)	363	0.48	0.60
Unsafe behaviour	Poor attendance	Gruys (1999)	363	0.37	0.50
		Unit weighted mean		0.44	0.58

Note: rho = true score correlation (i.e. observed correlation corrected for unreliability in both measures). ¹ Data from multiple data sets or from meta-analyses.

(Ones & Viswesvaran, 2003, pp. 218-219)

The last column of Table 2.17 shows that there is a strong relationship between absenteeism/withdrawal from work and aggression, substance abuse, lateness, misuse of information, unruliness, and unsafe behaviour. The average correlation between absenteeism/withdrawal and other CWB is 0.58.

Aggression and antagonistic and violent acts at work represent another facet of CWB. The relationship between these constructs and other dimensions of CWB are reviewed in Table 2.18.

Table 2.18**Relations of antagonistic behaviours/aggression/violence and related behaviours with other CWB**

<i>Correlate</i>	<i>Aggression/violence and related constructs</i>	<i>Study</i>	<i>N</i>	<i>r</i>	<i>rho</i>
Absenteeism/withdrawal	Aggression	Marcus <i>et al.</i> (2002)	174	0.49	0.66
Alcohol use	Inappropriate physical actions	Gruys (1999)	363	0.29	0.42
Alcohol use	Inappropriate verbal actions	Gruys (1999)	363	0.39	0.56
Destruction of property	Inappropriate physical actions	Gruys (1999)	363	0.59	0.80
Destruction of property	Inappropriate verbal actions	Gruys (1999)	363	0.52	0.71
Drug use	Inappropriate physical actions	Gruys (1999)	363	0.38	0.50
Drug use	Inappropriate verbal actions	Gruys (1999)	363	0.27	0.35
Hostility and complaints	Interpersonal aggression	Chen & Spector (1992)	387	0.56	0.68
Misuse of information	Inappropriate physical actions	Gruys (1999)	363	0.42	0.55
Misuse of information	Inappropriate verbal actions	Gruys (1999)	363	0.57	0.75
Misuse of time & resources	Inappropriate physical actions	Gruys (1999)	363	0.36	0.42
Misuse of time & resources	Inappropriate verbal actions	Gruys (1999)	363	0.54	0.63
Tardiness/absenteeism ¹	Unruliness	Hunt (1996) ¹	4,102	-	0.66
Theft	Inappropriate physical actions	Gruys (1999)	363	0.42	0.53
Theft	Inappropriate verbal actions	Gruys (1999)	363	0.55	0.69
Theft/property violations	Aggression	Marcus <i>et al.</i> (2002)	174	0.39	0.67
Unsafe behaviour	Inappropriate physical actions	Gruys (1999)	363	0.24	0.31
Unsafe behaviour	Inappropriate verbal actions	Gruys (1999)	363	0.47	0.62
		Unit weighted mean		0.42	0.55

Note: rho = true score correlation (i.e. observed correlation corrected for unreliability in both measures). ¹ Data from multiple data sets or from meta-analyses

(Ones & Viswesvaran, 2003, pp. 221)

There is a significant correlation between aggressive/violent acts and other facets of CWB. Substance abuse, theft, unsafe behaviours, absenteeism, doing poor quality work, etc. have a substantial positive correlation with aggressive/violent behaviours at work. The average correlation between antagonistic behaviours/aggression/violence and other CWB is 0.55.

The relationship between substance abuse and other facets of CWB are reviewed in Table 2.19. Table 2.19 indicates a positive correlation between substance abuse and other forms of CWB. These aspects of CWB cover aggression, absenteeism, low personal standards, misuse of information, poor quality work, unruliness and unsafe behaviour. The average correlation between substance abuse and other facets of CWB is 0.44.

Table 2.19

Relations of substance abuse and related behaviours with other CWB

Correlate	Substance abuse and related constructs	Study	N	r	Rho
Absenteeism/withdrawal	Substance abuse	Marcus <i>et al.</i> (2002)	174	0.58	0.83
Aggression	Substance abuse	Marcus <i>et al.</i> (2002)	174	0.32	0.47
Alcohol use	Drug use	Gruys (1999)	363	0.28	0.43
Destruction of property	Alcohol use	Gruys (1999)	363	0.30	0.48
Destruction of property	Drug use	Gruys (1999)	363	0.44	0.64
Drug use	Alcohol use	Gruys (1999)	363	0.28	0.43
Engaging in off-task behaviours ¹	Drug misuse	Hunt (1996) ¹	1,818	-	0.42
Inappropriate physical actions	Alcohol use	Gruys (1999)	363	0.29	0.42
Inappropriate physical actions	Drug use	Gruys (1999)	363	0.38	0.50
Inappropriate verbal actions	Alcohol use	Gruys (1999)	363	0.39	0.56
Inappropriate verbal actions	Drug use	Gruys (1999)	363	0.27	0.35
Low personal standards	Substance abuse	Hakstian <i>et al.</i> (2002)	1,019	0.19	0.23
Misuse of information	Alcohol use	Gruys (1999)	363	0.35	0.54
Misuse of information	Drug use	Gruys (1999)	363	0.29	0.41
Misuse of time & resources	Alcohol use	Gruys (1999)	363	0.40	0.55
Misuse of time & resources	Drug use	Gruys (1999)	363	0.21	0.26
Poor attendance	Alcohol use	Gruys (1999)	363	0.29	0.43
Poor attendance	Drug use	Gruys (1999)	363	0.27	0.37
Poor-quality work	Alcohol use	Gruys (1999)	363	0.20	0.28
Poor-quality work	Drug use	Gruys (1999)	363	0.38	0.49
Property theft	Substance abuse	Hakstian <i>et al.</i> (2002)	1,019	0.21	0.29
Tardiness/absenteeism ¹	Drug misuse	Hunt (1996) ¹	1,827	0.26	0.33
Theft	Alcohol use	Gruys (1999)	363	0.38	0.56
Theft	Drug misuse	Hunt (1996) ¹	1,701	-	0.52
Theft	Drug use	Gruys (1999)	363	0.27	0.37
Theft/property violations	Substance abuse	Marcus <i>et al.</i> (2002)	174	0.38	0.70
Unruliness ¹	Drug misuse	Hunt (1996) ¹	2,051	-	0.44
Unsafe behaviour	Alcohol use	Gruys (1999)	363	0.33	0.51
Unsafe behaviour	Drug use	Gruys (1999)	363	0.17	0.24
Work avoidance	Substance abuse	Hakstian <i>et al.</i> (2002)	1,019	0.13	0.17
		Unit weighted mean		0.30	0.44

Note: *rho* = true score correlation (i.e. observed correlation corrected for unreliability in both measures). ¹ Data from multiple data sets or from meta-analyses.

(Ones and Viswesvaran, 2003, pp. 222-223)

Ones, Viswesvaran and Schmidt (as cited in Ones & Viswesvaran, 2003) proposed that employee property deviance and theft are potentially good markers of CWB. The correlations between theft and property deviance are reviewed in Table 2.20.

The mean true correlation between theft/property violations and all the different facets of CWB is 0.62. This suggests that theft-related behaviours are good indicators of CWB. Employees who steal from their employers do poor quality work; engage in unsafe behaviours; use drugs and alcohol; misuse time at work; and exhibit absenteeism and tardiness.

Table 2.20***Relations of theft/property violations and related behaviours with other CWB***

<i>Correlate</i>	<i>Theft/property violations and related behaviours</i>	<i>Study</i>	<i>N</i>	<i>r</i>	<i>rho</i>
Absenteeism/withdrawal	Theft/property violations	Marcus <i>et al.</i> (2002)	174	0.40	0.68
Aggression	Theft	Marcus <i>et al.</i> (2002)	174	0.39	0.67
Alcohol use	Destruction of property	Gruys (1999)	363	0.30	0.48
Alcohol use	Theft	Gruys (1999)	363	0.38	0.56
Drug misuse ¹	Theft	Hunt (1996) ¹	1,701	-	0.52
Drug use	Destruction of property	Gruys (1999)	363	0.44	0.64
Drug use	Theft	Gruys (1999)	363	0.27	0.37
Engaging in off-task behaviours ¹	Theft	Hunt (1996) ¹	2,280	-	0.70
Hostility & complaints	Sabotage	Chen & Spector (1992)	387	0.45	0.70
Inappropriate physical actions	Destruction of property	Gruys (1999)	363	0.59	0.80
Inappropriate physical actions	Theft	Gruys (1999)	363	0.42	0.53
Inappropriate verbal actions	Destruction of property	Gruys (1999)	363	0.52	0.71
Inappropriate verbal actions	Theft	Gruys (1999)	363	0.55	0.69
Interpersonal aggression	Sabotage	Chen & Spector (1992)	387	0.57	0.66
Low personal standards	Property theft	Hakstian <i>et al.</i> (2002)	1,019	0.11	0.16
Misuse of information	Destruction of property	Gruys (1999)	363	0.55	0.80
Misuse of information	Theft	Gruys (1999)	363	0.71	0.96
Misuse of time & resources	Destruction of property	Gruys (1999)	363	0.43	0.56
Misuse of time & resources	Theft	Gruys (1999)	363	0.74	0.89
Poor attendance	Destruction of property	Gruys (1999)	363	0.38	0.53
Poor attendance	Theft	Gruys (1999)	363	0.63	0.82
Poor-quality work	Destruction of property	Gruys (1999)	363	0.51	0.68
Poor-quality work	Theft	Gruys (1999)	363	0.55	0.68
Substance abuse	Property theft	Hakstian <i>et al.</i> (2002)	1,019	0.21	0.29
Substance use	Theft/property violations	Marcus <i>et al.</i> (2002)	174	0.38	0.70
Tardiness/absenteeism ¹	Theft	Hunt (1996) ¹	2,289	-	0.52
Theft	Destruction of property	Gruys (1999)	363	0.47	0.66
Unruliness ¹	Theft	Hunt (1996) ¹	2,513	-	0.74
Unsafe behaviour	Destruction of property	Gruys (1999)	363	0.35	0.51
Unsafe behaviour	Theft	Gruys (1999)	363	0.46	0.62
Work avoidance	Property theft	Hakstian <i>et al.</i> (2002)	1,019	0.17	0.27
		Unit weighted mean		0.44	0.62

Note: *rho* = true score correlation (i.e. observed correlation corrected for unreliability in both measures). ¹ Data from multiple data sets or from meta-analyses

(Ones & Viswesvaran, 2003, pp. 225-226)

Ones and Viswesvaran (2003, p. 224) reported four studies that examined the relationship between Robinson and Bennett's (1995) two dimensions of CWB, i.e. organisational deviance and interpersonal deviance. The results are presented in Table 2.20. The mean *rho* between these two facets of CWB is 0.82. An earlier study by Lee and Allen (as cited in Ones & Viswesvaran, 2003) found a correlation of 0.96 between these two dimensions at the construct level. Organisational deviance and interpersonal deviance therefore are two closely related dimensions of CWB. Employees who engage in interpersonal deviance also engage in organisational deviance and vice versa. Ones and Viswesvaran (2003) concluded that these findings imply that a possible reason for the positive relationships between separate forms of CWB is the existence of common individual difference antecedents.

According to Sackett and Devore (2001, p. 149), self-report, other report and direct judgements of the likelihood of co-occurrence strengthens the view of positive correlations between counterproductive work behaviours. For self-report data, correlations are positive and in the range of 0.30 among individual counterproductive behaviours. For composites of related behaviours, correlations are approximately 0.50. In their opinion, it seems reasonable to support the idea of an overall counterproductivity construct because the true score correlation between Bennett and Robinson's two dimensions of interpersonal and organisational deviance is 0.86, Gruys' eleven behavioural domains yield a grand overall composite reliability of 0.92, and the reliability of Hunt's (1996) grand composite across five behavioural domains is 0.83.

According to Gruys and Sackett (2003), the co-occurrence of counterproductive work behaviour is of substantial interest because knowledge of the interrelationships between these behaviours can assist in directing future research on causes of counterproductive behaviours and interventions to reduce these behaviours. Counterproductive behaviours that have a high co-occurrence may point towards common antecedents and may suggest that they require similar interventions.

2.1.7 Conclusion

It emerged that CWB is voluntary behaviour that has a negative impact on organisations, its members or both. There are multiple antecedents consisting of individual differences, organisational characteristics and justice perceptions. Although there are many typologies of CWB, the most widely accepted one distinguishes between individual directed and organisation directed targets. The measurement of CWB has yielded a variety of factors underlying CWB. Research has also indicated that CWBs co-occur, which means that different manifestations of CWB are related.

The foregoing section provided the theoretical background of CWB, including the definition of CWB, its antecedents, construct typologies, its measurement and the

relationships among the various forms of CWB. The next section deals with the construct of integrity, its theoretical underpinnings, measurement and typologies.

2.2 DEFINITION AND MEASUREMENT OF INTEGRITY

2.2.1 Introduction

This section focuses on the definition of integrity in the context of the work situation, the history of integrity tests and the different types of integrity tests on the market. It also deals with the reliability of these tests and their construct validity, and with a whole range of other issues which form part of the integrity test debate.

The impact of integrity as a psychological construct on behaviour in the workplace is receiving a substantial amount of attention in the various domains of organisational and industrial psychology, such as employee selection, employee wellness, leadership and organisational dynamics (Barnard, Schurink & De Beer, 2008; Marcus, Höft & Riediger, 2006; Miller & Schlenker, 2011; Verhezen, 2010).

Integrity has been identified as an important trait of effective leaders (Craig & Gustafson, 1998; Petrick & Quinn, 1997; Van Aswegen & Engelbrecht, 2009). It is an important determinant of trust in organisations, as well as an element of employee wellness (Becker, 1998; Harter, 2002; Schabracq, 2003). According to Cameron (2003), it is a principal component of productive work relationships. It is also considered one of the important constructs in positive psychology (Cameron, 2003; Park & Peterson, 2003; Peterson & Seligman, 2004; Schabracq, 2003). Furthermore, Ones, Viswesvaran and Schmidt (1993) emphasised it as a reasonably valid predictor of work performance and counterproductive work behaviour.

According to Kerlinger (1979), a construct is a concept which has been deliberately and consciously invented or adopted for a specific scientific purpose. Scientists use constructs consciously and systematically in two ways. Firstly, a construct is described in a theoretical scheme, indicating how it is related to other constructs. Secondly, a construct is defined and specified in such a way that it can be observed and measured.

Kerlinger (1979) says that constructs can be defined in two ways. Firstly, we can define a construct by using other words, which is what a dictionary usually does. Secondly, we can define a construct by telling what actions or behaviours it expresses or implies. The scientist uses the above approaches in a precise and articulated manner. Kerlinger (1979) refers, in this regard, to Margenan's distinction between constitutive and operational definitions of a construct. A constitutive definition defines a construct by referring to other constructs, for example, "weight" can be defined by referring to the heaviness of objects. "Anxiety", for example, can be defined as "subjectified fear". Torgerson (as cited in Kerlinger, 1979) says that all constructs must possess constitutive meaning in order to be scientifically useful. This implies that the construct must be capable of being used in theories. An operational definition provides meaning to a variable by specifying what the investigator must do to measure it. Kerlinger (1979) emphasises the importance of operational definitions and says that they are essential ingredients of scientific research because they form the bridges between theoretical constructs and observations.

A large body of research involving the theoretical basis and practical significance of integrity tests has emerged over the last two decades (Van Aswegen & Engelbrecht, 2009). There seems to be a lack of clarity in the literature about the meaning of integrity (Audi & Murphy, 2006; Karren & Zacharias, 2007; Marcus, Lee & Ashton, 2007; Palanski & Yammarino, 2007; Six, De Bakker & Huberts, 2007). Palanski and Yammarino (2007) assert, however, that the literature on integrity suffers from three significant problems:

- conceptual confusion;
- too little theory; and
- too few rigorous empirical studies.

Confusion exists between integrity and related concepts such as emotional stability, morality, ethics, conscientiousness, honesty, agreeableness, and trustworthiness and important questions remain regarding the construct validity of integrity tests (Karren & Zacharias, 2007; Palanski & Yammarino, 2007). Audi and Murphy (2006)

suggest that any study of integrity should begin with a clarification of what is meant by integrity. Failure to do so will continue to result in increased confusion and separate streams of research.

2.2.2 Definition of Integrity

The word integrity is derived from the Latin word *integer*, which means wholeness, entirety or completeness and, by implication or extension, being unimpaired, uncompromised and uncorrupted, and being blameless. We can say that a person has integrity when he or she has a certain concentration of purity or consistency (Shapiro & Adams, 1998).

Tulloch (1997, p. 791) defines integrity as moral uprightness, honesty, wholeness and soundness. Moral is defined as “concerned with goodness or badness of human character or behaviour, or with the distinction between right and wrong and concerned with accepted standards and rules of human behaviour”. Uprightness is defined as “righteous, strictly honourable and honest”. Honesty is defined as “being honest and truthful”. Wholeness is defined as “unbroken, uninjured, intact or undiminished”. Synonyms of integrity are rectitude, uprightness, righteousness, decency, honour, principle, morality, goodness, virtue, incorruptibility, probity, purity, honesty, veracity and trustworthiness.

Montefiore and Vines (1999, p. 7) say that the root meaning of the term “integrity” refers to wholeness. They quote the Oxford Dictionary, which states that wholeness means the condition of having no part or element lacking, an unbroken state, material wholeness, completeness, entirety, an unimpaired or uncorrupted state, original perfect condition, soundness, innocence, sinlessness, soundness of moral principle, the character of uncorrupted virtue, honesty and sincerity. They say that corruption, as the obverse of integrity, is parasitic upon integrity; it eats away or, like rust, corrodes that which was formerly unblemished or intact. According to them, the expressions of “moral principle” and “character of uncorrupted virtue” appear to refer to overall moral character. They summarise integrity as a certain consistency of character that is rooted in morally serious commitments to aims and values which

are felt strongly enough to enable the individual to resist pressure to act otherwise. The Oxford Companion to Philosophy (Honderich, 1995, p. 410) defines integrity as:

... the quality of a person who can be counted upon to give precedence to moral considerations, even when there is a strong inducement to let self-interest or some clamant desire override them, or where the betrayal of moral principle may pass undetected. To have integrity is to have unconditional and steady commitment to moral values and obligations. For such a person, the fundamental question whether to conduct life on the plane of self-concern or of moral seriousness has been decisively resolved; the particular life situations will doubtless continue to put that commitment through strenuous tests. This moral commitment becomes a crucial component in his or her sense of identity as a person: it confers unity (integration) of character, and even a simplicity upon the man or woman of integrity.

According to Palanski and Yammarino (2007, p. 178) integrity is consistency of acting entities, words and actions.

According to Six, De Bakker and Huberts (2007) integrity is acting in accordance with relevant moral values and norms.

The terms honesty and integrity are often used interchangeably when referring to integrity in the workplace. Many of the paper-and-pencil tests that are used to make inferences about which individuals are likely to engage in dishonest behaviour at work are referred to as "integrity tests". Integrity usually implies honesty and fairness and the belief that one is acting correctly. This emphasises the importance of understanding the norms and behaviour standards that the individual and the work group use to define integrity at work (Murphy, 1993).

Ethical theories propose that integrity has two components, i.e. one must not lie and one is obliged to uphold the truth. The ethical theories that guide work behaviour, however, are not formal theories, but rather individual definitions of good or bad, acceptable and unacceptable behaviour at work (Murphy, 1993).

Murphy (1993, p. 9) defines honesty in the workplace as "... the extent to which individuals and groups in organisations abide by consistent and rational ethical principles related to obligations to respect the truth." This definition implies that employees cannot adopt fluid principles which differ from situation to situation. It also requires that individual principles about honesty must be able to withstand rational scrutiny.

Guion (1998) refers to a person of integrity as someone whose word can be trusted, whose work is reliable or dependably performed even without monitoring. It is someone who can be counted on to do the right or good thing. According to Guion, some integrity test distributors called their instruments predictors of counterproductive behaviour but Guion suggests that the construct is more related to dependability or trustworthiness, both of which are dimensions of conscientiousness. Guion (1998, p. 141) defines integrity in the workplace as "... being honest, avoiding unethical behaviour". Persons with high levels of integrity are willing to follow strict ethical codes, while people of low integrity show little involvement with ethical codes.

In the context of the work situation, two major components of integrity emerge. Firstly, a person of integrity is someone who acts in congruence with accepted ethical principles. Secondly, such a person adheres to the ethical code, rules or principles that govern work behaviour. Thus, employees of high integrity are expected to behave in congruence with ethical organisational norms, while employees of lower integrity are expected to display behaviour that warrants disciplinary action.

As summarised in Table 2.21, a comprehensive review of the various meanings of integrity in management literature can be classified into five general categories: wholeness (character); consistency of words and actions (promise keeping); consistency in adversity, temptation or challenge courage; being true to oneself (authenticity); and moral/ethical behaviour (absence of unethical behaviour) general sense of morality/ethics, honesty, trustworthiness, justice/respect, openness and empathy/compassion (Palanski & Yammarino, 2007).

Palanski and Yammarino (2007) define integrity as “consistency of an acting entity’s words and actions”. However, they furthermore state that, in keeping with the theory that good character comprises a set of virtues, one would expect that the virtue of integrity would be associated with similar virtues such as compassion, fairness, trustworthiness, honesty and authenticity. They suggest that these accompanying virtues may constitute a boundary condition for integrity. Thus, the meaning of integrity comprises two major components, namely consistency/wholeness and a moral component. These two components of integrity are supported by other authors. They define integrity as “acting in accordance with relevant moral values and norms (Fijnaut, Huberts & Uhr, as cited in Six *et al.*, 2007, p. 186).

According to Barnard, Schurink and De Beer (2008), the two most prominent aspects of integrity are the moral compass and the inner drive. Their analysis indicates that integrity consists of a set of values and principles that act as the norms and standards which govern one’s decisions and actions. This perception of integrity is closely related to Lennick and Kiel’s (2011) view of a moral compass. This view of integrity is also supported by Becker (1998), Craig and Gustafson (1998), Mason (2000; 2001), McFall (1987), Olson (2002), Putman (1996).

Barnard *et al.* (2008, p. 43) define the moral compass as

...having and living according to a core set of values and principles. Integrity is ultimately determined by the contextual nature of the moral compass and behaviour where integrity is driven by one’s willingness to act according to the internalised values, beliefs, norms and principles that constitute one’s moral compass.

Barnard *et al.* (2008) found that integrity points to core values and universally accepted principles. They furthermore found that a person’s inner needs and aspirations are the motivational drives for hard work, achievement and progress that underlie integrity.

According to Six *et al.* (2007), the moral approach does not ignore or deny the importance of consistency as consistency is one of the values that is incorporated in

a group of relevant moral values and norms. It implies that individuals are consistent and non-opportunistic in what they think, say and do.

Table 2.21

Summary of Integrity Usage in Scholarly Literature

Wholeness	Authenticity	Word/action consistency	Consist in adversity
Badaracco and Ellsworth (1992) Koehn (2005) Lowe <i>et al.</i> (2004) Trevino <i>et al.</i> (2000) Worden (2003)	Cox <i>et al.</i> (2003) Howell and Avolio (1995) Peterson and Seligman (2004) Koehn (2005) Lowe <i>et al.</i> (2004) Morrison (2001) Posner (2001) Yukl and Van Fleet (1992)	Bews and Rossouw (2002) Kirkpatrick and Locke (1991) Paine (2005) Simons (2002, 1999) Tracey and Hinkin (1994) Worden (2003)	Duska (2005) McFall (1987) Paine (2005) Posner (2001) Worden (2003)
Morality/ethics <u>Absence of unethical behaviour</u> Craig and Gustafson (1998) Mumford <i>et al.</i> (2003) Posner (2001)	<u>Honesty</u> Den Hartog and Koopman (2002) Peterson and Seligman (2004) Newman (2003)	<u>Justice/respect</u> Baccili (2001) Bews and Rossouw (2002) Den Hartog and Koopman (2002)	
<u>General sense of morality/ethics</u> Baccili (2001) Badaracco and Ellsworth (1992) Batson <i>et al.</i> (1999) Becker (1998) Lowe <i>et al.</i> (2004) Mayer <i>et al.</i> (1995) Newman (2003) Parry and Proctor-Thomson (2002)	Posner (2001) Trevino <i>et al.</i> (2000) Yukl and Van Fleet (1992) <u>Trustworthiness</u> Baccili (2001) Den Hartog and Koopman (2002) Paine (2005) Trevino <i>et al.</i> (2000)	Rawls (1971) <u>Openness/authenticity</u> Baccili (2001) Peterson and Seligman (2004) Koehn (2005) Paine (2005) Rawls (1971) <u>Empathy/compassion</u> Koehn (2005) Lowe <i>et al.</i> (2004)	

(Palanski & Yammarino, 2007, p. 173)

2.2.3 What is an Integrity Test?

Integrity tests, also sometimes called honesty tests, can be regarded as prototypical criterion-focused occupational personality tests (Ones & Viswesvaran, 2001b). These tests were specifically developed to measure honesty, integrity and dependability in order to assist in predicting theft and other counterproductive work behaviours. They are paper-and-pencil tests (Miner & Capps, 1996; Ones, 1993; Ones, Viswesvaran & Schmidt, 1993) which are used by employers to improve selection decisions (Cohen, 1997).

The original honesty tests were developed from two independent sources: polygraph operators and psychologists engaged in test construction. Experienced polygraphers

established that they could predict the outcome of polygraph examinations from the verbal responses to certain questions asked in their interviews. When these questions were compiled into a written question-and-answer format, the instrument appeared to be useful for predicting honesty, even without using the polygraph. Taking another approach, psychological research indicated that certain background and personality characteristics correlated with personal integrity. Psychologists used these characteristics to develop questions aimed at identifying the potential for violating laws, social norms and organisational policies (O'Bannon, Goldinger, & Appleby, 1989).

Today the practices of the polygrapher and the psychologist have become mixed to a large extent in the field of integrity testing. Many of the tests originally developed by polygraphers have included additions and modifications from psychologists trained in test construction. Both original sources can be recognised in the items in many of these tests and some test developers have relied heavily on validation against polygraph results when selecting their test items (O'Bannon *et al.*, 1989).

According to Miner and Capps (1996, p. 2), honesty tests are paper and pencil instruments (or sometimes computerised versions of such instruments) that are designed to provide an indication of how honest a person is. The term "honesty test" and "integrity test" are often used interchangeably, although the integrity label covers a somewhat broader range of behaviours. Miner and Capps (1996) state that neither designation is completely appropriate and suggest that a better understanding of what these tests measure can be achieved by studying the items to see what factors they consider. They studied a variety of honesty tests which yielded the following list of factors:

- dishonesty and untrustworthiness
- substance abuse (both drugs and alcohol)
- deception and misrepresentation
- violent behaviour and hostility
- emotional instability and maladjustment
- job instability (proclivity for rapid turnover)
- employee theft

- a lack of conscientiousness in job performance
- unreliability and undependability
- inventory shrinkage
- an organisational climate favouring dishonesty
- failure to accept authority and company policy
- alienated attitudes
- excessive absenteeism
- poor work ethic and values
- a lack of safety consciousness

A slightly different list is provided in the “Model Guidelines for Pre-employment Integrity Testing Programs” developed by the Task Force on Integrity Testing Practices of the Association of Personnel Test Publishers (Miner & Capps, 1996, pp. 2-3):

- theft of cash merchandise and property
- damaging merchandise to buy it on discount
- unauthorised work break extensions
- ‘time’ theft
- repeatedly coming to work late
- coming to work with a hangover or intoxicated
- selling illicit drugs at work
- breaking rules
- damage and waste
- preventable accidents
- misuse of discount privileges
- getting paid for more hours than worked
- turnover
- unauthorised use of company information
- using sick leave when not sick
- on-the-job drug abuse
- intentionally doing slow or sloppy work
- gross misconduct
- physical assault

An analysis of the above behaviours indicates that the range is very broad. Some tests focus on a narrow set of problems, in most cases associated with employee theft. Others have a number of subscales dealing with diverse kinds of problems and yield subscale scores for each; some consist of items dealing with a diverse range of problems, but yield only one overall score (Miner & Capps, 1996).

The test on which Miner and Capps (1996, p. 3) corroborated in their research dealt with the following items:

- misrepresentation
- drug use on the job (and addiction)
- theft and embezzlement
- blackmail
- falsification of expenses (padding)
- excessive gambling (and addiction)
- sabotage
- time theft
- falsification of evidence
- tax fraud and cheating
- bribery
- failure to obey laws
- deliberate violations of company policy
- assault and violence
- forgery
- driving under the influence of alcohol
- lying
- sex offences
- using alcohol on the job
- writing bad checks

According to O'Bannon *et al.* (1989), integrity tests vary considerably in their makeup, but, despite this, many similarities can be found when the test items are compared. Most of the test items fall into four broad categories:

- admissions of illegal or disapproved activities;
- opinions toward illegal or disapproved behaviour;
- descriptions of one's own personality and thought patterns; and
- reactions to hypothetical situations.

2.2.4 The History of Integrity Tests

Over the years, many efforts have been made to physiologically determine honesty and integrity in individuals. Erasistratus (around 200 B.C.) believed that pulse rate was a reliable indicator to identify deception. The first efforts to measure individuals' integrity and honesty through psychological evaluation took place in the early 1900s with a truthfulness test developed by Hugo Munsterberg. The first utilisation of honesty testing as a selection device was launched by Gilbert Betts during World War II to screen unsuitable candidates prior to induction into the military (Dalton, Metzger & Wimbush, 1994).

In the late 1940s, the polygrapher John E. Reid, often referred to as the granddad of honesty tests, started developing a paper-and-pencil integrity test while working as chief examiner at the Chicago Police Scientific Laboratory. The test was named the Reid Report. The test was originally developed as an introduction or supplement to the polygraph examination and was validated against results from polygraph interviews. After Reid entered private industry he broadened marketing of the instrument and got psychologists to conduct psychometric research on the test. Efforts were made to validate the instrument in research which did not depend on the judgements of polygraphs (O'Bannon *et al.*, 1989). Today, Reid Psychological Systems is one of the leading distributors of written integrity tests. It appears that integrity tests which were initially often validated by their correspondence to polygraph test results have entirely replaced polygraph testing (Dalton *et al.*, 1994).

In the early 1950s, Harrison G. Gough was developing another kind of test. The Reid Report contained questions directly related to an individual's reliability, dependability and integrity. The test developed by Gough, the Personnel Reaction Blank (PRB) consisted of items that were not obvious in their intent to measure integrity and was

therefore considered a “veiled-purpose” or subtle test. Based on the California Psychological Inventory, the PRB was constructed to measure inhibition of “wayward impulse”, a measure of dependability, conscientiousness and social conformity (O’Bannon *et al.*, 1989).

During the same decade, Russell N. Cassell and Gilbert Betts developed another integrity test, the Life Experience Inventory (LEI). The LEI consisted of 50 multiple-choice items to identify delinquency proneness in young people. Like Betts’ first integrity test, the LEI focused on factors such as early family experiences, social, recreational and educational experiences, and personal feelings. The LEI was promoted as a pre-employment screening instrument for identifying adults who would be untrustworthy in the employment context. Reviewers of the instrument acknowledged a growth in research on the LEI but questioned its effectiveness in predicting delinquency-proneness due to a lack of data supporting its use as a hiring device. Leyland, Hubers and Uhr (as cited in Six *et al.*, 2007 p. 186) define integrity as “acting in accordance with relevant moral values and norms”.

The early integrity tests were followed in the 1960s and 70s by new entries into the field. However, in the 1980s the floodgates opened for integrity test development (O’Bannon *et al.*, 1989). According to Dalton *et al.* (1994), twenty-eight percent of all wholesale and retail trade companies routinely use written integrity tests for employee selection. It has been estimated that 5,000 to 6,000 firms rely on written integrity tests when selecting staff.

According to O’Bannon *et al.* (1989), it is generally accepted that paper-and-pencil integrity tests is most commonly used in organisations where employees have direct access to cash and merchandise, such as banks and retail stores. In these industries, losses attributed to employee theft are high, producing a keen interest in hiring trustworthy people.

2.2.5 The Use of the Polygraph in Business

The introduction of detecting dishonesty by monitoring individuals’ physiological reactions in responding to questions started at the beginning of the century with the

introduction of the polygraph. This technique was initiated by the criminologist, Lombroso. Although the polygraph was initially employed in criminal investigations, and later during investigations of security leaks and risks, it soon was also used in the workplace for criminal investigations and also for pre-employment screening (Murphy, 1993).

Reactions against the polygraph escalated and in 1988 the Polygraph Protection Act was passed, which, in essence, prohibited the use of the polygraph in pre-employment screening (Jones, 1991).

2.2.6 Types of Integrity Tests

Ones and Viswesvaran (2001a), Sackett, Burriss and Callahan (1989), and Frost and Rafilson (1989) distinguished between two categories of integrity tests: overt and personality-based. According to Berry, Sackett and Wiemann (2007), overt or clear-purpose integrity tests, which use direct questions about an individual's past behaviour, originated from the polygraph industry. The overt tests often contain relatively transparent items directly related to counterproductive behaviour. Covert tests, in contrast, tend to ask questions based on personality traits which are thought to be linked to deviant behaviour in organisations.

Overt integrity tests are meant to assess admissions of historical theft, as well as attitudes regarding theft or other counterproductive/illegal activities (Ones, Viswesvaran & Schmidt, 1993; Sackett, Burriss & Callahan, 1989). Not all overt test items measure actual participation in theft-related behaviours. Some of the items deal with the prevalence of theft (Cunningham, 1989). Typical test dimensions are the following:

- (a) ruminations about theft;
- (b) being less punitive and more tolerant toward thieves than non-thieves;
- (c) believing that the majority of people steal regularly;
- (d) believing in inter-thief loyalty;
- (e) agreeing with rationalisations for theft (Bernardin & Cooke, 1993).

Examples of overt tests are the Reid Report (Reid Psychological Systems, 1951); the Stanton Survey (Klump, 1964); the Phase II Profile (Lousig-Nont, 1987); EAI (London House Press, 1982); Employee Reliability Inventory (Borofski, 1993); London House Personnel Selection Inventory (Sackett & Wanek, 1996), the Savvy Integrity Test (Cohen, 1997) and the Situational Judgement Test (Becker, 2005).

Overt integrity tests (also referred to as “clear-purpose” tests) normally consist of two sections. The first is an appraisal of theft attitudes and incorporates questions about beliefs regarding the extent and frequency of theft; thoughts about theft; punitiveness towards theft; perceived ease of theft; approving common rationalisations about theft; and evaluation of one’s own trustworthiness. The second section consists of requests for admissions of wrongdoing and theft. Candidates are asked to give an account of the amount and frequency of their theft and other counterproductive and/or illegal acts. These two sections are sometimes supplemented by other scales designed to measure other behaviours such as tendencies toward violence and drug abuse (Sackett & Wanek, 1996).

Personality-based (also referred to as “covert” or “disguised-purpose tests”) are closely related to normal, traditional personality tests. They are significantly wider in focus, and are not exclusively aimed at theft. They incorporate items dealing with hostility, trouble with authority, thrill-seeking, social conformity, conscientiousness and dependability (Sackett & Wanek, 1996). Examples of personality-based tests are the Personnel Reaction Blank (PRB), the Employee Reliability Index (ERI), and the Personnel Decisions, Inc. Employment Inventory (PDI-EI).

Most overt integrity tests were developed using a criterion-related approach rather than via the construct-oriented approach.

2.2.7 Reasons for the Popularity of Integrity Tests

According to Miner and Capps (1996), integrity testing has gained considerable popularity and continued future growth is expected. The main reasons for this are the following:

- The widespread occurrence of various forms of theft in organisations;
- Drug and alcohol abuse in the workplace resulting in substantial absenteeism, reduced productivity, an increase in accidents, injuries and death, and an escalation in workers' compensation claims;
- The frequent occurrence of production deviance and sabotage in the workplace;
- Workplace violence such as attacks, assaults, fights involving customers, colleagues and supervisors;
- Rape, sexual harassment and the use of weapons and arson;
- Theft, drugs and alcohol problems, production deviance, sabotage and violence, all of which can cause significant problems in the workplace, an increase in costs and decreasing profits, in some instances to a point where the company has to close down.

2.2.8 Reliability of Integrity Tests

In their review of integrity testing, Sackett and Harris (1984) reported reliability data for seven integrity tests (see Table 2.22). According to them, it is difficult to compare the results because of differences in the types of reliability estimates that were used and the incompleteness of information reported in the research. Three studies made use of internal consistency indices. The Stanton Survey yielded a Kuder-Richardson reliability of 0.91; a split-half reliability of 0.95 was reported for the Trustworthiness Attitude Survey and the London House Personnel Selection Inventory yielded a Spearman-Brown estimate of 0.95. Two studies reported test-retest reliabilities. The Phase II Profile yielded a ten-day retest reliability of 0.97; and a reliability estimate of 0.76 was reported for the Pre-employment Opinion Survey. However, no time period was specified. In addition, two reliability studies reported reliability estimates without indicating the method used to compute the reliability. The Reid Report yielded a reliability estimate of 0.92 and a reliability estimate of 0.58 was reported for the Personal Outlook Inventory. Sackett and Harris concluded that, regardless of the method used to obtain estimates, reliability estimates are generally quite high. They also emphasised that the outlying value of 0.58 was in respect of the instrument,

which differs much from the others because the Personal Outlook Inventory does not include questions about theft attitudes or past theft.

Table 2.22

Summary of Reliability Studies

Study	Test	Scale	Sample	Type of Reliability	Reliability Coefficient
Klump (1980)	Stanton Survey	Not specified	Not specified	Internal consistency (Kuder-Richardson)	0.91
Personnel Security Corporation (undated)	Trustworthiness Attitude Survey	Not specified	Not specified	Split-half reliability	0.95
Terris (1979)	London House Personnel Selection Inventory	Not specified	Not specified	Spearman-Brown	0.95
Not specified (1982)	Phase II Profile	Not specified	Not specified	Test-retest	0.97
P.O.S. Corporation (undated)	Pre-employment Opinion Survey	Not specified	Not specified	Test-retest	0.76
Ash (1974)	Reid Report	Not specified	Not specified	Not specified	0.92
Selection Research Publishing (1983)	Personal Outlook Inventory	Not specified	Not specified	Not specified	0.58

(Sackett and Harris, 1984, p. 238)

O'Bannon *et al.* (1989, pp. 66-68) reported the test-retest reliability of a number of integrity tests (refer Table 2.23). O'Bannon *et al.* (1989) concluded that the test-retest reliabilities were high for most of the integrity tests that were reviewed. According to them, there is scope for improvement in the design of test-retest reliability studies. Differences in the testing interval from one administration of a test to the next cause difficulties in comparing reliability coefficients across tests. Furthermore, longer testing intervals are recommended in some cases.

Table 2.23**Summary of Reliability Studies**

Study	Test	Scale	Sample	Type of Reliability	Reliability Coefficient
Cherrington and Cherrington (1985)	Applicant Review	Moral reasoning	30	Test-retest	0.80
		Personal honesty		Test-retest	0.90
		Definition of honesty		Test-retest	0.89
		Dishonest past behaviour		Test-retest	0.89
Borofski, Friedman and Maddocks (1986)	Employee Reliability Inventory	Honesty Scale	24	Test-retest	0.97
Hogan and Hogan (1989)	Hogan Personality Inventory	Hogan Reliability Scale	90	Test-retest	0.76
		Hogan Reliability Scale	36	Test-retest	0.90
Personnel Decisions (1985)	P.D.I. Employment Inventory	Not specified	79	Test-retest	0.62
Loss Prevention Analysts Ltd (undated)	O'Ryan System	Not specified	54	Test-retest	0.87
Cross-Fire Inc. (1988)	P.E.O.P.L.E. Survey	Not specified	44	Test-retest	0.89
			74	Test-retest	0.86
P.O.S. Corporation (undated)	Pre-employment Opinion Survey	Not specified	Not specified	Test-retest	0.76
Gough (1972)	Personnel Reaction Blank	Not specified	26	Test-retest (5-year interval)	0.56
Rafilson (undated)	Personnel Selection Inventory	Not specified	62	Test-retest	0.91
Martelli (1988)	Phase II Profile	Not specified	440	Test-retest	0.91
Lousig-Nont (1982)	Phase II Profile	Not specified	60	Test-retest	0.97
Ash (1986)	Reid Report	Not specified	Not specified	Test-retest	0.65
Ash (1986)	Reid Report	Not specified	Not specified	Test-retest	0.66
Ash (1986)	Reid Report	Total Score	500	Test-retest	0.66
		Punitive Scale	500	Test-retest	0.55
		Projective Scale	500	Test-retest	0.65
Taccarino (undated)	Safe-R	Honesty Scale	98	Test-retest	0.96
Harris (1988)	Stanton Profile	Trustworthiness Scale	146	Test-retest	0.79
Grimsley (1986)	Stanton Survey	Not specified	51	Test-retest	0.92
Grimsley (1986)	Stanton Survey	Not specified	35		0.87
		Attitude Scale			0.87
		Admissions Scale			0.81

(O'Bannon et al., 1989)

In 1989, Sackett, Burriss and Callahan published another review of integrity testing. They reported that internal consistency reliability estimates of 0.85 or higher had been reported for the London House PSI, the Phase II, the Reid Report, the Stanton Survey and the Trustworthiness Attitude Survey. They commented that it would be interesting to compare these findings related to overt integrity tests with reliability estimates for personality-orientated measures. They argued that, considering the broader scope of personality-oriented measures, it is possible that internal consistency reliability will be lower for these tests. In this regard reliability estimates were provided for the Personnel Reaction Blank. This test yielded a reliability coefficient of 0.65, using seventy-eight college females; forty-six college males yielded a value of 0.73; three hundred and twenty-one female workers yielded a result of 0.73; and studies with sixty-two delinquent males delivered a value of 0.97 and forty-nine delinquent females a value of 0.95. Concentrating on the non-

delinquent samples, internal consistency reliability estimates were lower for covert integrity tests. In keeping with this, the Hogan Reliability Scale, using a sample of 90 students, delivered a value of 0.63.

Ash (as cited in Sackett *et al.*, 1989) reported retest reliabilities of 0.65 and 0.66 for the Reid Report, but the sample size and time interval between test administrations were not specified. According to Grimsley (as cited in Sackett *et al.*, 1989), a reliability estimate of 0.90 was found for the Stanton Survey based on a sample of eighty-six college students tested six weeks apart. According to Martelli (as cited in Sackett *et al.*, 1989), a retest reliability of 0.91 was found for the Phase II Profile over a three-week interval, using a sample of four hundred and forty college students. Considering this, it appears that retest reliability for overt integrity tests probably varies substantially across this set of studies. However, the information provided with regard to some studies is too insufficient to speculate about the explanation for the variation.

Sackett *et al.* (1989) reviewed test-retest data for three personality-oriented measures. The PDI Employment Inventory produced estimates of 0.62 and 0.59 for the performance and scales respectively, using a student sample of 109 and a four-week interval. The Hogan Reliability Scale, using a sample of thirty-six employed individuals with a four-week interval produced estimates of 0.76 and 0.90. The Personnel Reaction Blank, using an unspecified sample of twenty-six with no time interval delivered a value of 0.56.

According to Sackett *et al.* (1989), it is important to note that studies of the PDI Employment Inventory provide insight into potential explanations for the variation in findings across studies. The student sample had higher mean scores and lower standard deviations than test norms for applicants. After correction for range restriction, however, the reliability estimates of 0.62 and 0.59 increased to 0.89 and 0.77 respectively. Therefore, by using samples with larger or smaller variance than expected from job applicants, one could decrease or increase a reliability estimate. They concluded that, because most reliability studies do not provide details of means and variances to compare to norm groups, the magnitude to which range restriction or enhancement is operating cannot be ascertained. Considering this lack of

information, the reliability estimates currently available should not be used as a basis for deciding whether one test or type of test is better than another.

Sackett, Burris and Callahan (1989) produced a further review of integrity testing and provided further data regarding the reliability of integrity tests (see Table 2.24):

Table 2.24

Summary of Reliability Studies

Study	Test	Scale	Sample	Type of Reliability	Reliability Coefficient
Gough (1972)	Personnel Reaction Blank	Not specified	78	Internal consistency	0.65
Gough (1972)	Personnel Reaction Blank	Not specified	46	Internal consistency	0.73
Gough (1972)	Personnel Reaction Blank	Not specified	321	Internal consistency	0.73
Gough (1972)	Personnel Reaction Blank	Not specified	62	Internal consistency	0.97
Gough (1972)	Personnel Reaction Blank	Not specified	49	Internal consistency	0.95
Hogan and Hogan (1986)	Hogan Reliability Scale	Not specified	90	Internal consistency	0.63
Ash (1987)	Reid Report	Not specified	Not specified	Test-retest	0.65 0.66
Grimsley (undated)	Stanton Survey	Not specified	86	Test-retest	0.90
Personnel Decisions Inc. (1985)	P.D.I. Employment Inventory	Performance Scale	109	Test-retest	0.62
		Performance Scale	109	Test-retest	0.59

(Sackett, Burris and Callaghan, 1989)

As indicated in Table 2.24, five of the reliability coefficients are above 0.70, which can be considered high. All the other reliability coefficients are above 0.60, while only one is below 0.60. It therefore appears that the overall reliability coefficients are acceptable.

In their meta-analyses of integrity tests, Ones, Viswesvaran and Schmidt (1993) obtained 124 integrity test reliabilities from test publishers and published literature. Of the 124 values, 47 were test-retest reliabilities and 68 were alpha coefficients ($M = 111.4$ days, $SD = 379.7$ days). The mean of the test-retest reliabilities was 0.85 ($SD = 0.10$) and the mean of the coefficient alphas was 0.81 ($SD = 0.10$). Ones *et al.* (1993) stated that the best estimate of reliability for their meta-analysis is coefficient alpha or the equivalent, but that test-retest reliabilities over short time periods yield

moderately close estimates of alpha coefficients. Furthermore, in their study, the means of the two types of reliability were similar. Ones *et al.* (1993) also gave the overall mean of the predictor reliability artefact distribution, which was 0.81 (SD = 0.11) and the mean of the squared roots of predictor reliability was 0.90 (SD = 0.06). The authors also constructed two other predictor reliability distributions, one for overt-integrity tests and the other for personality-based integrity tests indicated in Table 2.25.

Table 2.25

Descriptive Information on Statistical Artefact Distributions used to correct Validities

Artefact distribution	No. of values	<i>M</i>	<i>SD</i>	Mean of the square roots of reliabilities	Standard deviation of the square roots of reliabilities
Integrity test reliabilities					
Overall distribution	124	0.81	0.11	0.90	0.06
Overt	97	0.83	0.09	0.91	0.05
Personality based	27	0.72	0.13	0.85	0.08

(Adapted from Ones *et al.*, 1993, p. 683)

In another study, Rafilson (as cited in Coyne & Bartram, 2002) reported test-retest reliability of 0.91 for the PSI for 62 employees over a one-week period. Hartnett and Terranova (as cited in Coyne & Bartram, 2002) reported a test-retest reliability of 0.98 for the P.E.O.P.L.E. Honesty Scale for seventy-four job applicants over twelve weeks. Coyne (as cited in Coyne & Bartram, 2002) reported a retest reliability coefficient of 0.92 for ICES Compliance based on 114 working adults over a one-week test-retest period.

Coyne and Bartram (2002) concluded that research clearly shows that integrity tests are reliable, both in terms of test-retest and in internal consistency. They, however, highlighted some criticisms regarding the test-retest studies. First, some of the sample sizes for assessing reliability over time were rather small and, second, the time frame between test and retest was small in some of the studies.

Fortmann, Leslie and Cunningham (2002) examined the reliability of the Abbreviated Reid Report in Argentina, Mexico and South Africa (see Table 2.26). They found that this instrument was highly reliable in all three countries. They furthermore found that the coefficient alpha did not differ significantly from the reliability coefficient

obtained in the U.S.A. This indicates that the items of the Abbreviated Reid Report co-vary reliably across different cultures and languages.

Table 2.26

Reliability of Reid Integrity Attitude scores as a function of country

Country	No.	Cronbach's alpha
Argentina	347	.81
Mexico	298	.78
South Africa	188	.79
USA	156	.83

(Fortmann, Leslie and Cunningham, 2002, p. 102)

2.2.9 Construct Validity

The most extensive validation strategy, often called “construct validation”, consists of a process of gathering evidence about the validity of the conclusions drawn on the basis of test scores. The aim of construct validation is to make sense of test scores. For example, construct validity research investigates whether a test developed with the purpose of measuring a construct such as integrity truly measures integrity, and whether it presents a basis for predicting the individual's future behaviour. This validation strategy comprises two basic steps, construct explanation and empirical testing. Construct explanation is the course of action of defining exactly what is intended to be measured and how it relates to other measures and behaviours (Murphy, 1993).

According to Murphy (1993), construct explanation starts with the definition of the attributes that a sound measure of integrity should demonstrate. Scores obtained on an integrity measure should be (1) related to scores on other, well-validated integrity measures; (2) higher for allegedly honest individuals than for those known to be dishonest; (3) not related to personality traits that are irrelevant, such as need for achievement; and (4) related to employee theft levels. These statements represent a set of hypotheses, each leading to one or more empirical tests. As this process progresses, evidence is gathered with regard to the extent to which the test can be used to reach valid conclusions about the integrity construct.

2.2.10 Introduction

Ones (1993) suggested that the theoretical foundation for the construct of socialisation, organisational delinquency or integrity can be found in the work of Gough. According to Gough (1960), a continuum of socialisation extending from individuals of superior trustworthiness and morality at one pole to individuals who are deviant and hostile to the rules of society at the other pole can easily be drawn. Hogan and Hogan (1989) stated that hostility beyond a certain point will result in conflict with the law and even imprisonment. However, their research proposes that there are hostile individuals who succeed in avoiding legal action against them and who are, therefore, not labelled as delinquent. They are of the opinion that these individuals are responsible for most of the problems in organisations.

Gough (1948) offered a theoretical foundation for the organisational delinquency construct. Gough (1948, p. 361) stated "The psychopath can verbalise all the moral and social rules, but he does not seem to understand them in the way that others do." According to Gough (1948), various reviews of psychopathy yielded a set of attitudes which typify psychopaths. Some of these factors are:

- (1) overrating of immediate, short-term goals versus distant or long-term ones;
- (2) disinterest in the rights and privileges of others when they are perceived to inhibit personal gratification in any way;
- (3) impulsiveness;
- (4) inability to form sincere or lasting attachment to other individuals or to form interpersonal relationships;
- (5) deficient judgement and planning in achieving goals;
- (6) obvious lack of nervousness and sorrow with regard to social inadequacy and inability or unwillingness to recognise this;
- (7) a propensity to blame others and refusal to take responsibility for failures;
- (8) meaningless evasive behaviour;
- (9) almost complete absence of dependability and willingness to accept responsibility; and
- (10) emotional inadequacy.

None of the above attributes on their own would be critical, but when they occur in a particular individual, they strongly suggest psychopathy. Furthermore, these attributes may not necessarily lead to legal action; in fact, an individual may display these attributes and not be incarcerated (Gough, 1948).

According to Gough (1948), the theory of socialisation has its origin in role-playing deficiency, i.e. the inability to observe one's self as an object or to associate with another's point of view. The psychopath lacks the ability to envisage the consequences of his behaviour, particularly their social consequences. This is due to an inability to evaluate own behaviour from another's perspective. The psychopath does not feel social emotions such as group affiliation, loyalty, embarrassment and remorse.

The Socialisation (So) scale of the California Psychological Inventory (CPI) is based on two sources. One source is an interactional theory of psychopathy presented more than fifty years ago. The other is from clinical folklore about the opinions and attitudes of sociopathic individuals. The original scale was called "Delinquency" and scored toward wayward behaviour. In 1957 it became the "Socialisation" scale and has since then been scored toward pro-social behaviour.

2.2.11 Construct Validity Evidence Regarding Integrity Test Reliabilities

According to Ones (1993), integrity test reliabilities provide important insights regarding the construct of integrity.

An important question regarding any variable used in personnel selection is the stability of an individual's performance over time. To ascertain whether integrity is a stable trait, parallel forms of test-retest reliabilities are appropriate. Considering the findings of the meta-analysis, Ones (1993) concluded that the construct measured by integrity tests is very stable (see Section 3.8 for a detailed discussion on the reliability of integrity tests).

2.2.12 Construct Validity Evidence Regarding Correlations with Admissions of Counter-productivity

Many admissions studies have been reported for integrity tests. In general, according to Miner and Capps (1996), the correlation coefficients between integrity tests and admissions are in the region of 0.40. However, some coefficients are as high as 0.70. Ones (1993) stated that, irrespective of whether the criteria consists of theft or broadly disruptive behaviours, self-report criteria tend to yield higher validities than external criteria. It may be argued that correlations with self-report criteria are not appropriate to be utilised in estimating the operational validity of integrity tests. However, it is not completely certain that external counter-productivity criteria are more valid than admissions of such conduct. The validity of external measures is limited because many thefts and other counter-productive acts may not be detected. Furthermore, there is substantial evidence of significant correlation (about 0.50) between admissions and actual conduct. However, when admissions serve as criteria, the difference between validity and reliability becomes potentially negligible. Goldberg *et al.* (as cited in Ones, 1993) argued that, despite this, correlations between integrity tests and admissions criteria can be viewed as evidence of construct validity.

According to Ones (1993), a meta-analysis of the correlations between overt integrity tests and admissions criteria demonstrate higher correlations for employees than for applicants. Self-reports of theft yielded a true mean correlation of 0.54 ($N = 3217$) for employee samples and 0.42 ($N = 68613$) for applicant samples. When other counter-productive work behaviours such as absenteeism, tardiness, violence, and alcohol and drug abuse are also included, the mean correlation of overt tests increase to 0.99 ($N = 27887$) for employee samples and 0.46 ($N = 90527$) for applicant samples. Ones (1993) concluded that the construct validity of overt integrity tests is supported by the results of admissions studies.

2.2.13 Construct Validity Evidence Regarding Contrasted Group Studies

The aim of contrasted group studies is to demonstrate that groups assumed to differ in integrity yield mean differences in test scores. In these studies, individuals who

are undoubtedly dishonest are contrasted with those who do not display any lack of integrity. The underlying theory is that, if the integrity test is a sound measure of the construct of integrity, significant differences should be found between the two groups (Ones, 1993).

Several contrasted group studies have been conducted with integrity tests. According to Ones (1993), contrasted group studies indicate that integrity tests appear to be successful in discriminating between prisoners and non-incarcerated individuals and criminals and non-criminals.

2.2.14 Construct Validity Evidence Regarding Factor Analytic Studies

Factor analytic studies have been conducted on a variety of integrity tests. In general, researchers have intended to explain integrity by means of a multiple factorial model. They have never focused on a general factor. Ones considered this a major shortcoming (Ones, 1993). Harris (1987) analysed the factor structure of the Stanton Survey and Overt Integrity Tests. They found seven factors which accounted for fifty-three percent of the variance, i.e. general theft, opportunism, employee theft, leniency, employee discounting, pervasiveness and dissociation.

More factor analytic analyses have been done on overt than on personality-based integrity tests. Cunningham and Ash (as cited in Ones, 1993) analysed the dimensions of the Reid Report, using two samples ($N = 1281$ and 3071). They identified four factors, i.e. self-punitiveness; punitiveness toward others; self-projection; and projection toward others. The PSI was analysed by Jones and Terris (as cited in Ones, 1993). They found six factors, i.e. theft temptation and rumination; theft rationalisation; projection of theft in others; theft punitiveness; inter-thief loyalty; and personal theft admissions. Harris and Sackett (as cited in Ones, 1993) analysed the factor structure of the PSI Honesty scale ($N = 849$). They identified four factors, i.e. temptation and rumination about dishonesty; actual and expected dishonest behaviours; norms about the dishonest activities of others; impulse control; and behavioural tendencies. Martinelli (as cited in Ones, 1993) investigated the Phase II Profile and identified three factors.

Many of the factors found by the above researchers correlated significantly with each other, which suggest a problem of over-factoring and the presence of a general factor (Ones, 1993).

Comparatively few studies have analysed the factor structure of personality-based integrity tests. However, a new edition of the California Psychological Inventory was published in 1987; the Socialisation (So) scale was reduced from 54 to 46 items after eliminating items which had weak validities. Factor analysis of the reduced 46-item scale yielded four clusters, i.e.:

1. Optimism, self-confidence, and positive affect (12 items)
2. Self-discipline and cathexis of social norms (15 items)
3. Good memories of home and parents (10 items)
4. Interpersonal awareness and sensitivity (9 items) (Gough, 1994).

Gough (1994, p. 665) provided examples of items in each cluster:

Cluster 1: Optimism, self-confidence and positive affect

- “Most of the time I feel happy” (true)
- “I have had more than my share of things to worry about” (false)
- “Life usually hands me a pretty raw deal” (false)

Cluster 2: Self-discipline and cathexis of social norms

- “I think I am stricter about right and wrong than most people” (true)
- “I would do almost anything on a dare” (false)
- “I often act on the spur of the moment without stopping to think” (false)

Cluster 3: Good memories of home and parents

- “My home life was always happy” (true)
- “My parents have often disapproved of my friends” (false)
- “My parents never really understood me” (false)

Cluster 4: Interpersonal awareness and sensitivity

- “Before I do something I try to consider how my friends will react to it” (true)
- “I find it easy to ‘drop’ or ‘break with’ a friend” (false)
- “I often think about how I look and what impression I make on others” (true)

When scored as a subscale, each factor discriminated significantly ($p < .01$) between non-delinquent and delinquent samples for males and females. The summary of the results is shown in Table 2.27.

Table 2.27***Subscale differences between groups***

Test	Sample	Integrity Measure	Criteria	Results
California Psychological Inventory (Gough, 1994)	1088 non-delinquent versus 272 delinquent males and 2266 non-delinquent versus 400 delinquent females	“Socialisation” scale	Group differences	<p><u>Point biserial correlations:</u></p> <p><u>Males:</u> Optimism and self-confidence = 0.41 Self-discipline and cathexis of social norms = 0.44 Good memories of home and parents = 0.31 Interpersonal awareness and sensitivity = 0.18</p> <p><u>Females:</u> Optimism and self-confidence = 0.47 Self-discipline and cathexis of social norms = 0.52 Good memories of home and parents = 0.29 Interpersonal awareness and sensitivity = 0.22</p>

(Gough, 1994, p. 665-666)

In another study, using a personality-based test, Paajamen (as cited in Ones, 1993) investigated the factor structure of the PDI Employment Inventory. This inventory has three scales, i.e. Performance, Tenure and Frankness. Only the Performance scale represents a personality-based integrity test. However, the Performance and Tenure scales correlate between 0.45 and 0.65. Paajamen’s analysis of the three scales combined yielded five factors, i.e. irresponsibility, sensation seeking, unstable upbringing, frankness and conforming motivation. Like the analyses of overt tests, a large portion of the variance was accounted for by a first factor, irresponsibility, and positive correlations were found between the factors, supporting the existence of a general factor.

It would be impractical to review each factor analytical study of the dimensions underlying integrity tests in detail in this dissertation. Table 2.28 is a summary of the dimensions that emerged from several overt and personality based integrity tests.

Table 2.28***Integrity Test Dimensions from Factor Analytical Studies (categorised per dimension)***

Dimension:	Test:	Studies:
1. Poor family history/ unstable upbringing	1. California Psychological Inventory (CPI), Socialisation (So) Scale	Woolley and Hakstian (1992)
	2. PDI Employment Inventory	Paajanen cited in Ones (1993)
	3. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
2. Association with dishonest individuals	1. Stanton Survey	Harris (1987)
	2. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
3. Punitiveness toward others and self	1. Personnel Selection Inventory	Ones (1993)
	2. Reid Report	Cunningham and Ash (1988) Hogan and Brinkmeyer (1997)
	3. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	4. Honesty Scale of the Personnel Selection Inventory (PSI) Customer Service Scale	Van Iddekinge, Taylor and Eidson (2005)
4. Hostility to rules/rules abidance/social conformity/avoids trouble/good sense of attachment/not experience seeking	1. Reid Report	Hogan and Brinkmeyer (1997)
	2. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	3. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
	4. California Psychological Inventory (CPI),	Woolley and Hakstian (1992)

Socialisation (So) Scale

5. Turnover/loyalty	1. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
6. Reliability/ responsibility	1. Reid Report	Hogan and Brinkmeyer (1997)
	2. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	3. PDI Employment Inventory	Paajanen, cited in Ones (1993)
	4. Personnel Selection Inventory	Harris and Sackett(1987)
7. Adjustment (not depressed, no guilt)/ emotional stability	1. Hogan Personality Inventory	Hogan and Hogan (1989)
	2. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
8. Social insensitivity/ likeability/easy to live with	1. California Psychological Inventory (CPI), Socialisation (So) Scale	Woolley and Hakstian (1992)
	2. Reid Report	Hogan and Hogan (1989)
	3. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
9. Theft rationalisation	1. Personnel Selection Inventory	Ones (1993)
10. Theft temptation and rumination	1. Personnel Selection Inventory	Harris and Sackett in Ones (1993)
	2. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
	3. Honesty Scale of the Personnel Selection Inventory (PSI) Customer Service Scale	Van Iddekinge, Taylor and Eidson (2005)
11. Locus of control	1. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
12. Opportunism	1. Stanton Survey	Harris (1987)
13. Impulse control/ self-control	1. Personnel Selection Inventory (PSI)	Harris and Sackett (1987)

	2. Reid Report	Hogan and Brinkmeyer (1997)
	3. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	4. Employee Reliability Index	Woolley and Hakstian (1992)
	5. Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
14. Admissions of illegal drug use/ substance abuse	1. Reid Report	Hogan and Brinkmeyer (1997)
	2. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	3. Subscales of the California Psychological Inventory	Hakstian, Farrell and Tweed (2002)
	4. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
15. Inter-thief loyalty	1. Personnel Selection Inventory	Ones (1993)
	2. Honesty Scale of the Personnel Selection Inventory (PSI) Customer Service Scale	Van Iddekinge, Taylor and Eidson (2005)
16. Admissions of past wrongdoings/theft	1. Personnel Selection Inventory	Ones (1993)
	2. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	3. Subscales of the California Psychological Inventory (CPI)	Hakstian, Farrell and Tweed (2002)
	4. Honesty Scale of the Personnel Selection Inventory (PSI) Customer Service Scale	Van Iddekinge, Taylor and Eidson (2005)
	5. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI) (includes driving violations)	Wanek, Sackett and Ones (2003)
17. Projection of theft in others/perceived pervasiveness of dishonesty	1. Personnel Selection Inventory	Ones (1993)
	2. Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI), Inwald Personality Inventory	Wanek, Sackett and Ones (2003)
	3. Reid Report	Cunningham and Ash (1988)

	4. Stanton Survey	Harris (1987)
	5. Personnel Selection Inventory	Harris and Sackett (1987)
18. Financial need	1. Reid Report, Personnel Selection Inventory (PSI) and California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
19. Life stressors	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (DPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
20. School success/ scholastic adjustment/ achievement/success orientation/diligence/ orderliness	1. Hogan Personality Inventory	Hogan and Hogan (1989)
	2. California Psychological Inventory (CPI), Socialisation (So) Scale	Woolley and Hakstian (1992)
	3. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
21. Norms about dishonest behaviours	1. Personnel Selection Inventory	Harris and Sackett (1987)
	2. Honesty Scale of the Personnel Selection Inventory (PSI) Customer Service Scale	Van Iddekinge, Taylor and Eidson (2005)
22. Narcissism	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
23. Alienation	1. Reid Report	Mumford, Connelly, Helton, Strange and Osburn (2001)
	2. Hogan Personality Inventory	Hogan and Brinkmeyer (1997)
	3. California Psychological Inventory (CPI) Socialisation (So) Scale	Woolley and Hakstian (1992)
24. Fear	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (DPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
25. Outcome uncertainty	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
26. Negative life themes	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
27. Power motives	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)

28. Objective beliefs	1. Reid Report, Personnel Selection Inventory (PSI) and the California Psychological Inventory (CPI)	Mumford, Connelly, Helton, Strange and Osburn (2001)
29. Supervision attitudes/attitudes towards authority	1. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Wanek, Sackett and Ones (2003)
30. Sociability (enjoys crowds, exhibitionistic)/extraversion/introversion/risk-taking/thrill-seeking	1. Hogan Personality Inventory 2. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Hogan and Hogan (1989) Wanek, Sackett and Ones (2003)
31. Socialisation	1. Employee Reliability Index	Woolley and Hakstian (1992)
32. Frankness/honesty attitudes	1. PDI Employment Inventory 2. Personnel Selection Inventory (PSI), Reid Report (Reid), Stanton Survey (Stanton), Employee Reliability Inventory (ERI), Personnel Reaction Blank (PRB), PDI Employment Inventory (PDI-EI) and the Inwald Personality Inventory (IPI)	Paajanen, cited in Ones (1993) Wanek, Sackett and Ones (2003)

2.2.15 Relationships among Integrity Tests

According to Ones *et al.* (1993, p. 142), the mean correlations among integrity tests are as follows (see Table 2.29):

- between overt tests: .45 (.32 uncorrected)
- between covert tests: .70 (.43 uncorrected)
- between overt and covert tests: .39 (.25 uncorrected)

According to Ones (1993), it can be concluded that overt tests appear to share a general common core construct as indicated by the mean correlations among integrity tests depicted in Table 2.29. Similarly, personality-based test appear to also share, to some extent, a common construct.

Table 2.29***Meta-Analysed Intercorrelations between Overt and Personality-Based Integrity Tests***

		Overt	Personality-Based
Overt	Total N	7,424	15,978
	K	56	117
	r _{mean}	.32	.25
	p	.45	.39
Personality-Based	Total N	-	7,062
	K	-	37
	r _{mean}	-	.43
	p	-	.70

Note: N = Total sample size; K = number of correlations; r_{mean} = mean observed correlation; p = true score correlation.

(Adapted from Ones 1993, p. 142)

Hogan and Brinkmeyer (1997) conducted the first study to measure an item-level analysis across multiple tests to determine common and non-common factors. They analysed the Hogan Reliability Scale (personality-based or covert) and Reid Report (overt). All items of the Hogan Reliability Scale loaded on one factor, whereas the items on the Reid Report loaded on three other factors (admissions, drug use and punitive attitudes). After a second-level confirmatory factor analysis of the four factors, all loaded on a single factor called Conscientiousness. According to Berry, Sackett and Wiemann (2007), this conclusion regarding a hierarchical structure at item level corresponds to the finding by Ones (1993). Berry, Sackett and Wiemann (2007) say that, combining the research of Wanek *et al.* (2003) and Hogan and Brinkmeyer (1997), it is evident that integrity tests are multi-faceted and that the underlying construct may be of an hierarchical nature, i.e. lower-order factors consisting of 23 thematic composites, represented by Wanek *et al.*'s four principal components above, which were an overall conscientiousness factor.

Woolley and Hakstian (1992, p. 475) found correlation coefficients of between .33 and .37 between personality-based (covert) integrity tests (see Table 2.30).

Table 2.30

Correlations among the scales arising from the integrity tests (decimal points omitted)

	PRB		PDI-EI-P		PDI-EI-T		ERI		RR-Ho		RR-Pu	
	M	F	M	F	M	F	M	F	M	F	M	F
PRB	—	—										
PDI-EI-P	57	37	—	—								
PDI-EI-T	44	33	67	49	—	—						
ERI	70	54	47	36	46	42	—	—				
RR-Ho	38	22	29	11	38	32	39	31	—			
RR-Pu	12	13	09	—02	12	11	13	05	80	70	—	—

Note: PRB = Personnel Reaction Blank; PDI-EI-P = Personnel Decisions Inc. Employment Inventory Performance; PDI-EI-T = Personnel Decisions Inc. Employment Inventory Tenure; ERI = Employee Reliability Index; RR-Ho = Reid Report Honesty Scale; RR-Pu = Reid Report Punitive Scale.

(Woolley and Hakstian, 1992, p. 481)

Woolley and Hakstian (1992) found that the three personality-based (covert) integrity tests, the PRB, ERI and PDI-E, all evaluate a related broad, higher-order construct which they called Socialised control. They also stated that the personality-based (covert) integrity tests were distinct from the overt tests used in their study. However, they used only one overt test and admitted that not all overt tests can be conceptualised in terms of a single factor called Intolerance of Dishonesty. Although Socialised Control and Intolerance of Dishonesty correlated -0.35 , the two constructs are factorial and conceptually different. They ascribe the differences between these two constructs to the theoretical and practical foundation of these tests. Personality-based (covert) integrity tests were formulated and developed by personality psychologists, operating within the theoretical and methodological customs of their field. In contrast, the overt (clear purpose) tests were developed by non-psychologists, criminal law enforcement officers who validated their findings against the polygraph. Considering this, it is not surprising that the two different approaches led to measures that are conceptually and factorially different.

Wanek, Sackett and Ones (2003) researched the interrelationships between overt and covert integrity tests at item level, using a larger number of tests (three overt and four covert tests) (see Tables 2.31 and 2.32).

Table 2.31***Principal Components Analysis of Thematic Composites***

Composite name	Principal component name			
	1 Antisocial behaviour	2 Socialisation	3 Positive outlook	4 Orderliness/ Diligence
7 Drugs, guns, alcohol, tobacco	.86			
8 Driving violations	.79		-.52	
5 Association with delinquents	.78			
2 Theft admissions	.76			
6 Risk taking/thrill seeking	.71	-.35		
4 Social conformity/rule abidance	.57		.31	
1 Theft thoughts/temptations	.46		.36	
3 Self/impulse control	.37	.31	.35	
9 Honesty attitudes	.32		.32	.32
10 Achievement/success orientation		.78		.32
11 Locus of control		.76		
13 Emotional stability		.73		
14 Extroversion/introversion	-.31	.67		
12 Home life/upbringing		.67		
15 Turnover/loyalty	.31	.42		
18 Safety/accident prone			.91	
16 Perception of dishonesty norms	.30		.57	
17 Supervision attitudes		.34	.47	
20 Orderliness			-.43	.76
19 Diligence				.70

Correlations among composites

1 Antisocial behaviour			
2 Socialisation	.32		
3 Positive outlook	.48	.36	
4 Orderliness/diligence	.31	.16	.27

(Wanek, Sackett and Ones, 2003, p. 882)

Table 2.32***Relationships between Four Integrity Principal Components and Seven Integrity Tests***

Principal component	Integrity Tests							Mean <i>r</i> across seven tests	Mean <i>r</i> for overt tests (1-3)	Mean <i>r</i> for personality- based tests (4-7)
	1	2	3	4	5	6	7			
	PSI	Reid	Stanton	HP- Rel	IPI	PDI- EI	PRB			
Antisocial behaviour	.69	.67	.71	.50	.70	.65	.54	.63	.69	.60
Socialisation	.45	.37	.47	.49	.71	.39	.65	.50	.43	.56
Positive outlook	.73	.50	.64	.45	.48	.35	.52	.52	.63	.45
Orderliness/diligence	.31	.28	.33	.32	.34	.24	.37	.31	.31	.32

Notes: Composite correlations between a weighted composite of the thematic item composites for each principal component and each integrity scale. Factor loadings from Table 3.21 were used as weights in computing the composite correlations. The standard error of the difference between correlations in this table is approximately .10.

(Wanek, Sackett and Ones, 2003, p. 884)

The findings of the above study (see Tables 2.31 and 2.33) indicate that integrity tests can be dissimilar with regard to the various thematic composites, but very similar in respect of the four integrity principal components. This means that different integrity tests can be different on the surface, but measure the same underlying construct.

Table 2.33 indicates that three composites, i.e. theft thoughts/temptation, social conformity/rule abidance and perception of dishonesty norms correlate .40 or higher with all seven integrity scale scores. Furthermore, all integrity scales scores, except the HPI-Reliability scale, correlated .40 or larger with theft admissions. The three overt tests, i.e. PSI, Reid and Stanton correlate substantially with honesty attitudes, theft thoughts/temptations and theft admissions. The high correlation of the overt tests with theft admissions is problematic as overt tests typically include admissions as test items.

2.2.16 Construct Validity Evidence Regarding Correlations with Personality and Other Inventories

A number of integrity tests have been correlated with several personality and other inventories in order to study the construct validity of integrity. However, because the analysis of the relationship between integrity and personality is one of the main objectives of this research, the literature review of the relationship between these two constructs are discussed in section 2.4.

Based on the research findings in Tables 2.28, 2.31 and 2.33 it can be inferred that integrity is expressed in terms of:

- intrapersonal characteristics and traits;
- previous overt behaviour;
- current overt behaviour believed to be indicative of the inclination to engage in CWB;
- cognitive beliefs, and
- attitude towards behaviours of perpetrators.

2.2.17 Relationships with Other Constructs

The relationships between integrity and various other constructs such as cognitive ability, religiosity and moral reasoning and others are further elucidated in this section.

2.2.17.1 Cognitive ability

Sackett, Burriss and Callaghan (1989) reported insignificant correlations between integrity tests and cognitive ability based on five samples only. In their meta-analytic results, Ones, Viswesvaran and Schmidt (1993) concluded that integrity does not correlate with general mental ability.

Table 2.33

Relationships between Twenty-three Thematic Composites, Seven Integrity Tests and the Hogan Personality Inventory

Composite	Std. Alpha	PSI	Reid	Stanton	HPI-Rel	IPI	PDI-EI	PRB	ERI
1. Theft thoughts/temptation *Did you ever think about taking money from where you worked, but didn't go through with it? *Have you found a way a dishonest person in your job could take things from work?	.91	.80 (10)	.77 (16)	.74 (6)	.53 (-)	.49 (0)	.45 (0)	.45 (0)	- (1)
2. Theft admissions *Have you ever borrowed something from work without telling anyone? *What is the total dollar value of merchandise you've taken from work in recent years?	.91	.58 (12)	.60 (44)	.59 (7)	.28 (-)	.57 (9)	.55 (1)	.40 (0)	- (0)
3. Self/impulse control *There are times I've been provoked into a fist fight. *I often act quickly without stopping to think things through.	.89	.53 (10)	.36 (0)	.47 (2)	.51 (-)	.66 (24)	.54 (9)	.60 (3)	- (4)
4. Social conformity/Rule abidance *It is OK to get around the law if you don't break it. *It doesn't bother me what other people think.	.85	.62 (9)	.60 (8)	.71 (10)	.45 (-)	.59 (16)	.50 (1)	.53 (3)	- (1)
5. Association with delinquents *I've had fellow employees show me how to take things from where I work. *I have friends who are a little dishonest.	.79	.52 (1)	.54 (4)	.56 (5)	.39 (-)	.44 (3)	.55 (3)	.37 (0)	- (0)
6. Risk taking/thrill seeking *I will usually take someone up on a dare. *I am not a thrill seeker.	.83	.37 (0)	.37 (1)	.41 (0)	.40 (-)	.43 (8)	.58 (10)	.37 (5)	- (7)
7. Drugs/alcohol/tobacco use *How often do you take LSD before work or while at work? *How much money do you spend per week on non-prescription drugs?	.93	.37 (39)	.36 (39)	.38 (0)	.31 (-)	.63 (29)	.51 (1)	.34 (2)	- (7)
8. Driving violations *I've always driven insured vehicles. *I have had my driver's license revoked.	.60	.23 (0)	.36 (1)	.27 (0)	.22 (-)	.37 (6)	.28 (0)	.23 (0)	- (0)
9. Honesty attitudes *If you were sent an extra item with an order, would you send it back? *Are you too honest to steal?	.81	.78 (6)	.66 (5)	.72 (7)	.39 (-)	.41 (0)	.36 (2)	.42 (0)	- (2)
10. Achievement/success orientation *My grades in school were quite good. *I usually work harder than I need to on projects.	.86	.35 (6)	.30 (0)	.33 (1)	.34 (-)	.44 (18)	.28 (13)	.54 (6)	- (6)
11. Locus of control *In general, life has been unfair to me. *I don't feel I've had control over my life.	.62	.25 (0)	.20 (0)	.34 (0)	.30 (-)	.52 (5)	.22 (0)	.30 (1)	- (2)

12. Home life/upbringing	.89	.28	.25	.32	.50	.57	.41	.63	-
*My family members have always been close.		(0)	(0)	(0)	(-)	(31)	(6)	(9)	(2)
*I don't think my parents understood me.									
13. Emotional Stability	.93	.36	.26	.43	.49	.76	.35	.56	-
*I have a feeling someone is out to get me.		(0)	(0)	(0)	(-)	(86)	(1)	(6)	(12)
*I've thought about taking my own life.									
14. Extroversion/introversion	.79	.27	.35	.32	.26	.39	.29	.38	-
*It is not hard for me to converse with strangers.		(5)	(0)	(0)	(-)	(16)	(1)	(7)	(4)
*How confident are you about yourself?									
15. Turnover/loyalty	.75	.44	.34	.39	.26	.55	.35	.51	-
*I expect to change jobs often in the next few years.		(14)	(0)	(0)	(-)	(9)	(3)	(0)	(0)
*I'd like to spend the majority of my career with this company.									
16. Perception of dishonesty norms	.90	.67	.57	.81	.48	.56	.40	.42	-
*Would you say everyone is a little dishonest?		(6)	(17)	(23)	(-)	(4)	(3)	(2)	(4)
*Do most employees take small items from work?									
17. Supervision attitudes	.55	.49	.34	.39	.37	.43	.20	.48	-
*Most supervisors treat their employees fairly.		(5)	(0)	(2)	(-)	(1)	(0)	(0)	(0)
*Do most employees get along well with their supervisors?									
18. Safety/accident prone	.74	.46	.19	.29	.24	.17	.19	.39	-
*I worry about getting hurt at work.		(12)	(0)	(0)	(-)	(0)	(0)	(0)	(0)
*I'm lucky to avoid having accidents.									
19. Diligence	.55	.38	.25	.35	.35	.35	.26	.45	-
*People say that I'm a workaholic.		(2)	(0)	(1)	(-)	(2)	(2)	(1)	(1)
*I always finish what I start.									
20. Orderliness	.59	.15	.20	.18	.20	.28	.21	.22	-
*I like to plan things carefully ahead of time.		(0)	(0)	(1)	(-)	(5)	(1)	(0)	(0)
*I make sure everything is in its place before leaving home.									
21. Unlikely virtues/social desirability	.78	.48	.37	.36	.21	.36	.37	.38	-
*I always tell the truth.		(5)	(3)	(7)	(-)	(10)	(3)	(2)	(1)
*I've never hurt anyone's feelings.									
22. Manipulation check items	.52	.28	.24	.23	.15	.43	.03	.20	-
*Travel is slower now than at the turn of the century.		(0)	(2)	(0)	(-)	(2)	(5)	(1)	(1)
*I have never used a telephone.									
23. Punitiveness	.84	.39	.66	.42	.23	.29	.20	.22	-
*Should a person keep their job if they pay back the money they took?		(1)	(22)	(5)	(-)	(0)	(0)	(0)	(0)
*What dollar value would a worker have to steal before you would fire them?									

Note: *Rationally sorted composites, prototypical questions, standardised alpha coefficients, observed correlations between thematic integrity composites and test integrity scores, and (number of test items in composite). HPI Reliability scores were correlated with composites, however, the HPI items were not included in the thematic integrity composites. Test scores were unavailable for the ERI but items were sorted into composites. The standard error of the difference between correlations in this table is approximately .10.*

(Wanek, Sackett and Ones, 2003, pp. 879-881)

2.2.17.2 Religiosity

Hanson, Guastello, Rieke, Lilienfeld and Lykken (cited in Sackett & Wanek, 1996) have raised the argument that some integrity tests may discriminate against religious individuals. According to Sackett and Wanek (1996), research on this issue is limited. It has been suggested that religious people may score poorly on integrity tests for two reasons: first, by being inclined to confess past wrongdoings on admissions scales, and second, by being more forgiving towards transgressors. Sackett *et al.* (1996) concluded that, although research is limited, it does not support either of the above notions.

2.2.17.3 Moral reasoning

A considerable body of research has emerged from Kohlberg's theory of stages of cognitive moral development (Sackett *et al.*, 1996). Trevino (1992) published a review of research in this field.

Research by Cochran and Lasson (cited in Sackett *et al.*, 1996) found little or no correlation between moral reasoning and their scores on an integrity test, the Reid Report.

Herustein and Murray (cited in Dilchert, Ones, Davis & Rostow, 2007) observed that criminal offenders commonly have an absence of normal attachment to the norms of society. It has been proposed that a deficiency in moral behaviour is the result of poor moral reasoning, and that moral reasoning calls for a required level of intellect in order to understand the rules that form the basis of civilised interaction (Gottfredson & Hirschi, and Wilson & Herrnstein, cited in Dilchert *et al.*, 2007).

Dilchert *et al.* (2007) postulate that what they call the "moral reasoning effect" in essence comprises an indirect negative correlation between cognitive ability and criminality, mediated by moral reasoning ability.

According to Dilchert *et al.*, (2007), measures that claim to assess moral reasoning generally show a strong relationship with verbal ability test scores.

Dilchert *et al.* (2007) argued that the moral reasoning test (the Defining Issues Test) was just another method of measuring verbal intelligence. They, however, propose more empirical research to investigate the suggested mediating role of moral reasoning in the cognitive ability-deviant behaviour postulation.

2.2.17.4 Broad versus Narrow Facets of Integrity

Nicol and Paunonen (2002) compared two overt integrity test subscales for the prediction of counterproductive behaviour in an experimental situation. They used the Phase II Profile and Workplace Productivity Questionnaire (WPQ). Each of these tests produces six scale scores and an overall score. They found that the subscales of the two tests correlated differently with some of the criterion variables. In addition, several of the subscales correlated higher with counterproductive behaviour than the broad dimensions did. They deduced that there are advantages in considering correlations at the facet level in prediction measures. They concluded that, although broad measures are useful, and in particular circumstances, provide more complete measurement of a construct, they can also hide differences regarding the predictive validity of narrow facets and, as a result, restrict understanding of the dimensions under investigation.

2.2.17.5 Cultural Differences

Church (2001) provides a comprehensive review of the literature regarding personality measurement in cross-cultural perspective. With regard to integrity tests in particular, Fortmann, Leslie and Cunningham (2002) conducted cross-cultural comparisons of the Reid Integrity Scale in Latin America and South Africa (see Table 2.34). Cronbach's Alpha did not vary substantially between Argentina, Mexico, U.S.A. and South Africa, i.e. .81, .78, .83 and .79 respectively (see Table 2.34). Fortmann *et al.* concluded that data from Argentina, Mexico, U.S.A. and South Africa indicate that integrity is a relatively stable construct.

Table 2.34***Reid Integrity Attitude scores as a function of country, gender and employment***

Country	M	SD	N
Argentina	17.8	3.96	371
Applicants	17.8	3.96	371
Incumbents	-	-	-
Argentina males	17.8	4.08	127
Applicants	17.8	4.08	127
Incumbents	-	-	-
Argentina females	17.7	3.94	182
Applicants	17.7	3.94	182
Incumbents	-	-	-
Mexico	16.5	3.92	330
Applicants	15.5	4.13	47
Incumbents	16.7	3.88	283
Mexico males	16.4	4.01	150
Applicants	15.2	3.90	18
Incumbents	16.6	4.00	132
Mexico females	16.5	3.88	111
Applicants	16.0	3.77	20
Incumbents	16.6	3.9	91
South Africa	16.4	4.08	188
Applicants	16.1	3.99	23
Incumbents	16.5	4.12	164
South Africa males	16.6	3.94	130
Applicants	16.6	2.99	13
Incumbents	16.6	4.06	116
South Africa females	15.9	4.09	38
Applicants	16.5	4.43	4
Incumbents	15.9	4.12	34
USA	14.3	4.64	156
Applicants	17.3	4.22	23
Incumbents	13.8	4.52	133
USA males	13.7	5.34	48
Applicants	17.2	5.26	9
Incumbents	12.9	5.10	39
USA females	14.3	4.23	100
Applicants	17.2	3.07	6
Incumbents	14.1	4.24	94

(Fortmann, Leslie & Cunningham, 2002, p. 101)

2.2.18 Criticisms of Integrity Tests

Various aspects of integrity testing have been subject to criticism.

2.2.18.1 Negative Applicant Reactions

A practical uneasiness of employers considering the use of integrity tests is the concern that job applicants may respond negatively to taking integrity tests, as they may perceive the tests as invasive and offensive, therefore leading to damage to an organisation's image. Research in this domain considers issues such as job relatedness, fairness, invasion of privacy, offensiveness and appropriateness (Sackett & Wanek, 1996, Sackett & Wanek, 2007; Whitney, Diaz, Mineghino & Powers, 1999).

Hausknecht, Day and Thomas (2004) reported results from 86 independent samples. (N = 48750) and deducted that job applicants who have positive feelings about selection are more likely to perceive the employer favourably and present stronger desires to accept job offers and recommend the organisation to others.

According to Sackett and Wanek (2007),

- generally, integrity tests do not elicit strong negative responses;
- comparing integrity tests to a broad range of selection devices, integrity tests elicit reactions that are in the middle of the range of negative responses compared to other selection methods;
- there remains uncertainty as to whether personality-oriented tests yield more favourable results than overt tests;
- reactions to integrity tests are influenced by contextual factors, e.g. the explanation given by the organisation using such tests.

Sackett and Wanek (2007) stated that reactions to integrity tests seem to be motivated by factors such as the response format used, the specific items and the type of integrity test.

2.2.18.2 False Positive Problem

In order to rationalise the use of integrity tests for selection purposes, employers must consider whether there is a significant downside that makes the test less useful in predicting work performance. A false positive result is one such downside, i.e. the

identification of honest applicants as dishonest. Various authors such as Bernardin and Cooke (1993), Dalton and Metzger (1993), Hollinger and Clark (1983), Slora (1989), and Karren and Zacharias (2007) conclude that the false positive rate for integrity tests is quite high; consequently large numbers of job applicants are likely to be incorrectly classified as lacking integrity.

2.2.18.3 Faking Issues

Another decision error, the false negative error, is equally important in establishing the usefulness of integrity tests. The false negative error occurs when dishonest applicants are assessed as having integrity. This error depends partly on whether integrity tests can be faked. Lilienfeld, Alliger and Mitchell (1995) identified the fakability of integrity tests as an important controversial issue regarding overt integrity tests. There is substantial evidence that job applicants will fake to obtain employment (Anderson, Warner & Spencer, 1984; Barrick & Mount, 1996; Goldstein, 1971; Rosse, Stecher, Miller & Lewin, 1998). When comparing personality-based integrity tests to overt integrity tests, it is to be expected that the latter are easier to fake due to the direct nature of the test items. Evidence of this was found by Ryan and Sackett (1987), Lo Bello and Sims (1993), and Alliger and Dwight (2000).

According to Karren and Zacharias (2007), another key question is how prevalent faking is amongst job applicants. If the percentage is high, it may reduce the criterion-related validity of integrity tests. In this regard, Donovan, Dwight and Hurtz (2003) found that faking commonly occurs when applicants are of the opinion that dishonest responses regarding their behaviours could not be verified.

Earlier studies, i.e. Hough, Eaton, Dunette, Kamp and McCloy (1990) and Ones, Viswesvaran and Reiss (1996), found that faking did not have an adverse effect on the validities of personality tests. However, a more recent study by Douglas, McDaniel and Snell (1996) found that faking had a significant influence on both the construct validity and criterion validity of a personality test used in their research. Another study by Stark, Chernyshenko, Chan, Lee and Drasgow (cited in Karren and Zacharias, 2007) also found that faking had an adverse effect on the construct validity of personality tests.

2.2.18.4 Privacy and Fairness Concerns

Critics of integrity tests have emphasised privacy and fairness concerns regarding integrity tests. In general, privacy concerns deal with the invasiveness of selection methods and enquiries into the personal lives of job applicants. Fairness concerns, on the other hand, deal with whether selection methods exploit, abuse, discriminate against or otherwise put applicants at some discomfort or disadvantage. The researched literature regarding these concerns tends to fall into three categories:

- one category focuses on the legality of selection methods;
- the second category focuses on privacy norms; and
- the third category focuses on broader ethical norms, such as procedural justice or fairness (Karren & Zacharias, 2007).

A detailed discussion of privacy and fairness concerns falls outside the scope of this dissertation. Stone-Romero, Stone and Hyatt (2003), Gilliland (1993), Margulis (1977), Rosenbaum (1973), Schein (1976), Schein (1977), Stone and Kotch (1989) and Karren and Zacharias (2007) provide an extensive coverage of these issues.

2.2.19 Conclusions with regard to Construct Validity

Integrity test reliabilities generally indicate that it is a stable construct. Contrasting group studies appear to discriminate successfully between dishonest and honest individuals and between criminals and non-criminals. Factor analytical studies have identified a number of factors that underlie integrity tests. However, the early development of integrity tests, i.e. the polygraph route, lacked scientific foundation as it was purely concerned with criterion-related validity. Furthermore many, if not most, validity studies have used proprietary scoring keys, which seriously hampered scientific analysis. Thus, integrity testing lacked definition and theory development. It is only recently that researchers have begun to focus on a definition of underlying factors of the construct of integrity.

Criticism against studies on the relationship between integrity and work performance essentially relate to the construct validity of the integrity measures used (Cullen &

Sackett, 2004). According to Becker (1998) and Rieke and Guastello (1995), the construct of integrity remains either too broad or too vague and ill defined. According to Cullen and Sackett (2004), integrity measures have been developed from a magnitude of multi-faceted conceptualisations of the construct consisting of a mixture of values, attitudes and personality characteristics. The label of “integrity” was attached to a category of tests long after many of these tests were already in use (Marcus, Lee & Ashton, 2007). It would therefore be misleading to infer the meaning of integrity test scores deductively from any theoretical definition of integrity, as there is no conceptual link between those construct definitions and many tests supposed to measure integrity.

Integrity testing, to a large extent, has been and still is a commercially driven phenomenon that focuses almost entirely on criterion-related validity. According to Sackett and Wanek (1996), nobody initially started with a clear psychological theory in mind. Researchers developed integrity tests, put them in use, and discovered that they predict the whole range of behaviours. Now that we have a great deal of criterion-related validity data available, researchers are trying to understand what integrity tests measure, i.e. what the construct(s) underlying these tests is or are.

Camara and Schneider (1994) ascribe the concern regarding a valid conceptualisation of integrity to the development that the construct has been expanded to the extent that it is now considered a composite of three of the Big Five constructs of personality. Hogan and Ones (1997) and Ones (1993) reported substantial correlations between integrity and conscientiousness. Ones and Viswesvaran (2001b) also found strong correlations between conscientiousness and integrity, but reported that integrity also correlated significantly with agreeableness and emotional stability. Becker (1998) strongly criticised the tendency to equate integrity with honesty and conscientiousness, arguing that integrity is conceptually distinct from honesty and conscientiousness. Barnard, Schurink and De Beer (2008) agree with Murphy (2000) that the construct of integrity should be clarified because of the enormous impact of integrity on employment decisions.

A major flaw in the approach of many integrity test developers and researchers was the inclusion of CWB items in integrity tests and the inclusion of similar items in the

criteria. It is not surprising, therefore, that Ones (1993) reported very high correlations between overt integrity tests, which generally include many admission items, and admissions criteria. Thus, despite many positive research results regarding the construct of integrity, the construct suffers from too little theory, the lack of a clear definition of the construct and overlap with other constructs.

2.2.20 Summary

The aim of this section was to provide an overview of the integrity and integrity testing domain, excepting the criterion-related validity of integrity tests as this type of validity will be dealt with in another section. More specifically, the current section has dealt with the definitions of integrity, the description of what an integrity test is, the history of integrity testing, the use of a polygraph in business, different types of integrity tests, reasons for the popularity of integrity tests, the reliability of integrity tests, the construct validity of integrity tests, the relationship among different integrity tests, the relationship between integrity and other constructs, broad versus narrow facets of integrity, cultural differences, and criticism of integrity testing.

The following section will deal with personality, including a brief history of personality measurement, the emergence of the Big Five and Big Six personality dimensions, and the reliability of the Big Five personality dimensions. The criterion-related validity of the Big Five will be dealt with in another chapter.

2.3 PERSONALITY

2.3.1 Definition of Personality

Because the concept of personality encompasses such a broad-ranging domain, short definitions, which are essentially abstractions, cannot completely do justice to the diverse aspects of this domain of psychology (Staub, 1980). Despite this, many authors have tried to provide brief definitions of personality. For example, personality is “the culmination of all relatively enduring dimensions of individual differences on which he (an individual) can be measured” (Byrne, as cited in Staub, 1980, p. 4); “the distinctive patterns of behaviour (including thoughts and emotions) that characterize each individual’s adaptation to the situations of his or her life” (Mischel, as cited in Staub, 1980, p. 4); “a relatively enduring pattern of interpersonal situations that characterize a human life” (Sullivan, as cited in Staub, 1980, p. 4); “the dynamic

organisation within the individual of those psychological systems that determine his characteristic behaviour and thought” (Allport, as cited in Staub, 1980, p. 4); and “a person’s unique pattern of traits” (Guilford, as cited in Staub, 1980, p. 4).

Caprara and Servone (2000, p. 10), stated “by personality we refer to the complexity of psychological systems that contribute to unity and continuity in the individual’s conduct and experience, both as it is expressed and as it is perceived by that individual and others.”

Mayer (2007, p. 14) considered the definitions of Wundt, Allport and others and defined personality as “... the organised, developing system within the individual that represents the collective action of that individual’s major psychological subsystems”.

According to Staub (1980), most of the definitions quoted by him emphasise individual differences. Mischel’s definition (as cited in Staub, 1980) emphasises the adaptation to circumstances, Sullivan’s definition (as cited in Staub, 1980) focuses on the importance of interpersonal situations, while Allport’s definition emphasises the organisation of personal characteristics and that it is a dynamic process. Most of the definitions also suggest consistency in individual characteristics.

2.3.2 The history of personality measurement and emergence of the Big Five Factors

The link between personality and work performance has been studied frequently in industrial-organisational psychology during the last century. In general, the research can be classified into separate phases. The first phase covers many areas and consists of studies conducted from the early 1900s to the middle of the 1980s. Research conducted during this phase consisted mainly of primary studies in which researchers analysed the relationships between individual scales of personality inventories and various facets of work performance. It was concluded that personality and work performance were not related in any significant way across situations and across traits (Barrick, Mount & Judge, 2005; Ghiselli & Barthol, 1953; Guion & Gottier, 1965; Schmitt, Gooding, Noe & Kirsch, 1984).

Barrick *et al.* (2005) offered a number of possible explanations for the low validities of personality as predictor of work performance reported in early studies:

1. No taxonomy was utilised to classify personality traits into a smaller, more meaningful number.
2. Personality traits were not clearly defined.
3. Researchers did not differentiate between the measurement of personality at the inventory scale level and at the construct level.
4. A significant portion of the research used a “shotgun” approach by correlating all personality scales on personality inventories with all criteria in the study.
5. Literature reviews were mostly narrative and opposed to quantitative and no corrections were made for study artefacts which resulted in lower validity estimates.

According to Barrick *et al.* (2005), the above shortcomings resulted in inconsistent correlations between personality traits and criteria, which hampered progress in understanding the relationship between personality and performance.

Currently, personality research is experiencing a reawakening. The second phase, which covers the period from the mid-1980s to the present, makes use of the five-factor model or some variant of it to classify personality scales. Furthermore, more researchers have used Meta analytic methods to analyse results across studies. The results of the primary studies using the five-factor model and Meta analytic studies also using the five-factor model have resulted in more favourable conclusions than previously regarding validity of personality and have enhanced our knowledge of the personality-performance relationships.

A number of authors in recent literature have emphasised the importance and usefulness of personality measures in organisational settings (Barrick, Mount & Judge, 2005; Bowling & Burns, 2010; De Fruyt & Salgado, 2003; Dudley, Orvis, Lebiecki & Cortina, 2006; Grucza & Goldberg, 2007; Hastings & O’Neill, 2009; Hogan, 2005; Penney, David & Witt, 2011; Sarchione, Cuttler, Muchinsky & Nelson-Gray, 1998).

2.3.3 The Big Five personality factors

According to Barrick and Mount (1991, p. 2), planned efforts to categorise the taxonomy of personality started shortly after McDougall (1932) wrote that “personality may to advantage be broadly analysed into five distinguishable but separate factors, namely intellect, character, temperament, disposition and temper...”. Approximately ten years after that, Cattell developed an instrument that consisted of sixteen primary factors and eight second-order factors. Attempts by other researchers to replicate Cattell’s findings were unsuccessful, however. Support for the five-factor model grew and in 1961 Tupes and Christal (as cited in Barrick & Mount, 1991) found that there was considerable support for five factors: surgency, emotional stability, agreeableness, dependability and culture.

According to Barrick and Mount (1991), the powerful body of literature that has accumulated during the past decade presents compelling evidence for the robustness of the five-factor model – across different theoretical frameworks; using different instruments; using ratings obtained from different sources; and with a variety of samples. Barrick and Mount (1991) also stressed the fact that the five factors are relatively independent of measures of cognitive ability.

According to Dilchert, Ones, Van Rooy and Viswesvaran (2006), these five broad categories of personality traits have become known as the Big Five Personality Dimensions. Each dimension of the Big Five consists of a group of traits that are more closely correlated with one another than with traits from the other dimensions. The Big Five Personality Dimensions are (1) emotional stability; (2) extraversion; (3) openness; (4) agreeableness and (5) conscientiousness. Some researchers and authors prefer different names for some of these dimensions. For example, openness is sometimes referred to as intellect or intellectance, while others prefer the name neuroticism rather than emotional stability. Irrespective of this, the contents of the five dimensions correspond across the various conceptualisations of personality.

According to Robertson and Callinan (1998), considerable evidence exists that the Big Five Dimensions are compatible across various national groups. In this regard McCrae and Costa (as cited in Robertson and Callinan, 1998) reported results in

which six diverse samples, i.e. Japanese, Korean, Chinese, Hebrew, Portuguese and German, yielded considerable similarity in the Big Five structure with a substantial American sample.

According to Robertson and Callinan (1998), the materialisation of the Big Five factors constitutes a definite conceptual framework based on substantial research as well as a clear measurement framework. This has co-occurred with a renewed interest in the role of personality in industrial/organisational psychology.

Since the 1990s, research investigating the relationship between personality and work behaviour has accelerated. The Five Factor Model (FFM) dimensions have been repeated in a variety of studies across cultures and countries and have shown to be quite stable over time (McCrae & Terracciano, 2005). Studies have demonstrated that conscientiousness was the most significant of the Personality Factors in the prediction of work performance, both in western settings (e.g. Mount & Barrick, 1995; Salgado, 1997 as cited in Chang & Smithikrai, 2010) and Asian settings (e.g. Smithikrai, 2007 as cited in Chang & Smithikrai, 2010).

According to Dilchert *et al.* (2006), hundreds of studies over time yielded evidence that indicated that the Big Five were generalisable. An extensive body of literature and factor-analytic studies have emerged in the last decade, yielding strong evidence for the robustness of the Big Five dimensions of personality, using different tests and measures in a variety of samples and across various theoretical frameworks, as well as across different ratings, i.e. self and peer, and across languages, including Tagalog-Filipino, Italian, Turkish, Polish, German and English. According to Dilchert *et al.*, the Big Five, because of its generalisability and replicability, has become the most widely accepted taxonomy of personality attributes.

2.3.4 Summary

This section has dealt with the definition of personality, the history of personality measurement and the emergence of the Big Five personality factors. Significant progress has been made since the 1990s in conceptualising personality, culminating in the Big Five personality dimensions. It has been demonstrated that the Big Five

correlates significantly with a variety of work-related criteria in different settings, which assists in generalising findings.

2.3.5 PERSONALITY AND CWB

According to Ones (cited in Bolton, Becker & Barber, 2010), substantial resources are devoted to efforts to forecast counterproductive work behaviours during the process of staff selection. According to Mount, Ilies and Johnson (2006), counterproductive work behaviours are believed to be affected by individuals' personality traits rather than by abilities, because individuals decide voluntarily if they want to be involved in such behaviours. Although a multitude of personality traits (Goldberg, as cited in Bolton, Becker and Barber, 2010) have been isolated, the most popular method (Goldberg & Saucier; Mount *et al.*, as cited in Bolton, Becker and Barber, 2010) for assessing the relationship between personality traits and counterproductive work behaviours is the Big Five taxonomy.

The Big Five have been associated with a wide variety of counterproductive work behaviours, although inconsistently (Cullen & Sackett, 2003; Ones, Viswesvaran & Schmidt, 2003; Salgado, 2002).

Various scholars have investigated the relationship between the Big Five personality factors and CWB. In general, however, it has been found that three of the Big Five factors, i.e. conscientiousness, agreeableness and emotional stability (Neuroticism) are related to CWB, and mostly in that order, with conscientiousness showing the strongest negative relationship with CWB in general. However, the above three factors demonstrate differential relationships with interpersonal counterproductive work behaviour (ICWB) and organisation-directed counterproductive work behaviour (OCWB) (Berry, Ones & Sackett, 2007; Bowling & Eschleman, 2010; Darviri & Woods, 2006; Hastings & O'Neill, 2009; Hitlan & Noel, 2009; Jensen & Patel, 2011; Marcus, Lee & Ashton, 2007; Ménard, Brunet & Savoie, 2011; Ones, 1993; O'Neill, Lewis & Carswell, 2011; Smithikrai, 2008; Spector, 2011). A summary of the relationships is given in Table 2.35.

Numerous studies on potential antecedents of CWB in its different forms have been done with significant linkages being reported between certain personality dimensions and CWB.

Table 2.35

The relationship between conscientiousness (C), agreeableness (A) and neuroticism (N) and interpersonal counterproductive work behaviour, organisation directed and overall counterproductive work behaviour

Organisation-Directed Counterproductive Work Behaviour

Conscientiousness	Agreeableness	Neuroticism (N)	Author
—0.43	—0.03	(N)—0.08	O'Neill, Lewis and Carswell (2011, p. 598)
—0.34	—0.25	—0.19	Berry, Ones and Sackett (2007, p. 416)

Interpersonal Counterproductive Work Behaviour

Conscientiousness	Agreeableness	Neuroticism (N)	Author
—0.19	—0.36	—0.20	Berry, Ones and Sackett (2007, p. 416)
—0.31	—0.17	(N) 0.04	O'Neill, Lewis and Carswell (2011, p. 598)

Overall CWB

Conscientiousness	Agreeableness	Neuroticism (N)	Authors
—0.47	—0.33	0.26	O'Neill, Lewis and Carswell (2011, p. 597)
—0.39	—0.47	0.12	Hastings and O'Neill (2009, p. 291)
—0.22	—0.21	0.04	Ashton (1998, p. 296)
0.24	0.08	0.15	Hough (in Sackett & Devore, 2001, p. 155)

Berry, Ones and Sackett (2007) conducted a meta-analytic study and found that agreeableness and conscientiousness showed the highest correlation with a composite counterproductive work behaviours score; in particular, agreeableness predicted interpersonally-directed counterproductive work behaviours, whereas conscientiousness predicted organisation-directed counterproductive work behaviours.

As can be seen in Table 2.35, Overall Counterproductive Work Behaviour correlates the highest with Conscientiousness, then with Agreeableness, and then with Neuroticism. Organisation-directed Counterproductive Behaviour correlates the

highest with Conscientiousness. Agreeableness has the second highest correlation with Organisation-directed Counterproductive Behaviour, and Neuroticism has the lowest correlation. With regard to Interpersonal Counterproductive Work Behaviour, Conscientiousness and Agreeableness demonstrate similar relationships, while the relationship between Neuroticism and Interpersonal Counterproductive Work Behaviour is variable.

In 1998, Robinson and Greenberg (as cited in Sackett & Devore, 2001) stated that little or no support existed for relationships between personality and counterproductive work behaviour. Two subsequent meta analyses by Hough and Salgado (as cited in Sackett & Devore, 2001) investigated the relationship between the Big Five Personality Dimensions and counterproductive work behaviour. Of specific relevance here is the construct of irresponsible behaviour used by Hough, which was defined as including drug and alcohol use on the job; unauthorised absence; not following directions; disciplinary actions; counterproductive behaviour and poor attendance.

Hough found a correlation of .24 (see Table 2.35 for dependability (a dimension of conscientiousness) based on 69 independent samples consisting of 98 676 research subjects. Correlations of .15 or higher were found for achievement (a dimension of conscientiousness), neuroticism and openness to experience, but the samples were much smaller (Sackett & Devore, 2001).

Salgado (as cited in Sackett & Devore, 2001) reported a separate analysis for turnover, counterproductive behaviour (theft and disciplinary problems) and accidents and absence. Conscientiousness and agreeableness were found to be related to the counterproductive criterion.

Sackett and Devore (2001) also examined a large-scale United States Army Project which studied a number of personality measures as predictors of counterproductive work behaviour in a military environment. The mean correlation across jobs for each of the personality dimensions was reported. Dependability (mean $r = .30$) and achievement orientation (mean $r = .18$) demonstrated significant correlations.

Sackett and Devore (2001) concluded that the above findings are compelling. From literature on the Big Five Personality Dimensions and the literature regarding prediction in a military environment, significant relationships were found between personality and counterproductive work behaviour.

Ones and Viswesvaran (2003) also referred to the work of Hough and Salgado and concluded that the general trend that the sub-dimensions of conscientiousness, i.e. achievement and dependability, have significant predictive value with regard to all counterproductive work behaviours in Hough's analysis. The two dimensions of conscientiousness appear to have similar levels of correlations for the avoidance of counterproductive work behaviours. It appears that employees who are dependable and achievement-striving generally refrain from counterproductive work behaviour. Ones and Viswesvaran (2003, p. 231) furthermore emphasised that the strength of these effects is fairly large. For example, the correlation between dependability and avoidance of counterproductive work behaviour is .47 across 66 studies and 113,427 research subjects.

Mount, Ilies and Johnson (2006) studied the relationship of personality traits and counterproductive work behaviour and the mediating effects of job satisfaction. They found significant correlations between agreeableness, conscientiousness, emotional stability and counterproductive work behaviours. According to them, these findings are consistent with the findings of prior research, e.g. Hough *et al.* (1990), Ones (1993), Ones *et al.* (1993) and Salgado (2002). Mount *et al.* (2006), however, went one step further by investigating the relationship between personality and interpersonal as well as organisational deviance. Their results indicated that agreeableness was the best predictor of interpersonal counterproductive work behaviours whereas conscientiousness and emotional stability were the best predictors of organisationally based counterproductive work behaviour.

The results indicate that conscientiousness predicts organisational deviance better than interpersonal deviance. Two groups of traits that are generally used to describe conscientious people are dependability (rule-compliant, dutiful and reliable) and achievement orientation (goal-directed, hardworking and persistent). Traits linked to dependability are relevant to organisational deviance or counterproductive behaviour

directed at the organisation because they refer to the tendency to be rule-abiding and conforming to the norms of the organisation. Achievement orientation is associated with the willingness to exert effort.

An interesting finding by Mount *et al.* (2006) was that the correlations between boss and self-ratings for counterproductive behaviour against individuals was .48, which was twice as large as the correlations between boss and self-ratings for counterproductive behaviour against organisations, i.e. .21. This means that individuals and their bosses are more in agreement about the frequency of deviant behaviours directed at individuals than the frequency of behaviours focused on the organisation.

2.3.6 Summary

This section has focused on the relationship between personality and counterproductive work behaviour. Research indicates that personality correlates with counterproductive work behaviour. Three of the Big Five personality traits, i.e. Conscientiousness, Agreeableness, and Neuroticism, are related to counterproductive work behaviour and mostly in that order. Thus, it can be postulated that conscientiousness and agreeableness have a negative relationship with counterproductive work behaviour, and that neuroticism has a positive relationship with CWB.

2.3.7 PERSONALITY AND INTEGRITY

An important advancement in interpreting the constructs underlying integrity tests was the finding that integrity tests consistently correlate with three of the Big Five dimensions: Conscientiousness, Agreeableness, and Emotional stability (Berry, Sackett & Wiemann, 2007; Sackett & Wanek, 1996). Conscientiousness has the most overlap with integrity tests. Integrity appears to be measured by a very broadly defined construct of conscientiousness. Sackett and Devore (2001) refer to a meta-analysis by Hough (1992) that was based on more than 100 studies of several hundred thousand individuals which found significant relationships between Conscientiousness, Agreeableness and Emotional Stability, and integrity tests, with

conscientiousness explaining the biggest source of variance in integrity tests. However, agreeableness and emotional stability also contribute to the construct of integrity (see Table 2.36). It is informative to note that both overt and personality-based integrity tests correlate with the above three dimensions of the Big Five, and in that particular order (see Tables 2.37 and 2.38). The other two dimensions of the Big Five, extraversion and openness to experience, have near zero correlations with overt and personality-based integrity tests (Ones & Viswesvaran, 2001; Marcus, Funke & Schuler, in Marcus, Lee & Ashton, 2007). However, Wanek, Sackett and Ones (2003) found moderate relationships between extraversion and openness to experience and integrity tests. The three dimensions, conscientiousness, agreeableness and emotional stability also correlate with counterproductive behaviour (Berry, Ones & Sackett in Marcus, Lee & Ashton, 2007; Salgado, 2002).

Table 2.36

Meta-Analysis of Integrity Test Correlations with the Big Five Dimensions of Personality

	r _{mean}	K	N	ρ	ρ with conscientiousness
Emotional Stability	0.22	378	78,651	0.33	0.26
Agreeableness	0.26	272	62,097	0.40	0.27
Conscientiousness	0.28	423	91,360	0.42	-

Note: ρ = true score correlation; K = number of correlations; N = total sample size; r_{mean} = mean observed correlation. The last column shows true score correlations of conscientiousness scales that were obtained through a meta-analysis of the literature.

(Ones, 1993, p. 143)

Table 2.37

Meta-Analysis of Overt Integrity Test Correlations with the Big Five Dimensions of Personality

	r _{mean}	K	N	ρ	ρ with conscientiousness
Emotional Stability	0.18	142	17,265	0.28	0.26
Agreeableness	0.23	105	13,885	0.34	0.27
Conscientiousness	0.26	160	22,422	0.39	-

Note: ρ = true score correlation; K = number of correlations; N = total sample size; r_{mean} = mean observed correlation. The last column shows true score correlations of conscientiousness scales that were obtained through a meta-analysis of the literature.

(Ones, 1993, p. 144)

Table 2.38***Meta-Analysis of Personality-based Integrity Test Correlations with the Big Five Dimensions of Personality***

	r_{mean}	K	N	ρ	ρ with conscientiousness
Emotional Stability	0.23	236	61,386	0.37	0.26
Agreeableness	0.28	167	48,212	0.44	0.27
Conscientiousness	0.28	263	68,942	0.45	-

Note: ρ = true score correlation; K = number of correlations; N = total sample size; r_{mean} = mean observed correlation. The last column shows true score correlations of conscientiousness scales that were obtained through a meta-analysis of the literature.

(Ones, 1993, p. 145)

Despite the finding through meta-analyses of a significant relationship between conscientiousness, agreeableness, emotional stability and integrity, there is also scepticism about the relationship. For example, it is generally accepted that of the three factors, conscientiousness correlates the strongest with integrity. In their meta-analytic study, Murphy and Lee (1994) found little support for the postulation that conscientiousness explains the validity of integrity measures in predicting job performance. Furthermore, a number of primary studies indicated that the correlation of integrity tests with specific facets within the same dimensions is significantly different (Costa & McCrae, 1995; Hakstian, Farrell & Tweed, 2002; Marcus, Höft & Riediger, 2006; Murphy & Lee, 1994). This implies that the constructs that underlie integrity tests may be explained at the level below the Big Five, rather than above the Big Five dimensions. According to Marcus, Lee and Ashton (2007), the relationships between the Big Five dimensions and counterproductive behaviour are low to moderate ($\rho = -0.06$ to -0.26). However, in another study by Berry, Ones and Sackett (as cited in Marcus *et al.*, 2007) a $\rho = -0.46$ between agreeableness and interpersonal deviance was found, and -0.42 between conscientiousness and organisational deviance.

Hough and Schneider (1996) differentiate between two kinds of personality traits: basic traits and compound traits. Basic traits focus on conceptual coherence, internal consistency and temporal stability. A basic trait approach is predictor-focused.

A different methodology is the criterion-focused approach. In the latter approach, test items are retained on the basis of their predictive relationships with the criterion. As a consequence, the measure may tap multiple basic traits that may not all co-vary, yielding a low internal consistency. Such measures are labelled “compound traits”. Integrity tests are examples of a compound trait (Hough & Schneider, 1996). The main intention is that an empirically selected group of basic traits based on several studies to predict specific criteria, in specific settings should lead to higher criterion-related validity than using the basic trait approach. The finding that integrity tests predict counterproductive work behaviours better than Big Five dimensions or composites of Big Five dimensions supports this argument (Berry, Sackett & Wiemann, 2007).

Although integrity constitutes a compound trait related to Conscientiousness, Agreeableness and Emotional Stability, these three dimensions do not explain all the variance in integrity and do not explain as much variance in counterproductive work behaviour as integrity does (Murphy & Lee, 1994; Ones, 1993). The question is: what, other than the particular three of the Big Five dimensions, does integrity consist of? Sackett and Wanek (1996) proposed that integrity tests have a bigger reliance on self-control than the Big Five, but this has not been empirically tested.

Lee, Ashton and De Vries (2005) and Marcus, Lee and Ashton (2007) postulated that a sixth personality dimension, called “Honesty-Humility” that is not sufficiently represented by the Big Five may explain integrity. Lee, Ashton and De Vries (2005, p. 182) define “Honesty-Humility” as evidenced “by such content as sincerity, fairness, lack of conceit, and lack of greed”.

Sackett and Wanek (1996) investigated the relationship between integrity tests and the Big Five Personality Factors. They also reported correlations between overt tests, correlations between personality-based tests, and correlations between overt and personality-based tests.

According to Sackett and Wanek (1996), overt integrity tests correlate .45 with each other, while personality-based integrity tests correlate .70 with each other. The mean correlation between personality-based measures and overt measures is .39. Integrity tests correlate significantly with three of the Big Five dimensions, i.e.

conscientiousness, agreeableness and emotional stability. In her original research in 1993 (Sackett & Wanek, 1996), Ones showed that the traits of conscientiousness, agreeableness and emotional stability each contributes independently to integrity test scores.

Kochkin (1987) compared applicant performance on the Reid Report (an overt integrity test) with performance on the 16PF (Form A). The results indicated that applicants who are recommended for employment on the basis on their performance on the Reid Report are inclined to be emotionally mature and stable with higher ego strength (C+); are emotionally more disciplined, conscientious about moral standards, less self-indulgent and have higher super-ego strength (G+); display more self-confidence and are less prone to guilt (O-); are more likely to behave in socially desirable manners, are more compulsive and more controlled (Q3); are less likely to be motivated by nervous excitement; are more relaxed and less inclined to display poorly directed ID impulses (Q4-); are more venturesome and inhibited (H+) and less anxious.

2.3.8 INTEGRITY-RELATED PERSONALITY TRAITS

Kochkin (1987) also compared the 16PF profiles of subjects with the average 16PF profiles of five pathological groups: convicted criminals (N = 891), narcotic addicts (N = 937), alcoholics (N = 1019), general neurotics (N = 272), and anti-social personalities (N = 97). Kochkin (1987) concluded that his findings were in agreement with those of Terris and Jones (as cited in Kochkin, 1987). Applicants who have positive attitudes toward theft are likely to have a similar personality structure to those found in pathological groups, i.e. individuals with addictions, anti-social personalities and convicted criminals. The most salient similarities are low super-ego strength (G-), low-ego strength (C-), high guilt (O+), impulsivity (Q3-) and poorly directed ID-impulses.

Hogan and Zenke (as cited in Hogan & Hogan, 1989) correlated the Hogan Personality Inventory (HPI) with the California Psychological Inventory (CPI), and the Minnesota Multi-phasic Personality Inventory (MMPI). The results showed that individuals who obtained low scores on the reliability scale of the Hogan Personality

Inventory (HPI) tended to be aggressive, hostile, self-indulgent and impulsive. High scorers tended to be conscientious, attentive to detail, rule compliant and socially mature. When correlated with the CPI scales for self-acceptance and social presence, it appears that high scores on the HPI reliability scale are associated with modesty and conformity. The correlations between the MMPI and the HPI imply that employee reliability is linked to conscientiousness and carefulness. The relationships with the MMPI clinical scales suggest that high scorers on the reliability scale are associated with being modest, non-aggressive and restrained. The negative correlations between the reliability scale and the MMPI paranoia and hypomania also indicate that high scorers tend to be realistic and non-impulsive. The correlation with Welsh's Factor further suggests that high scorers tend to be mature, self-confident and exercise self-restraint. Furthermore, the MMPI MacAndrews scale for alcoholism correlates -0.51 with the HPI reliability scale.

Gough (1994) correlated the socialisation scale of the California Psychological Inventory with other personality measures and found four themes:

Theme 1: Reliability, dependability, conscientiousness, and moral behaviour and absence or minimal inclination towards non-conformist or unconventional behaviour

Theme 2: Adjustment, maturity, cheerfulness and the absence of depression and neuroticism

Theme 3: Agreeableness, likeability, friendliness and objectivity in interpersonal relations

Theme 4: Relative absence of impulsive, aggressive and hostile behaviour

According to Gough (1994), the Socialisation Scale (SO) scale was originally developed to measure perspective-taking ability and as a measure for classifying individuals as well as groups along a putative continuum of pro-social normative behaviour. Role-taking theory was appealed to as a method of conceptualising the symptomatology of psychopathy and as a way of accounting for the incomplete or flawed internalisation of social norms that characterises wayward and delinquent

individuals. Low scorers on the SO scale focused primarily on central cues, often to the disadvantage of the awareness of peripheral and incidental information. Putting it differently, is to say that persons with low scores on the SO scale have trouble in getting the big picture with regard to physical as well as interpersonal environments. High scorers on the SO scale have long-term perspectives including the envisaging of distant, future goals. Specific psycho-pathological problems are known to be associated with low scorers on the SO scale. These are: alcohol and drug abuse, recidivism in the correctional system, child abuse and neglect, eating disorders, tendency towards violence, sexual coerciveness in men, prevarication and cheating, poor self-esteem, and personality disorders including the histrionic, narcissistic, borderline and anti-social personalities. The perceptions of other individuals regarding high scorers on the SO scale are as follows: individuals with higher scores on the scale tend to be seen as organised, conscientious, conservative, dependable and ethically consistent. Individuals with lower scores on the scale tend to come across as changeable, dissatisfied, headstrong, rebellious and as impulse-dominated (Gough, 1994).

Woolley and Hakstian (1992) examined the relationship between integrity measures and personality scales to determine evidence of convergent and discriminant validity. The measures involved were the California Psychological Inventory, the 16PF, the Neo-PI, the Neo-FFI, the PRB and the PDI-EI (performance), the PDI-EI (Tenure), the ERI and the Reid Report. Four factors emerged.

Factor 1: Conventional Commitment

Individuals who obtain high scores on this factor can be described as self-controlled, conforming and steady. Overall, this factor indicates conventional attitudes and commitment to the job. Individuals who score low on this factor can be described as impulsive, lacking in commitment and job interest, and unreliable.

Factor 2: Intolerance of Dishonesty

This factor measures components of self-control and responsibility. It includes measures of attitudes and beliefs about dishonesty and opinions regarding the severity of punishment for theft.

According to Ash (1975) (as cited in Woolley and Hakstian, 1992) an individual's responses to Reid Report items are strongly influenced by the individual's own practices. The more deviant the individual's own past, the more lenient his or her attitude towards punishment will be and, therefore, the lower the punitiveness score will be. Low scorers tend to see some level of dishonesty as rather ordinary in society. Their interpretation of their own dishonesty is normative and they perceive themselves as more or less average within the context of a world that is largely dishonest. High scorers, however, tend to have extremely intolerant attitudes regarding all forms of dishonesty and theft. They endorse punishment even if the offenses are relatively minor. They perceive themselves as about average within the context of a world that is largely honest.

Factor 3: Socialised Control

This factor, the largest of the four factors, seems to represent the essence of personality-based measures of integrity. The general theme running through the eight scales which have significant loadings is largely related to the CPI Class II scales.

A large portion of the item content of the scales that load on this factor is associated with past behaviour: lack of conformity in the family and school, and instances of rule-breaking are common and also items related to problem drinking and clashes with the law. Another common theme is related to various forms of impulsivity and excitement seeking.

Individuals who obtain high scores on Factor 3 can be described as having internalised the values, norms and rules of society. They have developed a sense of self-control and responsibility and are mature and stable. Individuals who obtain low scores on this factor are less mature and stable, more opportunistic and care-free, more inclined to take risks and have admitted to more past rule-breaking.

Factor 4: Active Conscientiousness

The general theme running through these scales is the concept of active, persistent determination and duty-bound conscientiousness to meet one's obligations. Individuals who score high on this scale can be described as orderly, organised, having high standards, determined, and accomplishment orientated.

Collins and Schmidt (1993) studied the construct validity of the CPI and the PDI-EI, using samples of offenders and non-offenders. The PDI-EI is a personality-based test that purports to predict productive and counterproductive behaviour at work. Individuals who obtain high scores on this scale can be described as reliable, demonstrating good work habits and complying with company rules and policies. Those who obtain low scores display traits such as risk-taking, emotional instability, irresponsibility and dishonesty.

The five highest structure coefficients and effect sizes that emerged were for performance (PDI-EI), socialisation (CPI), tolerance (CPI) and responsibility (CPI). Performance, socialisation, responsibility and tolerance have the same psychological theme in common. High scorers on the performance scale are associated with being responsible, reliable, dependable, rule-abiding and conscientious in work behaviour and motivated toward high work performance.

The socialisation scale purports to measure the extent to which individuals comply with social norms. High scorers on this scale are predicted to be rule-compliant, conscientious, honest and dependable and not prone to being manipulative or opportunistic.

The responsibility and socialisation scales have some characteristics in common. The responsibility scale was developed to measure the extent to which an individual is dependable, responsible, conscientious, and is committed to moral, civic and social values. Low scorers on this scale often display anti-social behaviour whereas higher scorers demonstrate responsibility and attention to duty in the workplace. High scorers on the tolerance scale are tolerant and trusting; low scorers are suspicious and judgemental toward others and do not feel that they can depend on others.

According to Collins and Schmidt (1993) the common threads running through the above scales are conscientiousness and positive attitudes with regard to responsible and pro-social behaviours and activities, implying that the discriminate factor could be labelled conscientiousness. These scales resemble the elements of the global construct "conscientiousness" as defined by Digman, Peabody and McCrae and Costa, Norman and others (as cited in Collins & Schmidt, 1993). Individuals who score low on these scales are described as self-reliant, irresponsible, undependable, and over- or under-controlled. Low scorers on the responsibility scale are associated with behaviours that are irresponsible and self-centred, which may result in serious problems for the individual, including personal and financial difficulties. Low scores on the socialisation scale are normally risk-takers and they may be opportunistic, manipulative and unethical.

Lilienfeld, Andrews and Stone-Romero (1994) examined the relationship between the Reid Report Inventory (RRI), a widely used overt integrity test, and a number of personality measures. The personality measures included the Multi-dimensional Personality Questionnaire (MPQ), the Socialisation (SO) Scale of the CPI and the Activity Preference Questionnaire (APQ), a measure of fearfulness. The sample consisted of prisoners and college students. In the prisoner sample, RRI total honesty scores showed significant correlations with two of the higher-order scales of the MPQ, i.e. Negative Emotionality (NE) and Constraint (CN). Furthermore, RRI total honesty scores correlated significantly with a number of the MPQ lower-order scales, i.e. control, aggression, stress reaction, social closeness and alienation. RRI total honesty scores also correlated significantly with APQ total scores, as well as with the subscales of social fearfulness and physical fearfulness. The RRI total honesty scores also correlated significantly with the SO scale scores. In the college sample, RRI total honesty scores correlated significantly with NE and CN. Similar to the present sample, the RRI total honesty scores correlated significantly with a number of MPQ lower-order scales: aggression, social closeness, control, traditionalism, alienation, harm avoidance, well-being and absorption. The RRI total honesty score also correlated significantly with the SO scale.

The finding that both overt and covert integrity tests show the highest correlation with conscientiousness, the second highest correlation with agreeableness and the third highest correlation with emotional stability, demonstrates that these three constructs are present in varying degrees in all types of integrity tests (Ones, 1993). It seems that integrity tests singled out individuals who will be responsible, dependable and conscientious. They also single out individuals who will be agreeable, cooperative and not hostile in employment settings. Individuals who score high in integrity tests are also likely to be emotionally stable. There appears to be little correspondence between being open to experiences, being cultured and intellectual and displaying integrity. In addition, extraverts are somewhat more dishonest.

Woolley and Hakstian (1992, p. 482) studied the relationships among four integrity tests and CPI scores. The four tests were (1) the Personnel Reaction Blank (PRB), (2) the Personnel Decisions Employment Inventory (PDI-EI), (3) the Employee Reliability Index (ER-I), and (4) the Reid Report. The correlations between the socialisation (SO) scale and the various integrity tests, males and females respectively, were as follows:

Personnel Reaction Blank, 0.78 and 0.71; the PDI Employment Inventory Performance, 0.51 and 0.39; the PDI Employment Inventory Tenure, 0.30 and 0.35; Employee Reliability Index, 0.72 and 0.66; Reid Report Honesty, 0.26 and 0.26; and Reid Report Punitive Attitudes, 0.06 and 0.09. A factor analysis of the integrity measures plus eight personality scales from three inventories led to the conclusion that the SO scale had its highest loading on the factor named Socialised Control.

Logan, Koettel and Moore (1986) examined the relationship between 16PF scores and the Phase II Profile (an integrity test containing items in respect of attitudes, situations and admissions). The Phase II Profile correlated positively and significantly with emotional stability and imagination, and also correlated significantly negatively with tender-mindedness. Higher scores on the Phase II Profile are associated with higher levels of honesty. According to Logan *et al.* (1986), honest subjects appear to be more emotionally stable, more imaginative and more tender-minded. They concluded that their research did not provide convincing evidence of the construct

validity of the Phase II Profile and that the significant relationships were relatively low.

2.3.9 Summary

Robust support was found in the literature for substantial relationships between conscientiousness, agreeableness, emotional instability and integrity. Therefore, it can be postulated that conscientiousness and agreeableness relate positively with integrity, whilst emotional instability relates negatively with integrity.

2.3.10 Integrity and CWB

This section discusses the relationships between integrity and counterproductive work behaviour.

2.3.11 Early Criterion-related Validity Studies

According to O'Bannon, Goldinger and Applebee (1989), integrity testing validity research falls into five primary categories, i.e. contrasted group designs, background check research, admissions studies, predictive validity research and time series studies.

In validity research, the performance of an integrity test is compared against another measure of integrity, the criterion. It is appealing to consider the criterion as an unmistakable indicator of the "true" level of integrity, but in most cases it is not a flawless measure. As is the case with the test, the criterion may be unreliable to a degree (O'Bannon *et al.*, 1989).

2.3.11.1 Comparisons with Polygraph Performance

Sackett and Harris (1984) produced a review and critique of integrity testing. This included a review of the criterion-related validity of integrity tests by comparing test scores with polygraph results. A number of studies were examined (refer Table 2.39).

Table 2.39**Summary of Predictive Validity Studies**

Test	Sample	Predictors	Criteria	Results
Stanton Survey (Klump, 1980)	<i>N</i> = 930 (applicants for wide variety of jobs)	Composite of attitude items and admissions	Admissions during polygraph exam	$r_{ins} = 0.86$
Stanton Survey (Klump, 1980)	<i>N</i> = 1806 (applicants for wide variety of jobs)	Composite of attitude items and admissions	Admissions during polygraph exam	$r_{bis} = 0.80$
Stanton Survey (Reed, 1982)	<i>N</i> = 259 (unspecified)	Composite of attitude items and admissions	Recommendation based on admissions during the polygraph exam	$r_{bis} = 0.72$
Trustworthiness Attitude Survey (Personnel Security Corp., undated)	<i>N</i> = 400 (unspecified)	Honesty scale	Polygrapher recommendation	$r_{phi} = 0.53$
Trustworthiness Attitude Survey (Personnel Security Corp., undated)	<i>N</i> = 600 (unspecified)	Honesty scale	Polygrapher recommendation	$r_{pbis} = 0.76$
Wilkerson Pre- employment Audit (Wilkerson, 1980)	<i>N</i> = 820 (unspecified)	Composite of attitude item, admissions, and biographical data	Not specified	$r = 0.75$

(Sackett and Harris, 1984, p. 230)

Sceptics of integrity testing would argue that the above validities are weak for the following reasons: Firstly, the polygraph is seriously questioned by scientists; polygraph judgements should, therefore, be dismissed. Secondly, there is overlap between items in the tests and items in the criterion (such as admissions of past wrongdoing) which inflate the validity coefficients. Together with this, social desirability can also inflate validities (Sackett & Harris, 1984).

Despite the above weaknesses, Sackett and Harris (1984) concluded that integrity test scores consistently appear to correlate with admissions made during a polygraph examination and polygraph judgements.

Sackett, Burris and Callahan (1989) provided an updated review of the criterion-related validity of integrity tests with polygraph results as criterion. They highlighted substantial variation in methodologies in polygraph studies and reported that very little new research with the polygraph test criterion has been conducted, perhaps as a result of increased scepticism about the validity of the polygraph. Their results are presented in Table 2.40.

Table 2.40

Summary of Criterion Related Validity Studies (polygraph results)

Test	Sample	Predictors	Criteria	Results
London House Personnel Selection Inventory (Terris, 1985)	470	Theft attitudes scale	Theft admissions during polygraph examination	0.56
Stanton Survey (Reed, undated)	259	Attitude and admissions scale	Theft admissions during polygraph examination	0.72
True Test (Miner, undated)	100	Not specified	Failing/passing polygraph examination	0.34 0.51 0.64

(Sackett, Burris and Callahan, 1989, p. 500)

The research reviewed by them consisted of overt integrity tests and the results are consistent with earlier research. Personality-based tests have not been validated against polygraph criteria, perhaps due to the fact that they originated in mainstream psychological testing rather than in the polygraph industry.

2.3.11.2 Admissions Research

The most frequently used method of validating integrity tests has been to compare test scores with an individual's own confessions of wrongdoing. Admissions comprise questionnaires or interview confessions. In correctly designed studies, the integrity test scores and admissions responses are kept completely independent of each other. The admissions responses should not be used to determine the integrity test score (O'Bannon *et al.*, 1989). Despite this statement by O'Bannon *et al.*, the literature indicates that overt integrity tests, which frequently, if not always, include admissions, consistently yield higher validity coefficients than personality-based integrity tests.

Sackett and Harris (1984, p. 233) reviewed sixteen studies which used theft admissions as criterion (see Table 2.41).

Table 2.41

Summary of Theft Admission Studies

Test	Sample	Predictors	Criteria	Results
Reid Report (Ash, 1975)	140 bank applicants	honesty score	1) admitted cash theft 2) admitted merchandise theft	1) $r = 0.19$ 2) $r = 0.25$
Reid Report (Harris, 1980)	982 applicants	honesty score	1) value of cash theft admitted 2) value of merchandise theft admitted	1) $r = 0.07$ 2) $r = 0.15$
Reid Report (Ash, 1975)	1230 specified respondents	honesty scale	1) value of cash theft admitted 2) value of merchandise theft admitted	1) $r = 0.30$ 2) $r = 0.45$
Phase II Profile (1982)	240 applicants	honesty items and admission items	value of cash or merchandise stolen	$r = 0.64$
Pre-employment Analysis Questionnaire (Gerhardt, undated)	100 food store applicants	honesty scale	number of illegal activities admitted	$r = 0.45 - 0.53$ at various test cut-offs
Wilkerson Pre-employment Audit (Morey, 1981)	605 unspecified respondents	not specified	Admission vs no admissions	Contingency coefficient = 0.63
London House PSI -Jones (1982a) -Moretti (1980)	89 hospital employees 17 warehouse employees 14 supermarket employees	honesty scale honesty scale	\$ theft (anonymous) \$ theft (anonymous)	$r = 0.56$ $r = 0.56$ $r = 0.41$
-Terris and Jones (1982a) -Moretti (1982)	74 department store employees	honesty scale	\$ theft (anonymous) theft index (anonymous)	$r = 0.57, 0.58, 0.34$ in 3 stores $r = 0.41$
-Jones (1981)	132 grocery workers 64 hospital workers	honesty scale	\$ theft of drugs and supplies (anonymous)	$r = 0.59$
-Terris and Jones (1980) -Jones (1980)	33 nurses 37 supermarket employees 39 employees-various organizations	honesty scale	\$ theft (anonymous) \$ theft or merchandise (anonymous)	$r = 0.66, 0.81$ in 2 stores
-Jones and Terris (1982b)	254 department store employees	composite of honesty, violence and drug abuse scales	admissions of theft and other rule infractions (anonymous)	$r = 0.41$ sig. mean difference between unscreened group and group pre-screened with PSI
-Terris (1979b) -Jones (1982b)	145 college students 71 high school students	honesty scale honesty scale	\$ theft (anonymous) theft frequency (anonymous)	$r = 0.63$ $r = 0.51$

(Sackett and Harris, 1984, p. 233)

Sackett and Harris (1984) concluded that integrity test scores consistently correlate with admissions of past wrongdoing of both job applicants and current employees. However, they highlighted a number of factors which may affect the size of the correlations:

- (1) A theft index consisting of multiple items is probably more reliable than only one question regarding theft admissions.
- (2) Some studies had the same items in the predictor measure as in the criterion measure.
- (3) Pre-selecting equal numbers of individuals who admitted theft and who did not admit theft will yield higher validities than random sampling.
- (4) Some studies used monetary values as criterion while others used a theft/no theft dichotomy.

They concluded that, considering these differences, they were cautious about drawing any conclusions about the validity of integrity tests using an admissions criterion. O'Bannon *et al.* (1989) concluded that research regarding admissions by employees and job applicants has been fairly successful in showing a relationship between integrity test scores and admissions by individuals. However, they also highlighted the following areas of concern:

- (1) Correlating integrity test scores and admissions may inflate the validity coefficients.
- (2) The personalities of individuals completing the tests and admission criterion measures may determine their willingness to disclose past wrongdoing.
- (3) While past behaviour is often considered a good indicator of future behaviour, it may not be suitable for all job applicants, for example, young, inexperienced applicants may have a clean past record.

Miner and Capps (1996) reported three further admissions studies (see Table 2.42):

Table 2.42**Summary of Admissions Studies**

Test	Sample	Predictors	Criteria	Results
Personnel Selection Inventory (Frost & Rafilson, 1989)	105	Not specified	Theft subscale Counter-productivity subscale	0.46 0.39
Personnel Reaction Blank (Frost & Rafilson, 1989)	105	Not specified	Theft subscale Counter-productivity subscale	0.10 0.26
Personnel Selection Inventory (Miner & Capps, 1996)	104	Not specified	Drug admissions Theft admissions	0.45 0.45

(Miner and Capps, 1996, p. 40)

Miner and Capps (1996) concluded that correlating integrity tests and admissions produced a wide range of validity coefficients. The general pattern is one of statistical significance, with some coefficients as high as 0.70. Generally, however, the results are in the 0.40's. There is a tendency for the validity coefficients to be lower than those for the polygraph. Miner and Capps are of the opinion that this is probably due to subjects fearing that the examiner has some hidden way of establishing the truth when both integrity tests and polygraph-provoked confessions are being used.

2.3.11.3 Contrasted Groups Studies

The aim of studies involving contrasted groups is to demonstrate that groups assumed to differ in integrity yield mean differences in test scores. In these studies, individuals who are undoubtedly dishonest are contrasted with those who do not display any lack of integrity. The underlying theory is that if the integrity test is a sound measure of the construct of integrity, significant differences should be found between the two groups (Ones, 1993).

Gough (1994) reported numerous contrasted group studies, using the SO-scale (Summary in Table 2.43 and Table 2.44).

Table 2.43

Summary of Contrasted Group Studies with the CPI

Test	Sample	Predictors	Measure	Results
California Psychological Inventory (Gough, 1994)	Five samples (males): 1) 45 high school boys 2) 125 high school boys 3) 19 boys nominated by principals as behaviour problems 4) 243 delinquents 5) 698 male reformatory inmates	"Delinquency" scale	Group means	Mean score for non-delinquents = 21.65 Mean score for behaviour problems = 28.95 Mean score for delinquents = 29.98
	Four samples (females): 1) 44 high school girls 2) 134 high school girls 3) 19 girls nominated as behaviour problems 4) 109 reformatory inmates	"Delinquency" scale	Group means	Mean score for non-delinquents = 18.19 Mean score for behaviour problems = 22.00 Mean score for delinquents = 30.26
	99 U.S. Army prisoners versus 1092 recruits	"Delinquency" scale	Group means	Means: Recruits = 19.43 Prisoners = 30.49
	144 repeat offenders versus 209 first offenders	"Delinquency" scale	Group means	Means: First offenders = 28.40 Repeat offenders = 31.11 $t = 3.34$ ($p < 0.01$) Point biserial correlation = 0.18
	45 first offenders versus 190 recidivists	"Delinquency" scale	Group means	Means: First offenders = 34.39 Recidivists = 30.82 $t = 4.31$ ($p < 0.01$) Point biserial correlation = 0.27
	111 boys with zero or one previous convictions versus 119 with 2 or more convictions	"Socialisation" scale	Group means	Means: Zero or no previous convictions = 29.72 Two or more convictions = 25.95 $t = 4.55$ ($p < 0.01$) Point biserial correlation = 0.29 Means (for the last 2 studies) Black inmates = 29.39 ($N=56$) White inmates = 27.75 (difference statistically insignificant)
	<i>N</i> Not specified First commitment at age 15 or younger versus first commitment at age 16 or older	"Socialisation" scale	Group means	Continued Means: First commitment at age 15 or younger = 24.76 First commitment at age 16 or older = 29.93 $t = 6.41$ ($p < 0.01$) Point biserial correlation = 0.38
	125 boys raised as "insulated" against delinquency versus 101 boys who were delinquent prone	"Socialisation" scale	Group means	Means: "Insulated boys" = 39.43 Vulnerable boys = 31.40 $t = 8.34$ ($p < 0.01$)

Test	Sample	Predictors	Measure	Results
				Point biserial correlation could not be calculated
	743 merit scholars and 578 certificate of merit winners (957 boys versus 364 girls)	"Socialisation" scale	Group means	Means: Boys = 38.85 Girls = 40.06
	9000 more socialised individuals versus 1295 less socialised individuals	"Socialisation" scale	Group means	Means: More socialised persons = 36.74 (SD = 5.61) Less socialised persons = 27.98 (SD = 6.08) $t = 51.70$ ($p < 0.01$) Point biserial correlation = 0.45
	9776 more socialised women versus 784 less socialised women	"Socialisation" scale	Group means	Means: More socialised women = 39.46 Less socialised women = 29.94 (SD = 6.89) $t = 47.25$ ($p < 0.01$) Point biserial correlation = 0.42 For both males and females the highest mean score for the less socialised samples was lower than the lowest mean among the more socialised samples.

(Gough, 1994, p. 652-654)

Table 2.44**Summary of Further Contrasted Group Studies with the CPI**

Test	Sample	Predictors	Measure	Results
California Psychological Inventory (Gough, 1994)	78 male and 39 female alcoholic in-patients	1) Psychopathic Deviate Scale of the MMPI (Pd) 2) Hare Psychopathy Checklist		<i>Correlations with SO</i> Pd, $r = 0.56$ Hare Checklist, $r = 0.36$ DIS-APD, $r = 0.65$
"Socialisation" scale, scored in reverse order for "Delinquency" California Psychological Inventory (Gough, 1994)		3) NIMH Diagnostic Interview Schedule on Antisocial Personality Disorder (DIS-APD)		<i>Correlations with Pd</i> Hare Checklist, $r = 0.29$ DIS-APD, $r = 0.38$ <i>Correlations with Hare Checklist</i> DIS-APD, $r = 0.34$
				Factor Analysis of the low measures A single first dimension, accounting for 57.3% of the variance in the matrix. Loadings on this factor were 0.90 for So, 0.69 for DIS-APD, 0.58 for Pd and 0.45 for the Hare Checklist.

Test	Sample	Predictors	Measure	Results
	88 non-APD patients versus 29 APD patients	"Socialisation" scale (So) Psychopathic Deviate (Pd) Hare Checklist	Non-APD patients versus APD patients	<i>Point-biserial correlations</i> So = 0.43 Pd = 0.28 Hare Checklist = 0.14
	274 white male inmates (105 classified as APD and 169 classified as non-APD)	-Hare checklist -Psychopathic -Deviate (Pd) -Hypomania (Hy) -Socialisation Scale (So) -Self-reports on a weighted form of the Hare Checklist -Composites of Pd + Ma and Pd-So	Antisocial Personality Disorder (APD) versus Non-Antisocial Personality Disorder	<i>Point biserial correlations</i> Hare Checklist: $r = 0.67$ Global rating: $r = 0.57$ Pd-So: $r = 0.44$ So: $r = 0.37$ Self-rating: $r = 0.35$ Pd + Ma: $r = 0.33$ Pd: $r = 0.29$ Ma: $r = 0.21$ Factor Analysis: Factor 1 accounted for 52.7% of the variance and had major loadings on the global ratings (0.91), the Hare Checklist (0.91), and the criterion diagnosis (0.76). Factor 2 accounted for 18.8% of the variance and had major loadings on So (-0.81), self-reports (0.79), and Pd + Ma (0.71).
	2198 non-delinquent men and 1011 delinquent men from other countries, using Afrikaans, Spanish, Punjabi, Italian, Hindi, German and French translations of the scale. 797 non-delinquent women and 299 delinquent women from the abovementioned countries	"Socialisation" scale	Group differences	<i>Group means:</i> Non-delinquent men = 34.15 Delinquent men = 28.26 $t = 26.82$ ($p < .001$) Point biserial correlation = 0.43 Non-delinquent women = 36.11 Delinquent women = 27.50 $t = 22.72$ ($p < .001$) Point biserial correlation = 0.56
	39 Borstal boys in India, classified as casual or first offenders versus 23 Borstal boys, classified as habitual offenders	"Socialisation" scale	Group differences	<i>Group means:</i> Casual or first offenders = 33.95 Habitual offenders = 24.78 $t = 8.10$ Point biserial correlation = 0.72
	99 Fardikot Jail casual and first offenders, 20 Delhi Jail habitual offenders and 22 Ambala Prison hardened and habitual offenders	"Socialisation" scale	Group differences	<i>Group means:</i> Borstal boys casual or first offenders = 34.31 Delhi Jail habitual offenders = 23.15 Ambala Prison hardened and habitual offenders = 21.55

(Gough, 1994, p. 658-664)

Gough (1994) concluded that it is clear that scores on the SO-scale differentiate between groups along the socialisation continuum. This differentiation is also valid across cultures.

Jones (1991) reported differences in contrasted groups for the Personnel Selection Inventory as indicated in Table 2.45. Jones (1991) concludes that the contrasted groups design represent a significant advance in the validation of the Personnel Selection Inventory because they go beyond self-report criteria.

Table 2.45
Summary of Contrasted Group Studies

Test	Sample	Predictors	Criteria	Results
Personnel Selection Inventory (Jones & Terris, 1981)	116 incarcerated felons/200 job applicants	Honesty Scale	Group differences	felons scored significantly lower than applicants ($t = 23.5, < 0.001$)
Personnel Section Inventory (Jones & Terris, 1981)	116 incarcerated felons/527 department store applicants	Honesty Scale	Group differences	felons scored significantly lower than the recommended ($t = 30.0, p < 0.001$) and non-recommended groups ($t = 29.5, p < 0.001$)
Personnel Selection Inventory (Jones & Terris, 1983)	177 store applicants of whom 20 had criminal records	(1) Not specified	Group differences	50 percent of applicants with no criminal record passed the PSI; 10 percent of applicants with criminal records passed the PSI $X^2(1) = 13.3, p < 0.01$
		(2) Honesty Scale	Criminal record vs non-criminal record	applicants with a criminal history scored significantly lower ($t = 5.8, p < 0.001$)
Personnel Selection Inventory (Jones & Terris, 1983)	15 problematic restaurants/15 non-problematic restaurants in terms of internal theft and cash shortages and surpluses (521 employees)	Honesty Scale	Problematic restaurants vs non-problematic restaurants	employees in the problematic restaurants on average scored significantly lower than those in the non-problematic restaurants ($t(28) = 2.6, p < 0.02$)
Personnel Selection Inventory (Jones & Terris, 1983)	86 employees/5 locations	Honesty Scale	Inventory shortages vs inventory surpluses	Locations with better honesty climate scores tended to have inventory surpluses; locations with inventory shortages tended to have weaker honest climates ($r = 0.52, p < 0.025$)
			Number of cases of internal theft	locations with better honesty climates had the lowest incidence of internal theft ($r = -0.37, p < 0.025$)

Test	Sample	Predictors	Criteria	Results
			Number of shortages	a between-location analysis of the 5 centres for shortages yielded a marginally significant variance ($f = 2.4, p < 0.06$) (Jones, 1991, p. 70-71)

O'Bannon *et al.* (1989) raised some concerns with regard to contrasted group studies, such as the fact that some of the studies included juvenile delinquents and not all delinquents are necessarily involved with the criminal justice system. Furthermore, it is possible that differences in integrity test scores between delinquents and job applicants may, to some extent, be due to differences in maturity rather than proneness towards criminality. In addition, studies which compare convicted felons to typical citizens represent an extreme contrast, which does not truly assess the effectiveness of integrity tests used in employment settings.

2.3.11.4 Background Check Research

Background check studies consist of administering an integrity test to a group of individuals and then doing background searches to uncover past criminal activity. It is expected that an integrity test will identify individuals with a criminal record (O'Bannon *et al.*, 1989).

O'Bannon *et al.* (1989) reviewed a number of studies that made use of background checks. Although background checks have some success in isolating those with a history of wrongdoing, many individuals with no record of historical wrongdoing are also classified as risky. To some extent, the explanation is that a portion of individuals with low integrity may not have public records that are significant enough to label them as dishonest.

2.3.11.5 Predictive Validity

According to Sackett, Harris and Callahan (1989), validation strategies that use external non-polygraph comparisons evoke the most interest from personnel

psychologists because of looking for evidence that integrity tests predict independent external criteria (i.e. labour turnover, disciplinary records, detected theft on the job, etc.).

A study conducted by Sackett and Harris in 1984 (Sackett *et al.*, 1989) reviewed several studies of this nature but these studies were plagued by a number of difficulties and did not yield much convincing evidence of this validation strategy (see Table 2.46).

Table 2.46
Summary of Predictive Validity Studies

Test	Sample	Predictors	Criteria	Results
London House Personnel Selection Inventory (Jones and Terris, 1981b)	61 convenience store job applicants	Honesty scale	Caught stealing or disciplined for cash/merchandise shortages	% caught or disciplined greater for those failing test ($Z = 2.1$; $p < 0.05$)
London House Personnel Inventory (Jones and Terris, 1981b)	80 Salvation Army Kettlers	Honesty scale	Average daily intake	$r = 0.28$
London House Personnel Selection Inventory (Terris and Jones, 1982a)	527 department store applicants	Honesty scale	Discharged for theft	Significantly lower mean test score ($p = 0.05$) for those discharged
London House Personnel Selection Inventory (Jones and Terris, 1983b)	64 home improvement centre applicants	Honesty scale	Disciplined for mishandling/cash merchandise	$r = 0.23$
Milby Profile (Bradley, 1980)	Gas station/convenience store employees - 83 cashier applicant - 101 current cashiers - 56 new and current managers	Stepwise selection of honesty items	Average number of days per two-week period where employee was working and a cash shortage over \$5 was found	Cashier applicants: $r = 0.82$ Current cashiers: $r = 0.68$ Managers: $r = 0.72$
Personal Outlook Inventory (Selection Research Publishing, 1983)	459 department store applicants	Weighted sum based on item analysis	Discharged for theft of cash or merchandise	Derivation sample: $r = 0.48$ Cross validation sample: $r = 0.39$
Reid Report (Ash, 1975)	140 bank applicants	Honesty scale	Discharged for theft	Only 2 individuals discharged; $r = 0.06$
Stanton Survey (Klump, 1980)	$N = 930$ (applicants for wide variety of jobs)	Composite of attitude items and admissions	Admissions during polygraph exam	$r_{ins} = 0.86$

Test	Sample	Predictors	Criteria	Results
Stanton Survey (Klump, 1980)	<i>N</i> = 1806 (applicants for wide variety of jobs)	Composite of attitude items and admissions	Admissions during polygraph exam	$r_{bis} = 0.80$
Stanton Survey (Reed, 1982)	<i>N</i> = 259 (unspecified)	Composite of attitude items and admissions	Recommendation based on admissions during the polygraph exam	$r_{bis} = 0.72$
Trustworthiness Attitude Survey (Personnel Security Corp., undated)	<i>N</i> = 400 (unspecified)	Honesty scale	Polygrapher recommendation	$r_{phi} = 0.53$
Trustworthiness Attitude Survey (Personnel Security Corp., undated)	<i>N</i> = 600 (unspecified)	Honesty scale	Polygrapher recommendation	$r_{pbis} = 0.76$
Wilkerson Pre-employment Audit (Wilkerson, 1980)	<i>N</i> = 820 (unspecified)	Composite of attitude item, admissions, and biographical data	Not specified	$r = 0.75$

(Sackett and Harris, 1984, pp. 229-230)

Since then, however, a substantial number of studies using an external criterion have been conducted. These studies are reported in Table 2.46.

Table 2.47**Validity Studies Using an External Criterion**

Test	Sample	Predictor	Criterion	Validation Strategy	Results
London House PSI (Jones & Terris, 1983b)	86 home improvement centre employees	Dishonesty scale	Sup. Rating -mishandle cash-merchandise -damage property -overall productivity -absence -tardiness	Predictive (8-month intervals)	$r = 0.23$ $r = 0.35$ $r = -0.16$ $r = 0.62$ $r = 0.24$
London House PSI (Brown & Joy, 1985)	482 grocery store applicants	Dishonesty scale	Theft apprehension	Predictive (8-months)	Signif. difference ($p < .05$) in failure rate; 94% of detected thieves (16 of 17) failed test; 48.4% of rest of sample failed test
			Tenure	Mean days employed	Signif. higher among those passing test (95.4 vs. 87.5 days)
London House PSI (Brown & Joy, 1985)	3,790 grocery store applicants	Dishonesty scale	Termination for dishonesty	Predictive (one year)	Signif. difference ($p < .05$) in failure rate: 83% of thieves (75 of 91) failed test; 58% of rest of sample failed test

Test	Sample	Predictor	Criterion	Validation Strategy	Results
			Termination for absenteeism		72% (43 of 60) failed test
			Termination for other policy violations		83% (42 of 51) failed test
London House PSI (Joy & Frost, 1987)	157 bus drivers	Dishonesty scale	Composite of 14 objective measures (e.g. absence, accidents)	Predictive (3 months)	$r = 0.19$
	72 conductors and ticket agents				$r = 0.21$
London House PSI (Terris & Jones, 1982b)	238 fast food chain applicants	Dishonesty scale	Sup. rating of counter-productive behaviour	Predictive (one year)	r not reported: claimed r was signif. At 0.05 level
London House PSI (Moretti, 1984)	498 department store applicants	Dishonesty scale	Sup. rating of frequency of register shortages	Predictive (3 months)	$r = 0.16$
London House PSI (Moretti & Terris, 1983)	876 department store applicants	Dishonesty scale	Termination for theft	Predictive (time interval unspecified)	48% of detected thieves (10 of 21) failed the test; 41% of the rest of the sample failed the test
Reid Report (Kamp, 1988)	145 convenience store manager applicants	Dishonesty scale	Average monthly inventory imbalance	Predictive	$r = 0.48$
Employment Inventory (PDI, 1985)	98 college students	Performance scale	Received \$3.00 in advance after offering to retake test; measured whether test was completed	Predictive	Those who defaulted ($N = 19$) scored 0.63 SD lower
		Tenure scale			Those who defaulted ($N = 19$) scored 0.50 SD lower
PDI Employment Inventory (PDI, 1985)	2,988 retail applicants	Performance scale	9 perf. categories, from fully satisfactory to terminated for gross misconduct	Predictive (9-12 months)	$r = 0.26$ to 0.34 depending on performance categories compared; 71% (47 of 66) of those fired for gross misconduct failed the test; 29% (216 of 744) of fully satisfactory employees failed the test
PDI Employment Inventory (PDI, 1985)	1,188 retail applicants	Tenure scale	Employed vs. voluntary turnover	Predictive (3 months)	$r = 0.26$
PDI Employment	72 retail applicants	Performance scale	Sup. rating of performance	Predictive (3 months)	$r = 0.24$

Test	Sample	Predictor	Criterion	Validation Strategy	Results
Inventory (PDI, 1985)					
PDI Employment Inventory (PDI, 1987)	90 current retail employees	Performance scale	Sup. rating -overall performance -sales behaviour -objective sales indexes: sales/payroll sales/hour	Concurrent	$r = 0.38$ $r = 0.21$ $r = -0.10$ $r = 0.02$
PDI Employment Inventory (Sevy, 1987)	173 bus drivers	Performance scale	Workers' compensation claims	Concurrent	$r = 0.32$
Personnel Reaction Blank (Gough, 1972)	342 department store employees 46 lumber mill employees 58 male office workers 321 female office workers 300 supermarket employees	Dependability/ Conscientiousness scale	Sup. rating of effectiveness	Unclear if predictive of concurrent	$r = 0.25$ $r = 0.30$ $r = 0.33$ $r = 0.20$ $r = 0.22$
Hogan Reliability Scale (J. Hogan, R. Hogan & Briggs, 1984)	56 truck drivers	Reliability scale	Commendations/ Suspensions	Concurrent	$r = 0.51$ $r = -0.28$
Hogan Reliability Scale (J. Hogan, Peterson, R. Hogan & Jones, 1985)	111 truck drivers	Reliability scale	Grievances filed Commendations Claims filed for equipment failure	Concurrent	$r = -0.18$ $r = 0.15$ $r = -0.25$
Hogan Reliability Scale (Raza, Metz, Dyer, Coan, & J. Hogan, 1986)	201 hospital service workers	Reliability scale	No. times counselled for aberrant behaviour	Concurrent	$r = -0.18$
Hogan Reliability Scale (Guier, 1984)	65 psychiatric counsellors	Reliability scale	Sup. ratings of overall job performance	Concurrent	$r = 0.25$
Hogan Reliability Scale (Montgomery, Butler, & McPhail, 1987)	163 nuclear power plant workers	Reliability scale	Sup. ratings	Concurrent	$r = 0.21$
Hogan Reliability Scale (R. Hogan, Jacobson, J. Hogan, & Thompson, 1987)	76 service operations dispatchers	Reliability scale	Absences	Concurrent	$r = -0.49$
Hogan Reliability Scale (J. Hogan, Arneson, R. Hogan & Jones,	178 habilitation therapists	Reliability scale	Injuries sustained No. incidents filed with state insurance	Concurrent	$r = -0.17$ $r = -0.17$

Test	Sample	Predictor	Criterion	Validation Strategy	Results
1986)			commissioner		
Employment Productivity Index (Joy & Frost, 1987)	167 retail job applicants	Composite of dependability, interpersonal cooperation, and drug avoidance scales	Sup. ratings (mean) across 6 dimensions)	Predictive (3-month interval)	$r = 0.22$
Employment Productivity Index (Terris, 1986)	1,236 retail applicants	Composite of dependability, interpersonal cooperation, and drug avoidance scales	Employment status	Predictive (6 months)	% failing test: successful employees – 22%; fired for poor performance – 37%; fired for absence/tardiness – 37%; fired for other reasons – 47%
Phase II Profile (Martelli, 1988)	547 college students	Honesty score	Probability of cheating on classroom exam	Predictive	$r = -0.14$

(Sackett, Burris and Callahan, 1989, p. 503-506)

With reference to Table 2.47, Sackett *et al.* (1989) addressed a number of issues with regard to using external criteria.

- (1) Little theft is detected.
- (2) Much larger samples than in the past were used, which dealt to some extent with the low rate of detected theft.
- (3) Various criteria other than theft were incorporated in the studies. Significant correlations were found with turnover, absence and behavioural indicators such as grievances and commendations and performance ratings by supervisors.
- (4) Irrespective of the type of criteria or the type of test used, the reported validity coefficients are significantly smaller than is the case in validation studies where independence of predictor and criterion poses a potential problem (e.g. admissions during a polygraph examination or self-reports of theft). It can be argued that both types of validation strategies yield a distorted perspective of test validity: correlations with self-reports are amplified by method variance and correlations with objective theft are attenuated as a result of low criterion variance, which is due to the failure to detect some or most employee theft.

- (5) Overt and personality-oriented measures produce similar results when a similar criterion is used.

2.3.11.6 Time Series Research

According to O'Bannon *et al.* (1989), another development is research that focuses on the impact of integrity testing on organisations instead of individuals. In these studies, the subjects comprise organisations or departments in organisations. Various performance indicators are examined for a period of time to monitor variations that may occur as a result of testing. The most widely used indicators are staff dismissal levels and inventory shrinkage. They conclude that a number of time series studies have indicated that integrity tests can have a beneficial impact on organisational measures, such as stimulation for theft and inventory shrinkage. However, a drawback is that most time series studies do not provide the stringent experimental controls which are required to attribute the positive effect to the successful identification of applicants with low integrity.

2.3.12 The Results of Two Large Meta-analyses

The relationship between integrity tests and work-related criteria has received substantial interest since the early 1980s (Berry, Sackett & Wiemann, 2007; Jones & Terris, 1991; Neuman & Baron, 1998; Ones & Viswesvaran, 2001; Sackett & Wanek, 1996; Sackett, Burris & Callahan, 1989). Perhaps the two most important studies are the ones conducted by Ones, Viswesvaran and Schmidt (1993) and Van Iddekinge, Roth, Raymark and Odle-Dusseau (2012). The findings of these two meta-analytic studies appear in Tables 2.48; 2.49 and 2.50. The study by Van Iddekinge *et al.* (2012) was conducted across 65 independent samples and yielded a mean observed validity estimate of 0.26 for counterproductive work behaviour. When the validity coefficient was corrected for unreliability in the criterion, it increased to 0.32. According to Van Iddekinge *et al.* (2012), the source of the counterproductive work behaviour criteria, i.e. self-reports versus other-reports and personnel records, had a large influence on validity. When self-reported criteria were excluded, the mean corrected validity for counterproductive work behaviour dropped to 0.11. Ones *et al.* (1993) found an observed validity of 0.33 which increased to 0.47 after correction for overall counterproductive work behaviour criteria. Van Iddekinge *et al.* (2012) reported that, although the reported validities in their own meta-analysis were lower

than those reported by Ones *et al.*, they were nevertheless moderately high, which indicates a negative relationship between integrity tests and counterproductive work behaviour.

According to Van Iddekinge *et al.* (2012), there were a number of moderators which influenced the validity coefficient, of which self-report measures versus non-self report measures was the strongest. Furthermore, another factor which may influence validities is when both the test and the criterion measure contain the same items. They propose that the most suitable validity evidence for integrity tests and counterproductive behaviour would be non-self-report criteria, applicant samples and predictive designs. However, non-self-report criteria are also flawed because not all employee counterproductive work behaviour is detected.

Ones, Viswesvaran and Schmidt (2012) commented on Van Iddekinge *et al.*'s (2012) meta-analysis and the implications thereof. According to Ones *et al.* (2012), the study contained only a partial database of integrity test validities; they included tests in their study which were not integrity tests; and there were important flaws in their analytic approach with regard to correcting for restriction of range and identification of moderators.

Sackett and Schmidt (2012) reviewed both the above meta-analyses (see Table 2.51) and considered both of them as of a high standard and important. The major difference between the two studies is the fact that the study by Ones *et al.* contained a much larger sample. Sackett and Schmidt (2012) conclude that both studies show that integrity test scores are related to work performance and counterproductive work behaviour, but the size of the relationships is uncertain.

Harris, Jones, Klion, Arnold, Camara and Cunningham (2012) also commented on van Iddekinge *et al.*'s analysis. They agree with Van Iddekinge *et al.* (2012) that there is a significant relationship between integrity test scores and counterproductive work behaviours, and that overt tests are stronger predictors of such behaviours than personality-based tests. However, they expressed concern about Van Iddekinge *et al.*'s coding; statistical decisions regarding correction; and the exclusion of certain studies.

Table 2.48

Meta-Analytic Estimates of Integrity Test Criterion-Related Validity for CWB

Analysis	<i>k</i>	<i>N</i>	<i>r</i>	<i>P</i>	<i>SD_p</i>	% VE	90% CI	80% CV
Overall	65	19,449	.26	.32	.18	11.0	.27, .35	.08, .55
Type of integrity test								
Overt	43	11,751	.30	.38	.16	14.5	.33, .42	.18, .58
Personality-based	32	9,364	.23	.27	.19	9.6	.20, .32	.03, .51
Study design								
Concurrent	49	13,457	.32	.40	.15	13.7	.35, .43	.20, .59
Predictive	13	5,481	.11	.13	.09	31.7	.08, .18	.02, .24
Study sample								
Incumbents	45	7,047	.38	.45	.18	14.2	.39, .50	.21, .68
Applicants	16	10,802	.18	.22	.12	14.7	.18, .28	.07, .37
Breadth of criterion								
Broad criterion measures	34	11,222	.35	.43	.13	13.7	.38, .47	.27, .59
Narrower criterion measures								
Substance abuse	14	5,106	.20	.25	.17	15.1	.24, .43	.03, .47
Without influential case	12	3,106	.28	.40	.10	40.4	.44, .61	.27, .53
Theft	25	6,797	.23	.33	.11	30.5	.28, .38	.19, .47
Withdrawal	11	3,989	.23	.33	.10	22.2	.25, .39	.20, .46
Source of criterion								
Self-reports	43	13,085	.33	.42	.13	13.1	.37, .45	.25, .59
Other-reports	7	3,645	.09	.11	.00	95.3	.08, .15	.41, .11
Employee records	17	3,420	.14	.15	.10	38.9	.11, .21	.02, .29
Author affiliation: Self-reports								
Test Publishers	26	10,010	.31	.39	.11	14.4	.34, .43	.25, .54
Non-publishers								
Overall	14	2,218	.48	.55	.14	28.8	.50, .61	.37, .72
Developed integrity test	11	1,756	.49	.55	.15	26.2	.50, .63	.35, .75
Did not develop integrity test	8	1,466	.47	.54	.15	19.8	.45, .63	.35, .73
Publishers and non-publishers	3	857	.15	.28	.00	100.0	.20, .37	.28, .28
Author affiliation: Non-self-reports								
Test publishers								
Computed validity	16	3,174	.14	.15	.11	38.2	.10, .21	.01, .29
Reported validity	16	3,174	.21	.24	.11	31.8	.18, .29	.10, .38
Non-publishers								
Overall	4	656	.17	.17	.00	100.0	.12, .23	.17, .17
Developed integrity test	1	91	.25	.27				
Did not develop integrity test	3	565	.16	.16	.00	100.0	.10, .22	.16, .16
Publishers and non-publishers	4	3,235	.08	.10	.00	100.0	.07, .14	.10, .10
Publication status								
Published	37	6,554	.32	.35	.22	12.0	.30, .42	.07, .63
Unpublished	28	12,895	.23	.29	.15	10.9	.24, .34	.10, .48

Note. CWB = counterproductive work behaviour; *k* = number of validity coefficients; *r* = sample-size weighted mean observed validity estimate; *p* = validity estimate corrected for measurement error in the criterion only; *SD_p* = standard deviation of *p*; %VE = percentage of variance in *p* accounted for by sampling error and measurement error in the criterion; 90% CI = lower and upper bounds of the 90% confidence interval for *p*; 80% CV = lower and upper bounds of the 80% credibility value of *p*.

^aTen studies reported separate validity estimates for both overt and personality-based tests. Thus, the total *k* for this moderator analysis is larger than the *k* for the overall analysis. ^bResults of three studies are based on a combination of concurrent and predictive designs and thus were excluded from this moderator analysis. ^cResults of four studies are based on both incumbents and applicants and thus were excluded from this moderator analysis. ^dWe limited the criterion breadth analyses to self-report criteria. Observed and corrected validity estimates across all sources of criterion information (i.e. self-reports, other-reports and employee records) were .27 and .33 for broad CWB criteria (*k* = 46, *N* = 16,562), .20 and .28 for theft (*k* = 30, *N* = 8,608), and .16 and .21 for withdrawal, (*k* = 24, *N* = 10,764) (the values for substance abuse are the same as the tabled values because all studies used self-report criteria). ^eSec. Footnote 7 regarding identification of influential cases. ^fTwo studies reported separate validity estimates for both self-report and other-report criteria. Thus, the total *k* for this moderator analysis is larger than the *k* for the overall analysis. ^gWe did not have to compute any alternate validity estimates for test publisher studies that used self-report CWB criteria. ^hIn five non-publisher samples, the researchers examined an integrity test they developed and one or more tests they did not develop, which we analysed separately. Thus, the sum of the *ks* for the two subcategories of non-publishers is larger than the overall *k*.

(Van Iddekinge, Roth, Raymark and Odle-Dusseau, 2012)

Van Iddekinge *et al.* (2012) have responded to the critiques of their meta-analysis. They stated that their own views are more in line with those who are sceptical of integrity tests. They are of the opinion that much of the criticism of their meta-analyses are due to misconceptions about their study and that using different approaches and different estimates would have had little or no impact on their findings. They furthermore emphasised that their study contains a more balanced set of data, as studies by independent researchers versus studies by test publishers are almost equally represented in their study.

Table 2.49***Moderator Analyses for Predicting Counterproductive Behaviours***

Category of analysis	<i>N</i>	<i>K</i>	mean <i>r</i>	<i>SD_r</i>	<i>SD_{res}</i>	<i>P</i>	<i>SD_p</i>	% variance SE	% variance acc. for	90% CV
Predictor type ^a										
Overt	349,623	305	.39	.2835	.2710	.55	.41	1.1	8.6	.07
Personality based	158,065	138	.22	.0884	.0663	.32	.11	11.3	43.7	.20
Criterion measure ^a										
Admissions of counterproductivity	309,831	255	.41	.2730	.2589	.58	.40	1.1	10.1	.11
Externally measured counterproductivity	197,717	187	.22	.1490	.1369	.32	.22	4.5	15.6	.07
Criterion breadth										
Theft ^b	193,631	152	.36	.2654	.2523	.52	.39	1.6	9.6	.06
Broad counterproductivity ^c	312,827	290	.32	.2382	.2267	.45	.36	1.5	9.4	.04
Validation strategy ^a										
Concurrent	219,640	295	.39	.2680	.2539	.56	.39	1.4	10.2	.10
Predictive	282,544	138	.25	.1885	.1785	.36	.28	2.1	10.4	.03
Validation sample ^a										
Applicants	369,581	183	.30	.2314	.2207	.44	.35	1.1	9.0	.04
Employees	105,369	153	.38	.3120	.3120	.54	.47	1.2	7.4	.02
Job complexity ^a										
Low	14,301	44	.30	.1836	.1836	.43	.25	11.3	23.4	.13
Medium	32,764	78	.28	.1731	.1731	.40	.24	11.2	23.6	.13
High	2,372	21	.49	.1751	.1751	.68	.20	17.9	45.3	.45

Note. *K* = number of correlations; mean *r* = mean observed correlation; *SD_r* = observed standard deviation; *SD_{res}* = residual standard deviation; *p* = true validity; *SD_p* = standard deviation of the true validity; % variance SE = percentage of variance due to sampling error; % variance acc. for = percentage of variance due to all corrected statistical artefacts; 90% CV = lower 90% creditability value.

^aCriteria included narrow and broad criteria of disruptive behaviour, such as actual theft, admitted theft, dismissals for actual theft, illegal activities, absenteeism, tardiness, and violence. ^bIncluded narrow criteria of admissions of theft, actual theft, and dismissals for actual theft. ^cBroad criteria included violence on the job, tardiness, absenteeism, and other disruptive behaviours not included in the narrow criteria.

(Ones, Viswesvaran and Schmidt, 1993, p. 689)

Table 2.50

Fully Hierarchical Moderator Analyses of the Validity of Integrity Tests for Predicting Counterproductive Behaviours

Statistic	External criteria						Admissions criteria					
	Theft ^a		Broad ^b				Theft ^c		Broad ^d			
	Predictive	Concurrent	Predictive	Concurrent	Predictive	Concurrent	Predictive	Concurrent	Predictive	Concurrent		
App	Ees	App	Ees	App	Ees	App	Ees	App	Ees	App	Ees	
Overt tests												
<i>N</i>	2,434	9,005	5,598	17,580	277	7,909	68,613	3,217	90,527	27,887		
<i>K</i>	7	11	10	23	2	14	63	34	24	46		
mean <i>r</i>	0.09	0.11	0.27	0.06	0.22	0.71	0.30	0.38	0.32	0.76		
<i>SD_r</i>	0.1152	0.1049	0.1218	0.1192	0.1597	0.2336	0.2235	0.1644	0.2336	0.1346		
<i>SD_{res}</i>	0.0781	0.0923	0.0837	0.1091	0.1208	0.2072	0.2128	0.1125	0.2233	0.0771		
<i>P</i>	0.13	0.16	0.39	0.09	0.32	0.94	0.42	0.54	0.46	0.99		
<i>SD_p</i>	0.12	0.15	0.13	0.17	0.19	0.29	0.33	0.17	0.35	0.11		
% variance acc. for 90% CV	54.0	22.6	52.7	16.2	42.7	21.3	9.3	53.2	8.6	67.2		
	-0.01	-0.01	0.23	-0.11	0.10	0.59	0.04	0.34	0.06	0.86		
Personality based												
Statistic			93,092	37,415	4,350	1,511						210
<i>N</i>			62	5	6	12						2
<i>K</i>			0.20	0.18	0.57	0.20						0.16
mean <i>r</i>			0.0555	0.0118	0.0519	0.1033						0.1000
<i>SD_r</i>			0.0115	0.0000	0.0000	0.0339						0.0000
<i>P</i>			0.29	0.26	0.77	0.29						0.23
<i>SD_p</i>			0.02	0.00	0.00	0.06						0.00
% variance acc. for 90% CV			95.7	100	100	89.3						100
			0.27	0.26	0.77	0.23						0.23

Note. This table represents the following moderators being taken into consideration simultaneously: predictor type, criterion measurement method, breadth of criteria, validation strategy, and validation sample. App = applicants; Ees = employees, *K* = number of correlations; mean *r* = mean observed correlation; *SD_r* = observed standard deviation; *SD_{res}* = residual standard deviation; *p* = true validity; *SD_p* = standard deviation of the true validity; % variance acc. for = percentage of variance due to all corrected statistical artefacts; 90% CV = lower 90% credibility value. ^aExternal measures of actual theft and dismissals for theft. ^bExternal measures of violence on the job, tardiness, absenteeism, and other disruptive behaviours excluding theft. ^cAdmissions of theft and self-reports of dismissals for theft. ^dAdmissions of violence on the job, tardiness, absenteeism, and other disruptive behaviours excluding theft.

(Ones, Viswesvaran and Schmidt, 1993, p. 692)

Table 2.51

Validity Estimates from Ones et al. (1993) and Van Iddekinge et al. (2012a)

Measure	<i>K</i>	<i>N</i>	Mean <i>r</i>	<i>P</i>	<i>SD_p</i>
Performance criteria					
Overt tests					
Ones et al.	51	12,932	.18	0.30	0.22
Van Iddekinge et al.	18	2,223	.10	0.14	0.13
Personality-oriented tests					
Ones et al.	102	27,081	.22	0.37	0.05
Van Iddekinge et al.	60	12,017	.14	0.18	0.07
Only predictive, applicant, non-self-rating studies					
Ones et al.	23	7,550	.35	0.41	0.00
Van Iddekinge et al.	24	7,104	.11	0.15	0.09
Counterproductive behaviour criteria					
Overt tests					
Ones et al.	305	349,623	.39	0.55	0.41
Van Iddekinge et al.	43	11,751	.30	0.38	0.16
Personality-oriented tests					

Ones <i>et al.</i>	138	158,065	.22	0.32	0.11
Van Iddekinge <i>et al.</i>	32	9,364	.23	0.27	0.19
Only predictive, applicant, non-self-report studies					
Ones <i>et al.</i> overt tests, non-theft	10	5,598	.27	0.39	0.13
Ones <i>et al.</i> personality-oriented tests, non-theft	62	93,092	.20	0.29	0.02
Van Iddekinge <i>et al.</i> both overt and personality-oriented tests, both theft and non-theft	10	5,056	.09	0.11	0.02

(Sackett and Schmidt, 2012, p.551)

2.3.13 Summary

This section has dealt with the relationship between integrity and CWB. Integrity is undoubtedly related to CWB. Consequently, it can be postulated that integrity is negatively related to CWB. However, the size of the relationship between integrity and CWB is debatable. Overt tests yield higher correlations than personality-based tests. This is probably due, in part if not mainly, to the inclusion of similar items in the overt tests and criterion measures.

Incumbent studies show higher correlations than applicant studies. Furthermore, self-reports correlate higher than other-reports and employee records. Criterion measures remain problematic because the rate of detected theft is low, many counterproductive work behaviours are not observed, employee records are not necessarily reliable and self-report measures may be flawed.

2.4 Conclusion

This chapter presented a theoretical and empirical review of personality, integrity and CWB. The focus was on the various definitions found in the literature and the instruments that were used to measure these constructs. Possible hypotheses were developed from the research conducted on these constructs and based on the relationships derived. The following chapter focuses on the research methodology used to empirically measure the credibility of the proposed hypotheses.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

After an in-depth study of the respective constructs that were highlighted in the literature overview (Chapter 2), relationships between integrity and CWB, personality correlates of integrity and CWB, and personality correlates and integrity were suggested for research. These relationships are based on indirect and direct associations between the concepts as outlined in the literature. The theoretical argument presented in the literature review led to a conceptual model with structural relationships between the latent variables. This is depicted in Figure 3.1. In order to determine the specific nature of these relationships, it was necessary to fit the conceptual structural model and to empirically investigate the hypotheses. Suitable methods to analyse and explore the data were also necessary for accurate inferences. In applying the scientific method of investigation, careful reflection is required at various points in the process of analysing the data. It is also essential to take appropriate steps in instances where the soundness of the explanations is potentially threatened in order to maximise the possibility of valid findings (Babbie & Mouton, 2001).

This chapter presents the research design, sampling, measuring instruments and statistical analysis procedure that were used to establish the model fit and the strength and paths for the envisaged hypotheses.

3.2 RESEARCH DESIGN

The conceptual structural model of this study (Figure 3.1) represents and hypothesises specific structural relationships between the latent variables in the model. To empirically test the merit of the structural relationships, a plan or strategy that will guide the empirical evidence to test the operational hypotheses is required.

This plan or strategy refers to the research design (Kerlinger & Lee, 2000). The research design is a plan, guideline or blueprint of how research will be performed (Babbie & Mouton, 2001). The research problem and the type of evidence that is required to address the problem determine the design that will best suit the intended research. The function of the research design is to attempt to ensure empirical evidence that can be interpreted explicitly for or against the hypothesis being tested.

An *ex post facto* correlational research design was used in this study to test the substantive research hypotheses. With the *ex post facto* correlational design the researcher acquires measures on the observed variables and calculates the observed covariance matrix (Kerlinger & Lee, 2000). The *ex post facto* correlational design can be used where the independent and the dependent variables are only observed by individuals to confirm the degree to which they co-vary. This design is used in this structural model because the latent variables cannot be manipulated. Estimates for the structural and measurement model parameters are obtained in a repetitive manner with the objective of reproducing the observed covariance matrix as closely as possible (Diamantopoulos & Sigua, 2000).

3.3 SAMPLING

There are two types of methods that can be utilised for sampling. The first is probability sampling. Babbie and Mouton (2001) refer to probability sampling as “the selection of a random sample from a list containing the names of everyone in the population you are interested in studying”. This is the most accurate and most widely used sampling method, especially for research containing large, representative samples, but is not always practical or attainable. Non-probability sampling is therefore sometimes the most appropriate sampling method to use as an alternative for probability sampling.

This study also made use of non-probability convenience sampling as a way of obtaining the appropriate sample.

3.3.1 The Data Collection Procedure

The research hypotheses described in Chapter 2 were empirically tested using a sample size of 1211 employees already employed in the retail industry (N = 286) and prospective employees in the security services (N = 925) in South Africa. The relationship between integrity and counterproductive work behaviour; personality and counterproductive work behaviour; and personality and integrity was measured by analysing responses from employees and prospective employees with the use of the appropriate measuring instruments.

With regard to the retail sample, the questionnaires were distributed via the operational human resources managers. Confidentiality was maintained by assuring participants that their responses would be treated anonymously and that no names would be revealed in the study. Participants were also guaranteed that the study envisaged no potential risks or discomforts and that the responses would not be revealed to their managers, but would be directed to the researcher. With regard to the security sample, the questionnaires were completed as part of the pre-employment test battery.

Respondents evaluated their own personality, integrity and counterproductive work behaviour. The data were then used as input for the statistical analysis programmes. Kelloway (1998) stated that a sample size of 200 observations is suitable for most structural equation modelling (SEM) submissions, but that also depends on the number of parameters to be estimated.

3.3.2 The Demographic Profile of the Sample

The overall sample consisted of 1211 employees operating within the security services (N = 925) and retail (N = 286) industries within South Africa.

The composition of the sample is set out in Table 3.1. Table 3.1 indicates that 72.2% of the sample consisted of male and 27.8% of female employees. The sample predominantly consisted of Africans (90.7%), with only 9.3% from the other ethnic groups in South Africa (i.e. Indians, Coloureds and Whites). Regarding home

languages, 9.1% spoke Afrikaans, 2.5% English and 88.4% spoke one of the nine indigenous African languages in South Africa. Furthermore, 97% of the sample had at least grade 10 education. The mean age of 30.4 years and a mean of 6.97 years of working experience indicated a relatively young group of employees.

To meet the comprehension level of the items, the researcher decided to apply the research instruments on testees who at least had achieved Grade 10 education. In the selection process, 35 of the 1211 respondents (see Table 3.1) were deleted from the sample. The remaining sample (N = 1176) was used for the analysis of the data.

3.4 MISSING VALUES

It is important to address missing values before data are analysed. The method that is used depends on the number of missing values, as well as the nature of the data. It is especially the case when data follows a multivariate normal distribution. Missing values are the result of the unwillingness of the respondent to answer a particular item in the questionnaire.

Different methods can be used to address missing values. List-wise deletion is one of the most popular methods for dealing with missing values. In this instance, all cases that contain missing values are excluded from the analysis (Byrne, 2001). The final sample which was used in the analysis therefore only includes complete data records. One of the disadvantages of this method is the decrease in sample size.

Pair-wise deletion refers to the deletion of cases only on the variables where the values are missing. The case is therefore not deleted from the entire set of analyses, but only from the particular analysis involving variables for which there are no observed scores (Byrne, 2001).

TABLE 3.1*Biographical information of the sample*

Sample profile			%
Gender	Male	829	72.2
	Female	319	27.8
Race	African	990	90.7
	Indian	4	0.4
	Coloured	51	4.7
	White	46	4.2
Language	Afrikaans	107	9.1
	English	29	2.5
	Ndebele	64	5.5
	Xhosa	69	5.9
	Zulu	180	15.4
	Northern Sotho	250	21.3
	Sesotho	89	7.6
	Setswana	166	14.2
	SiSwati	43	3.7
	Tshivenda	52	4.4
Xitsonga	122	10.4	
Education	Grade 9 and below	35	3.0
	Grade 10	138	11.7
	Grade 11	282	23.9
	Grade 12	655	55.6
	Diploma	64	5.4
	Degree	5	0.4
Age	Mean	30.43 yrs	
Years working experience	Mean	6.97	
Industry	Security	925	76.4
	Retail	286	23.6

Another method for dealing directly with missing values is to replace it with some estimated value. Mean imputation is one strategy by which the arithmetic mean is substituted for a missing value. This method can be problematic because the arithmetic mean represents the most likely score, which may reduce the variance of the variable (Byrne, 2001). A second imputation strategy is regression-based imputation. Here every missing value is replaced with a predicted score using multiple regression based on the values on the other variables (Kline, 2011).

Although there are various options that one could make use of to address missing values, it was intended to solve this problem through the imputation-by-matching procedure. In this method, the missing values are replaced by substitute values which are derived from other cases with similar response patterns (Theron, Spangenberg & Henning, 2004). The PRELIS program can be used for this purpose (Jöreskog & Sörbom, 1996).

3.5 MEASURING INSTRUMENTS

Seven different instruments were used, i.e. one for measuring integrity, one for measuring counterproductive work behaviour, and five for measuring personality. The instruments for measuring counterproductive behaviour and personality (three dimensions of the Big Five) were used in their original form while the instruments for measuring integrity and four other personality correlates were developed to fit the purpose of this study.

3.5.1 Integrity

A new Integrity Scale was developed for the purpose of this study. After dealing with missing values, the remaining sample (N = 1176) (see Section 3.3.2) was split equally on a random basis into development (N = 588) and validation (N = 588) sub-samples. The development (training) sample was used to develop and refine the Integrity Scale and the validation (testing) sample to determine the validity of the new instrument.

The Integrity Scale was systematically developed through different stages: Generation of an initial pool of items; reviewing of the items by a panel of experts; item analysis; identification of the subscales through exploratory factor analysis (EFA); determining the uni-dimensionality of the subscales; and determining the factor structure of the instrument through confirmatory factor analysis (CFA) (Tabachnick & Fidell, 2001). Each of these stages is discussed below.

Phase 1: Item Generation

The purpose of this phase was to create a large, inclusive pool of items, so that they together would reflect the domain of behaviours that meet Hunter and Engelbrecht's (2010) definition of workplace integrity: Integrity refers to the degree to which an individual's behaviour is characteristic of honesty, morality, responsibility and norm-abidance. On the basis of previously published theoretical and empirical investigations of behaviours revealing integrity in the workplace, an initial pool of 316 items was generated (Huysamen, 1979). After eliminating redundant behaviours, 256 items of the measure of integrity remained.

Respondents were asked to indicate the extent to which they agreed with a specific item on a 6-point Likert scale. The scale anchors varied from 1 (disagree strongly) to 6 (agree strongly).

Phase 2: Item Review

The next phase in the development process was to subject the experimental instrument to expert scrutiny (Huysamen, 1979). The initial pool of items and dimensions was reviewed by 11 judges who have acquired expertise in the field of Industrial Psychology in South Africa. All the judges have attained Master's degrees in Industrial Psychology and have gained experience in management consultation.

The judges reviewed the items on the basis of several criteria. Firstly, the judges rated each dimension in terms of whether it was consistent with the definition of integrity used in this study (Hunter & Engelbrecht, 2010). Secondly, the judges rated the appropriateness of each item in terms of its relevance to the respective dimension.

Judges used a rating scale that consisted of a 7-point semantic differential ranging from 1 (highly inappropriate) to 7 (highly appropriate) to rate the relevance of 26 dimensions and 256 items. Items and dimensions that received a mean score of 3.0 or less were either rewritten or eliminated. This process resulted in the survival of 10 dimensions and 99 items.

A further 17 items concerning admission of deviant behaviour were deleted in order to avoid content overlap with the criterion measure of counterproductive behaviour.

Phase 3: Item analysis

The 82 items generated from the item generation and item review phases were subjected to item analysis to determine their internal consistency (see Section 3.6.1). The results of the item analysis are presented in Chapter 4.

Phase 4: Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) is used to determine whether the dimensionality of each scale contributes to an internally consistent description of the relevant measuring model. Exploratory factor analysis can further be used as a process to refine and reduce items by identifying and removing items with inadequate factor loadings (Pallant, 2001). Nunnally (1978, p. 327) refers to factor analysis as a “broad category of approaches to conceptualizing groupings (or clusterings) of variables and an even broader collection of mathematical procedures for determining which variables belong to which group”.

The first step is to perform an Exploratory Factor Analysis (EFA) on all the items comprising the subscale. Exploratory Factor Analysis (EFA) was done to examine the uni-dimensionality of the subscale and identify items contributing to the lack of coherency. The purpose was to confirm the uni-dimensionality of each scale and subscale and to remove items with inadequate factor loadings (Theron *et al.*, 2004). SPSS (Version 20) was used to perform the uni-dimensionality test.

Principal Axis Factoring analysis was used as the extraction technique (Pallant, 2001). The extracted solution was then subjected to oblique rotation.

Once the number of significant factors had been determined, the factor loadings on the rotated matrix were studied. Poor items should be identified and subjected to elimination according to the EFA decision criteria. A factor loading was considered acceptable if $\lambda_{ij} > 0.30$ (Tabachnick & Fidell, 2001).

The decision rules that were followed to determine the number of factors to be extracted, and the items to be included in each factor when conducting exploratory factor analyses were as follows:

- ❖ The number of factors to be extracted had to have eigenvalues > 1.00 , according to Kaiser's (1961) criterion.
- ❖ An item not loading > 0.30 on any factor would be excluded (Field, 2005; Pallant, 2010; Tabachnick & Fidell, 2001).
- ❖ An item loading > 0.30 on more than one factor would be excluded if the difference between the higher and the lower loading was < 0.25 (Nunnally & Bernstein, 1994; Tabachnick & Fidell, 2001).

A Kaiser-Meyer-Olkin measure of sampling adequacy (KMO index) is used to compare the magnitudes of the observed correlation coefficients in relation to the magnitudes of the partial correlation coefficients. Large values are good because correlations between pairs of variables (i.e. potential factors) can be explained by the other variables. A value close to 1 indicates that patterns of correlations are relatively compact and factor analysis should therefore present distinct and reliable factors (Field, 2005). Kaiser (as cited in Field, 2005) recommends accepting values greater than 0.5 as acceptable; values between 0.5 and 0.7 as mediocre; and values between 0.7 and 0.8 as good, while values between 0.8 and 0.9 are great and values above 0.9 are superb.

Bartlett's test of sphericity is used to test the hypothesis that the correlation matrix is an identity matrix (all diagonal terms are one and all off-diagonal terms are zero). Significance values less than .05 are acceptable (Field, 2005)

The scree plot can be used to assist in the decision concerning the number of factors to be retained. The use of the scree plot entails inspecting the point at which the shape of the curve changes direction and becomes horizontal (Pallant, 2010). According to Cattell (1966), all factors above the elbow, or break, in the plot should

be retained, as these factors contribute the most to the explanation of the variance in the data set.

Phase 5: Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) is a technique by which hypotheses or theories relating to the structure underlying a set of variables are tested (Pallant, 2001) (see Section 3.6.2). LISREL 8.80 (Jöreskog & Sörbom, 2006) was used to perform separate confirmatory factor analyses (CFAs) on the different subscales of the Integrity Scale. The results of CFA are discussed per sub-scale in terms of important fit indices (see Chapter 4).

3.5.2 Personality correlates of integrity

Personality was measured by three dimensions of the Revised NEO Personality Inventory (NEO PI-R) (Costa & McCrae, 1992), i.e. conscientiousness, agreeableness and emotional stability, which, according to the literature, have been shown to correlate substantially with integrity and counterproductive work behaviour (Cullen & Sackett, 2003; Ones, Viswesvaran & Schmidt, 2003; Salgado, 2002). Each of these dimensions consists of six subscales, which contain eight items each. The subscales for conscientiousness are: competence, order, dutifulness, achievement thriving, self-discipline and deliberation. The subscales of agreeableness are: trust, straight-forwardness, altruism, compliance, modesty and tender-mindedness. The subscales for neuroticism (in positive form expressed as emotional stability) are: anxiety, angry hostility, depression, self-consciousness, impulsiveness and vulnerability. The NEO PI demonstrated sound psychometric properties with satisfactory coefficient alphas regarding self-report form (S) and observer report form (R) (Costa & McCrae, 1992) (see Table 3.2).

The Revised NEO Personality Inventory (NEO PI-R) contains item statements rated by means of a 5-point Likert scale ranging from 1 (strongly disagree), to 2 (disagree), 3 (neutral), 4 (agree) and 5 (strongly agree).

Table 3.2*Personality dimensions of the NEO PI*

Dimensions & Subscales	Coefficient Alpha	
	Form S	Form R
Conscientiousness:		
Competence	.67	.73
Order	.66	.71
Dutifulness	.62	.70
Achievements driving	.67	.70
Self-discipline	.75	.82
Deliberation	.71	.73
Agreeableness:		
Trust	.79	.90
Straight-forwardness	.71	.84
Altruism	.75	.80
Compliance	.59	.78
Modesty	.67	.83
Tender-mindedness	.56	.69
Neuroticism:		
Anxiety	.78	.82
Angry hostility	.75	.86
Depression	.81	.81
Self-consciousness	.68	.73
Impulsiveness	.70	.69
Vulnerability	.77	.81

(Costa and McCrae, 1992, p. 44)

Besides the three dimensions of the 5-factor model of personality, namely, conscientiousness, agreeableness and emotional stability, additional univariate personality correlates of integrity were identified in the literature (see Chapter 2)

For the purpose of this study, new instruments were developed to measure adjustment, external locus of control, fearfulness and personalised power. Existing integrity tests were studied to uncover the underlying themes. The PDI Employment Inventory; Personnel Reaction Blank and the Stanton Survey were used as guidelines for item generation.

Adjustment

Adjustment refers to a psychological disposition reflecting an inner disposition of being happy, confident and positive about life in general and hopeful about the future – a state of being in equilibrium with one's own emotions and the world (Gough, 1994; Hogan & Hogan, 1989; Wanek, Sackett & Ones, 2003). The scale was made

up of eight items and the scale anchors ranged from strongly disagree (1) to strongly agree (6).

External locus of control

Individuals with an external locus of control consider themselves to be helpless pawns of fate controlled by outside forces over which they have little, if any, influence (Gibson, Ivancevich, Donnelly & Konopaske, 2006; Kish-Gephart, Harrison & Trevino, 2010; Wanek et al., 2003; Zettler, 2011). The scale was made up of eight items and scale anchors ranged from strongly disagree (1) to strongly agree (6).

Fearfulness

Fearfulness refers to an inclination to be afraid, worried, anxious and easily stressed. This person perceives the world as a hostile place (Lilienfeld, Andrews & Stone-Romero, 1994; Mumford, Connelly Helton, Strange & Osburn, 2001). The scale was made up of eight items and the scale anchors ranged from strongly disagree (1) to strongly agree (6).

Personalised power

Personalised power refers to an egoistic, at times antisocial, desire for power and influence, which is distinct from a concern with avoiding the immoral aspects of power as opposed to wanting to use influence for the benefit of others (Magee & Langner, 2008; Mumford et al., 2001; Popowitz & Warren, 2010). The scale was made up of eight items and the scale anchors ranged from strongly disagree (1) to strongly agree (6).

3.5.3 Counterproductive Work Behaviour (CWB)

Counterproductive work behaviour was measured by means of the Interpersonal and Organisational Deviance Scale developed by Bennett and Robinson (2000). The scale contains items tapping into various kinds of CWB, including theft, absenteeism, bullying, vandalism and alcohol abuse. According to Bennett and Robinson (2000), the internal reliabilities for the Organisational Deviance Scale and Interpersonal Deviance Scale are 0.81 and 0.78 respectively.

3.6 STATISTICAL ANALYSES OF DATA

After all the data on the nine constructs had been gathered, the statistical analysing of the data followed. The statistical techniques that were utilised in this study were item analysis; exploratory factor analysis (EFA) (used for the Integrity Scale only, see Section 3.5.1); confirmatory factor analysis (CFA) to evaluate the fit of the measurement models; and structural equation modelling (SEM) to measure the fit of the structural model. This was possible through utilising the Statistical Package for the Social Science (SPSS), version 20.

3.6.1 Item Analysis

The structural model comprises latent variables and various scales used to measure specific dimensions in the model. The purpose of item analysis is to determine whether a measurement is reliable and to identify items in these scales that do not represent the specific latent variable. Such items are referred to as poor items because of their inability to differentiate between various states of the latent variable they are meant to reflect. Elimination of these items is then considered (Theron, Spangenberg & Henning, 2004). Nunnally (1978) stated that a measurement is reliable to the extent that it provides the same result, regardless of any opportunities for variation that might occur.

Coefficient alphas were calculated to determine the reliability of these scales, based on internal consistency. The size of the reliability coefficient is based on both the average correlation among items (internal consistency) and the number of items (Nunnally, 1978). Cronbach's alphas range from 0 – 1 and the closer the values is to 1 the greater the internal consistency of the items in the scale. According Kline (as cited in Field, 2009) items with a Cronbach alpha of 0.7 are satisfactory. Every scale underwent item analysis through the SPSS Reliability Procedure (version 20) to identify and possibly eliminate the poor items.

Item-total correlations for specific items can be determined to further ensure that the measuring instruments are internally consistent. Item-total correlations were

calculated for all the scales. Item-total correlations above 0.20 were seen as satisfactory and those below 0.20 qualified for elimination (Nunnally, 1978).

3.6.2 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a technique by which hypotheses or theories relating to the structure underlying a set of variables are tested (Pallant, 2001). LISREL 8.80 (Jöreskog & Sörbom, 2006) was used to perform confirmatory factor analysis (CFA) separately on the different scales used in this study. The results of CFA are discussed per scale in terms of important fit indices.

As an initial test of model fit, the fit index of Root Mean Square Error of Approximation (RMSEA) was observed. The RMSEA is regarded as one of the most informative fit indices (Diamantopoulos & Siguaaw, 2000). An acceptable fit is indicated when $RMSEA < 0.08$ (See Table 3.4).

If the initial test of model fit demonstrated poor fit ($RMSEA > 0.08$), the modification indices of THETA-DELTA were investigated in order to determine the possibility of increasing model fit.

Model modification indices are intended to answer the question whether any of the currently fixed parameters, when freed in the model, would significantly improve the parsimonious fit of the model. Modification indices (MI) indicate the extent to which the chi-square fit statistic decreases when a currently fixed parameter in the model is freed and the model re-estimated (Jöreskog & Sörbom, 1993). Large modification index values (> 6.6349 at a significance level of 0.01) are indicative of parameters that, if set free, would improve the fit of the model significantly ($p < 0.01$) (Diamantopoulos & Siguaaw, 2000; Jöreskog & Sörbom, 1993).

After acceptable initial fit was found, each item had to be evaluated in terms of its completely standardised factor loadings (LAMBDA-X). Significant item factor loadings will have a value > 0.50 (Diamantopoulos & Siguaaw, 2000), but for the purpose of this

study, factor loadings of > 0.30 were regarded as acceptable, which would indicate that the item successfully contributed to the coherency of the sub-scale.

3.6.3 Structural Equation Modelling.

The statistical technique that was used in this study was Structural Equation Modelling (SEM). This technique is also referred to as covariance structure analysis or covariance of structure modelling (Kline, 2011). SEM is a confirmatory technique and is performed by means of a computer program, namely LISREL 8.80. Kelloway (1998) provided three reasons why this statistical technique is increasingly being used in social science research. Firstly, SEM deals directly with how the measure reflects the intended constructs through Confirmatory factor analysis. It is also used to evaluate the measurement properties of psychological measures. Secondly, SEM allows for the specification and testing of path models. Lastly, SEM simultaneously assesses the quality of measurement and examines the predictive relationships among constructs by performing confirmatory factor analysis and path analysis at the same time. Kelloway (1998) further stated that SEM allows researchers to “frame increasingly precise questions about the phenomena in which they are interested” and to “test these questions”. In this way complex questions about data can be answered.

The purpose of SEM is to summarise the interrelationships between variables (Weston & Gore, 2006). The unreliability of measurement in the model can be captured through SEM, which allows the structural relationships between the latent variables to be accurately estimated. Researchers can develop complex relationships and test it through SEM if the relationships are reflected in the sample data. If any weaknesses are found, the researcher would explore further, using a modified model and a new sample (Weston & Gore, 2006).

SEM comprises five stages:

1. Model specification
2. Identification
3. Estimation
4. Testing fit

5. Re-specification

Model specification refers to the representation of the hypotheses in the form of a structural equation model. The model can be presented as a series of equations which relate to the presumed relations among variables (Kline, 2011). According to Diamantopoulos and Siguaw (2000), model specification involves describing the number and nature of the parameters to be estimated; it is an important step that has to be fully constructed before any data analysis can be done.

Model identification involves a process by which the information provided by the data is examined to determine whether it is sufficient for parameter estimation. A model is identified when it is possible for the computer to obtain a unique estimate of every parameter of the model (Kline, 2011). A single unique value for every parameter should be obtained from the observed data.

After the model is thoroughly identified, parameter estimation can take place. During parameter estimation the LISREL program attempts to calculate and obtain the implied covariance matrix which is compared to the observed covariance matrix and adjusted until it is equivalent to the actual covariance matrix (Diamantopoulos & Siguaw, 2000).

The assessment of model fit follows the parameter estimation by which it is determined that the implied covariance matrix is equivalent to the covariance matrix of the observed data. The various fit indices to determine the model fit via LISREL and model fit are discussed in the following section.

Model modification follows when the results obtained through the investigation of model fit have determined that it is necessary to modify the model. Kelloway (1998) explains model re-specification as the deletion of non-significant paths from the model or adding paths to the model on the basis of empirical results. This is necessary when the fit of the model, as revealed in the previous step, is poor and implies that model identification to test the fit should be repeated.

3.6.4 The Structural Model.

The structural model consists of a set of linear structural equations which “specifies the causal relationships among the latent variables, describes the causal effects and assigns the explained and unexplained variance” (Jöreskog & Sörbom, 1996, p.1).

The structural model illustrated in Figure 3.1 is based on the theoretical arguments presented in Chapter 2. Integrity and CWB are the dependent or endogenous variables in the study and are indicated by the symbol ETA (η). Conscientiousness, neuroticism, agreeableness, external locus of control, fearfulness, personalised power, and adjustment, are the independent or exogenous variables. This is indicated by the symbol KSI (ξ).

The structural model also consists of various paths between the variables. These paths represent the relationships between different constructs. The paths between the exogenous and endogenous variables are indicated with the symbol GAMMA (γ), while the paths between the endogenous variables are indicated with BETA (β). ZETA (ζ) represents the errors in structural equations and describes the error terms of η_1 and η_2 . ZETA therefore represents residual error in the latent endogenous variables.

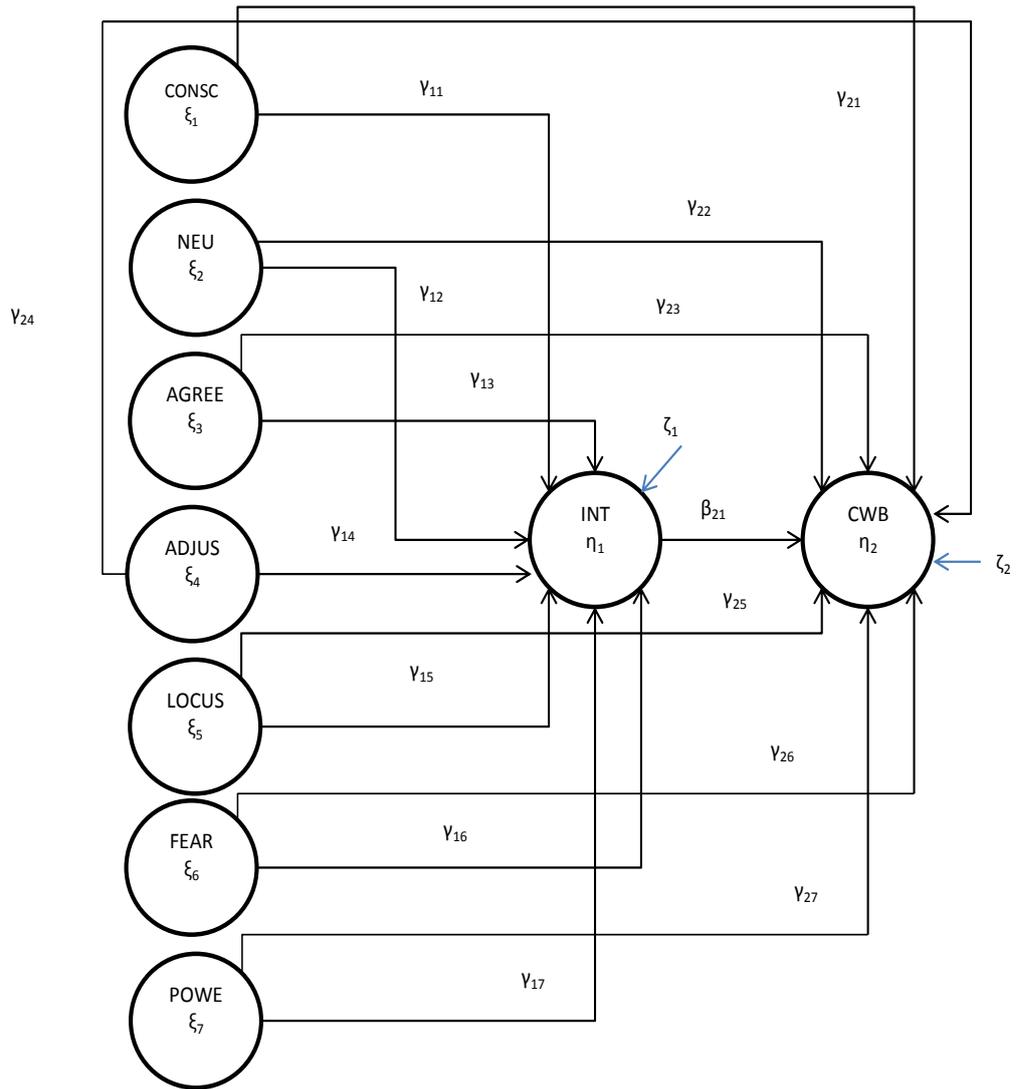


Figure 3.1: The structural model representing the relationships between the personality correlates, integrity and counterproductive workplace behaviour with LISREL symbols

The structural model in matrix form

$$\begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ \beta_{21} & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \gamma_{11} \\ \gamma_{12} \\ \gamma_{13} \\ \gamma_{14} \\ \gamma_{15} \\ \gamma_{16} \\ \gamma_{17} \\ \gamma_{21} \\ \gamma_{22} \\ \gamma_{23} \\ \gamma_{24} \\ \gamma_{25} \\ \gamma_{26} \\ \gamma_{27} \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \\ \xi_5 \\ \xi_6 \\ \xi_7 \end{pmatrix} + \begin{pmatrix} \zeta_1 \\ \zeta_2 \end{pmatrix}$$

$$\eta = B\eta + \Gamma\xi + \zeta$$

The matrix equation can be developed when looking at the exogenous and endogenous variables. The gammas and betas should also be taken into consideration in the matrix equation.

3.6.5 The Statistical Hypotheses

The overarching substantive research hypothesis of this study was to investigate the nature of the influence of integrity and personality on counterproductive work behaviour. Existing research provided a substantive basis for this research study. The theoretical argument presented in the literature study resulted in the

identification of integrity, personality and counterproductive work behaviour as latent variables in the structural model depicted in Figure 3.1. If the overarching substantive research hypothesis is interpreted to indicate that the structural model provides a perfect explanation of the manner in which integrity and personality influence counterproductive behaviour, the substantive research hypothesis translates into the following exact fit null hypothesis.

H_{01} : RMSEA = 0

H_{a1} : RMSEA > 0

If the overarching substantive research hypothesis is interpreted to indicate that the structural model provides an approximate account of the way in which integrity and personality influence counterproductive work behaviour, the substantive research hypothesis translates into the following close fit null hypothesis:

H_{02} : RMSEA \leq 0.05

H_{a2} : RMSEA > 0.05

The overarching substantive research hypothesis was divided into 15 more detailed, specific substantive research hypotheses. These 15 detailed research hypotheses were converted into the path coefficient statistical hypotheses (See Table 3.3).

Hypothesis 3: Conscientiousness has a significant positive influence on integrity.

Hypothesis 4: Agreeableness has a significant positive influence on integrity.

Hypothesis 5: Neuroticism has a significant negative influence on integrity.

Hypothesis 6: Adjustment has a significant positive influence on integrity.

Hypothesis 7: External locus of control has a significant negative influence on integrity.

Hypothesis 8: Fearfulness has a significant negative influence on integrity.

Hypothesis 9: Personalised power has a significant negative influence on integrity.

Hypothesis 10: Conscientiousness has a significant negative influence on counterproductive work behaviour.

Hypothesis 11: Agreeableness has a significant negative influence on counterproductive work behaviour.

Hypothesis 12: Neuroticism has a significant positive influence on counterproductive work behaviour.

Hypothesis 13: Adjustment has a significant negative influence on counterproductive work behaviour.

Hypothesis 14: External locus of control has a significant positive influence on counterproductive work behaviour.

Hypothesis 15: Fearfulness has a significant positive influence on counterproductive work behaviour.

Hypothesis 16: Personalised power has a significant positive influence on counterproductive work behaviour.

Hypothesis 17: Integrity has a significant negative influence on counterproductive work behaviour.

3.7 ASSESSING MODEL FIT

Structural Equation Modelling is mostly used to assess model fit. Over the years, a wide range of goodness-of-fit statistics has been developed to be used to assess a model's overall fit. Kelloway (1998) refers to goodness-of-fit indices for assessing absolute and comparative fit.

Table 3.3:*The statistical hypotheses*

Hypothesis 3 $H_{03}: \gamma_{11} = 0$ $H_{a3}: \gamma_{11} > 0$	Hypothesis 4 $H_{04}: \gamma_{13} = 0$ $H_{a4}: \gamma_{13} > 0$	Hypothesis 5 $H_{05}: \gamma_{12} = 0$ $H_{a5}: \gamma_{12} > 0$
Hypothesis 6 $H_{06}: \gamma_{14} = 0$ $H_{a6}: \gamma_{14} > 0$	Hypothesis 7 $H_{07}: \gamma_{15} = 0$ $H_{a7}: \gamma_{15} > 0$	Hypothesis 8 $H_{08}: \gamma_{16} = 0$ $H_{a8}: \gamma_{16} > 0$
Hypothesis 9 $H_{09}: \gamma_{17} = 0$ $H_{a9}: \gamma_{17} > 0$	Hypothesis 10 $H_{010}: \gamma_{21} = 0$ $H_{a10}: \gamma_{21} > 0$	Hypothesis 11 $H_{011}: \gamma_{23} = 0$ $H_{a11}: \gamma_{23} > 0$
Hypothesis 12 $H_{012}: \gamma_{22} = 0$ $H_{a12}: \gamma_{22} > 0$	Hypothesis 13 $H_{013}: \gamma_{24} = 0$ $H_{a13}: \gamma_{24} > 0$	Hypothesis 14 $H_{014}: \gamma_{25} = 0$ $H_{a14}: \gamma_{25} > 0$
Hypothesis 15 $H_{015}: \gamma_{26} = 0$ $H_{a15}: \gamma_{26} > 0$	Hypothesis 16 $H_{016}: \gamma_{27} = 0$ $H_{a16}: \gamma_{27} > 0$	Hypothesis 17 $H_{017}: \beta_{21} = 0$ $H_{a17}: \beta_{21} > 0$

3.7.1 Absolute Fit

Absolute fit indices are explained as “proportions of the covariances in the sample data matrix explained by the model” (Kline, 2011, p. 195). Tests of absolute fit therefore directly assess how well a model reproduces the sample data. These indices concern model-to-data matrix correspondence. The first measure of fit is the chi-square statistic, which is a traditional measure for evaluating overall fit. It provides a test of perfect fit. A statistically significant chi-square leads to the rejection of the model (Diamantopoulos & Sigua, 2000). The null hypothesis tested by the chi-square is:

$$H_0: \Sigma = \Sigma(\theta)$$

The aim here is to not reject H_0 and the Satorra Bentler χ^2 statistic was used to test this hypothesis. Kelloway (1998) stated that “a non-significant χ^2 indicates that the model fits the data well in that the model can reproduce the population covariance matrix”. The null hypothesis of exact fit is unrealistic, however, and therefore it is more appropriate to test the close fit null hypothesis. Acceptable values for the p-value of close fit ($RMSEA < 0.05$) must exceed .05 (Diamantopoulos & Siguaaw, 2000).

The chi-square, however, is sensitive to sample size and in order to avoid an increase in the χ^2 with an increase in sample size; the χ^2 should be expressed in terms of its degrees of freedom (i.e. χ^2 / df). Disagreement about the interpretation of the values for χ^2 / df is evident in the literature, but good fit is generally indicated by values between 2 and 5. A value less than 2 indicates over fitting (Kelloway, 1998).

LISREL reports a number of Absolute fit indices. The Goodness-of-fit Index (GFI) directly assesses how well the covariances predicted from the parameter estimates reproduce the sample covariance. The GFI ranges from 0 (poor fit) to 1 (perfect fit), with values exceeding 0.9 assumed to indicate a good fit of the model to the data (Kelloway, 1998).

The Root Mean Square Residual (RMR) is a measure of the average value of the difference between the sample covariance matrix and a fitted covariance matrix reproduced by the theoretical model (Diamantopoulos & Siguaaw, 2000). It is generally accepted that the lower the index, the better the fit of the model to the data. The standardised RMR comprises fitted residuals divided by their estimated standard errors and has a lower bound of 0 and an upper bound of 1, with values less than 0.05 interpreted as indicating a good fit to the data (Kelloway, 1998).

The Root Mean Square Error of Approximation (RMSEA) is regarded as one of the most informative fit indices. Smaller values indicate a better fit to the data. Values lower than 0.08 indicate a reasonable fit and a value lower than 0.05 indicates a good fit, while values below 0.01 indicate outstanding fit to the data (Diamantopoulos & Siguaaw, 2000).

Another Absolute fit index is the Expected Cross Validation Index (ECVI). The ECVI focuses on the overall error. It measures the difference between the population covariance matrix and the model fitted to the sample. Smaller ECVI values indicate better fitting models that are believed to have the greatest potential for replication (Diamantopoulos & Siguaaw, 2000).

3.7.2 Comparative Fit

Comparative fit (also called incremental fit) represents the relative improvement in fit of the model compared to the statistical baseline model. The baseline model refers to the independence (null) model. According to Kelloway (1998), the null model indicates that there is no relationship between the variables composing the model. Reported comparative fit measures are the Normed-fit Index (NFI), the Non-normed Fit Index (NNFI), the Incremental Fit Index (IFI), the Comparative Fit Index (CFI), the Relative Fit Index (RFI) and the Adjusted Goodness-of-fit Index (AGFI). All of these fit indices have a range of 0 to 1. Values closer to one, especially values > 0.90, represent good fit (Kelloway, 1998).

The goodness-of-fit indices described above are summarised in Table 3.4. These indices were used to reach a meaningful conclusion regarding model fit.

Table 3.4:
Criteria of goodness-of-fit indices

Absolute fit measures	
Minimum fit function Chi-Square χ^2/df	A non-significant result indicates model fit. Values between 2 and 5 indicate good fit.
Root Mean Square Error of Approx (RMSEA)	Values of 0.08 or below indicate acceptable fit, those below 0.05 indicate good fit, and values below 0.01 indicate outstanding fit.
P-Value for Test of Close Fit (RMSEA < 0.05)	Values > 0.05 indicate good fit.
90% Confidence Interval for RMSEA	This is a 90% confidence interval of RMSEA testing the closeness of fit, i.e., testing the hypothesis $H_0: RMSEA < 0.05$.
Root Mean Square Residual (RMR)	Lower values indicate better fit with values below 0.08 indicative of good fit.
Standardised RMR	Lower values indicate better fit, with values less than 0.05 indicating good fit.

Goodness of Fit Index (GFI) Values closer to 1 and > 0.90 represent good fit.

Incremental fit measures

Normed Fit Index (NFI)	Values closer to 1 indicate better fit, with values > 0.09 indicative of good fit.
Non-normed Fit Index (NNFI)	Higher values indicate better fit, with values > 0.90 being indicative of good fit.
Adjusted Goodness of Fit (AGFI)	Values closer to 1 indicate better fit, with values > 0.90 being indicative of good fit.
Comparative Fit Index (CFI)	Values closer to 1 indicate better fit, with values > 0.90 being indicative of good fit.
Incremental Fit Index (IFI)	Values closer to 1 indicate better fit, with values > 0.90 being indicative of good fit.
Relative Fit Index (RFI)	Values closer to 1 indicate better fit, with values > 0.09 being indicative of good fit.

(Diamantopoulos and Sigauw, 2000; Kelloway, 1998)

3.8 SUMMARY

The hypotheses relevant to the study and the research methodology to be used to test the hypotheses have been stated in this chapter. An overview of the research design, sampling technique and the resultant measuring instruments and statistical analysis techniques was provided.

CHAPTER FOUR

RESEARCH RESULTS

4.1 INTRODUCTION

The theoretical model presented in Chapter 2 is based on relationships obtained from analysing the literature. Hypotheses were subsequently formed which, together with the measurement and structural models, were subjected to the methodology explained in Chapter 3. Chapter 4 deals with a comprehensive description of the results obtained through analysing the data by means of the statistical analysis process. The measurement models of the nine underlying constructs, namely personality correlates of integrity, integrity and counterproductive behaviour were taken through reliability analysis and confirmatory factor analysis in order to determine the reliability and fit of the measurement models. The structural model containing the different relationships between constructs was subjected to confirmatory factor analysis via structural equation modelling to determine whether the model fits the data. Hypotheses identified in Chapter 2 were also tested to determine relationships between the constructs. This chapter presents a discussion of the outcomes of the statistical analysis of all the models and the end findings thereof.

4.2 MISSING VALUES

The missing values problem is a common occurrence when self-reporting instruments are used. In the present study, this problem was addressed through imputation by matching (Jöreskog & Sörbom, 2006). Through this technique, missing values are substituted by values derived from one or more other cases with a similar response pattern over a set of matching variables (Jöreskog & Sörbom, 2006). Of the 1243 cases, only 32 were lost during the imputation process.

4.3 ITEM ANALYSIS

Item analysis was performed on all the measurement scales in order to ensure internal reliability and to identify the items that did not contribute to the internal description of the latent variables. It was important to ensure that the instruments used measured the variables they were intended to measure within the study. Item analysis was performed by means of SPSS (version 20). The reliability of each of the scales was established. Cronbach's alpha is the indicator of the reliability of the scale. According to a number of scholars, Cronbach's alpha should preferably exceed the value of 0.70 in order to be regarded as a reliable item (Kerlinger & Lee, 2000; Nunnally & Marlowe, 1997; Pallant, 2007). In this study, a Cronbach's alpha of 0.70 was regarded as acceptable and reliability values of below 0.70 therefore qualified for elimination.

The corrected Item-Total Correlation also needed to be determined as it is an indication of the degree to which each item correlates with the total score. Values lower than 0.20 may indicate that the item is not measuring the specific scale (Nunnally, 1978). The removal of such items should be considered as they may lead to a higher Cronbach's alpha.

4.3.1 Reliability Results: Interpersonal and Organisational Deviance Scale

Table 4.1 represents the reliability results for the Interpersonal and Organisational Deviance Scale (Bennett & Robinson, 2000) which consists of 19 items. The Cronbach alpha of this subscale was found to be .89 which is excellent (Nunnally, 1967).

Table 4.1**Reliability and Item Statistics of the Interpersonal and Organisational Deviance Scale**

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.892	.908	19

Item-Total Statistics					
Adjust Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
inper1	28.91	162.651	.425	.365	.890
inper2	29.33	161.714	.607	.502	.885
inper3	28.97	155.810	.569	.407	.886
inper4	29.31	159.154	.642	.489	.883
inper5	28.82	160.067	.493	.357	.888
inper6	29.40	161.800	.614	.456	.885
inper7	29.61	166.610	.536	.409	.888
orga1	29.69	166.189	.605	.529	.886
orga2	29.50	164.721	.553	.382	.887
orga3	29.40	159.018	.607	.432	.884
orga4	29.41	161.724	.605	.455	.885
orga5	29.47	165.626	.532	.395	.887
orga6	29.28	158.847	.563	.424	.886
orga7	29.12	154.070	.554	.469	.887
orga8	29.29	159.636	.603	.452	.884
orga9	29.49	159.419	.654	.494	.883
orga10	29.72	167.656	.509	.390	.888
orga11	28.26	160.689	.277	.168	.903
orga12	29.28	160.264	.495	.339	.888

4.3.2 Reliability Analysis: Big Three Personality Factors

Each of the Big Three (of the Big Five) Personality Factors, i.e. Conscientiousness, Agreeableness, and Neuroticism, contains six subscales which consist of eight items

each. Each of these subscales of the NEO PI-R scale (Costa & McCrae, 1992) was subjected to item analysis.

4.3.2.1 Reliability Results: Conscientiousness Scale

The initial Cronbach alpha for the Conscientiousness Scale, which consists of 48 items, was .84. Although the Cronbach alpha value is satisfactory, as it is above the recommended value of .70, it was evident from the item- total statistics that 16 of the 48 items correlated $< .20$. These items were: Compe 2 (reversed); Compe 4 (reversed); Compe 5; Compe 6 (reversed); Order 1 (reversed); Order 8 (reversed); DUT 2 (reversed); DUT 8; ACH 1 (reversed); ACH 3 (reversed); ACH 5 (reversed); ACH 8; Selfdis 4 (reversed); Selfdis 6 (reversed); Deli 5 (reversed); and Deli 6. After the removal of these poor items, the Cronbach alpha increased to .89. The item total correlation loadings ranged from 0.213 to 0.606. Due to the large number of items involved, it was deemed appropriate to display the reliability analysis results of the conscientiousness scale in Appendix 4.1.

4.3.2.2 Reliability Results: Agreeableness Scale

The Cronbach alpha of the Agreeableness Scale was found to be .72. However, it was evident from the item-total statistics that the item- total correlations of the following items were < 0.20 : Trust 1 (reversed); Trust 2; Trust 3 (reversed); Trust 5 (reversed); Trust 6; Straight 1; Straight 3; Straight 8 (reversed); ALTR 3 (reversed); ALTR 5 (reversed); COMP 2 (reversed); COMP 3; COMP 4 (reversed); COMP 5; MOD 1 (reversed); MOD 2; MOD 3 (reversed); MOD 5 (reversed); MOD 8 (reversed); Tender 2 (reversed) and Tender 3. After removal of the above poor items, the Cronbach alpha increased to .80 (see Appendix 4.2). This reliability coefficient indicates good reliability (Nunnally, 1967).

4.3.2.3 Reliability Results: Neuroticism Scale

The Cronbach alpha of the Neuroticism Scale was found to be .71. From the item-total statistics it was apparent, however, that the following items correlated $< .20$ or negatively $> .20$ with the Total Scale: ANX 1 (reversed); ANX 3 (reversed); ANX 5

(reversed); ANX 7 (reversed); Anger 2 (reversed); Anger 4 (reversed); Anger 6 (reversed); Depress 1 (reversed); Depress 3 (reversed); Selfcon 2 (reversed); Selfcon 4 (reversed); Selfcon 6 (reversed); Selfcon 8; Impulse 1 (reversed); Impulse 3 (reversed); Impulse 5 (reversed); Impulse 8 (reversed); VUL 2 (reversed); VUL 4 (reversed); VUL 6 (reversed); VUL 7 (reversed) and VUL 8 (reversed). After deletion of these poor items, Cronbach's alpha increased to .88 (see Appendix 4.3). This was good reliability (Nunnally, 1967).

4.3.3 Reliability Results: Other Personality Correlates

4.3.3.1 Reliability Results: Adjustment scale

The initial Cronbach alpha of the Adjustment scale consisting of eight items was found to be .65. However, the item-total statistics indicated that two items loaded below .20. It is also of interest to note that there was a significant increase in the Cronbach alpha if the two items were deleted. The deletion of items 5 and 7 increased the Cronbach alpha to .70, which is adequate (Nunnally, 1967) (see Table 4.2).

Table 4.2

Reliability and Item Statistics of the refined Adjustment scale

Reliability Statistics					
	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items		
	.698	.692	6		

Item-Total Statistics					
Adjust Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
emosta1	21.82	28.542	.221	.065	.712
emosta2r	22.78	22.684	.477	.250	.642
emosta3r	22.09	25.001	.455	.209	.652
emosta4r	22.72	22.604	.510	.284	.630
emosta6r	23.10	23.196	.472	.225	.644
emosta8r	23.09	23.155	.434	.206	.657

4.3.3.2 Reliability Results: External Locus of control scale

The initial Cronbach alpha of the external Locus of control scale consisting of eight items was found to be .74. However, from the item-total statistics it was evident that item 7 loaded below .20. It is also important to note that there was an increase in the Cronbach alpha if the item was deleted (see Table 4.3). The deletion of the item increased Cronbach's alpha to .76, which is adequate (Nunnally, 1967).

Table 4.3

Reliability and Item statistics of the External Locus of control scale

Reliability Statistics					
	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items		N of Items	
	.762	.759		7	

Item-Total Statistics					
Locus Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
locus1	16.00	38.641	.548	.323	.718
locus2	16.19	39.790	.514	.274	.726
locus3	15.57	39.553	.483	.249	.732
locus4	15.75	39.662	.459	.219	.738
locus5	16.49	39.852	.559	.332	.717
locus6	15.61	38.310	.507	.273	.727
locus8	17.17	46.919	.289	.099	.766

4.3.3.3 Reliability Results: Fearfulness scale

Table 4.4 represents the reliability results for the Fearfulness scale, which also consists of eight items. The Cronbach alpha of this subscale was found to be .79. Cronbach's alpha therefore shows adequate reliability (Nunnally, 1967). None of the items loaded below .20.

Table 4.4*Reliability and Item statistics of the Fearfulness scale*

Reliability Statistics					
	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items		
	.788	.785	8		

Item-Total Statistics					
Fear Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
fear1	18.31	49.253	.586	.353	.748
fear2	19.01	55.170	.430	.210	.774
fear3	19.08	50.166	.611	.405	.745
fear4	18.99	51.308	.580	.383	.750
fear5	19.21	52.852	.538	.311	.758
fear6	18.98	52.620	.466	.231	.769
fear7r	19.48	58.771	.278	.118	.795
fear8	18.48	53.102	.453	.238	.771

4.3.3.4 Reliability Results: Personalised Power scale

Table 4.5 represents the reliability results for the Personalised Power scale which also consists of 8 items. Cronbach's alpha of this subscale was found to be .70. It therefore shows adequate reliability (Nunnally, 1967). None of the items loaded below .20.

Table 4.5*Reliability and Item statistics of the Personalised Power scale*

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.698	.698	8

Item-Total Statistics					
Power Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
soc1	25.78	42.405	.343	.162	.679
soc2	26.16	41.846	.363	.174	.675
soc3	26.71	41.402	.412	.340	.664
soc4	24.23	42.169	.386	.221	.670
soc5	26.25	41.224	.390	.317	.669
soc6	24.83	39.305	.442	.292	.657
soc7	25.21	39.446	.451	.271	.655
soc8	24.73	42.829	.317	.126	.685

4.3.4 Reliability Analysis: Integrity Scale

Cronbach's alpha of the Integrity Scale consisting of 82 items was found to be .926. From the item-total statistics it was, however, evident that the following items correlated < .20 with the total scale: INT 1; INT 2 (reversed); INT 4 (reversed); INT 5 (reversed); INT 6 (reversed); INT 8; INT 15; INT 22 (reversed); INT 37; INT 51; INT 59; INT 60; INT 62 (reversed); INT 70; INT 75; INT 80; INT 84; INT 87. After deletion of these 18 poor items, Cronbach's alpha increased to .932 (see Appendix 4.4). This was excellent reliability (Nunnally, 1967).

4.4 Summary of the item analysis results

The results of the item analysis performed on the various scales are summarised in Table 4.6. After examination of all the scales it was concluded that all the Cronbach alpha values exceeded the required 0.70 cut-off and all items presented high item-total correlations. Each scale was therefore considered to be internally consistent and reliable.

4.5 DIMENSIONALITY ANALYSIS

Exploratory factor analysis (EFA) (i.e. principal axis factoring analysis with oblique rotation) was conducted to analyse the interrelationships of the items and to suggest additional items for deletion (Hair *et al.*, 2006).

Prior to performing the EFA, the measures of sampling adequacy had to be evaluated to determine whether the correlation matrix for the items comprising the scale was suitable for factor analysis. In this case, a Kaiser-Meyer-Olkin (KMO)

measure of sampling adequacy of 0.921(> 0.60) and a significant ($p < 0.001$) Bartlett's test of sphericity indicated that the data were suitable for factor analysis.

Based on the results of the Scree test, it was decided that a four-factor solution would be the most appropriate for defining integrity. In order to ensure that each item represented the construct underlying each factor, a factor loading of 0.30 was used as the minimum cut-off point. Secondly, each item was required to be clearly defined by only one factor. An item was retained if the difference between loadings for any given item was more than 0.10 across factors. Thirteen items were rejected because they did not meet these criteria, thus 51 items remained.

Table 4.6

Summary of the item analysis results

Scale	Mean	Std deviation	Cronbach's alpha	Number of items deleted	Number of items retained
Conscientiousness	28.95	5.645	.89	16	32
Agreeableness	25.10	4.857	.80	21	27
Neuroticism	66.88	15.33	.88	22	26
Integrity	291.24	44.29	.93	18	64
Adjustment	27.12	5.73	.70	2	6
Locus of control	18.80	7.27	.76	1	7
Fearfulness	21.65	8.19	.79	0	8
Personalised Power	29.13	7.19	.70	0	8
CWB	11.97	5.66	.89	0	19

Four subscales for the Integrity Scale were developed from the EFA results (see Appendix 4.5). The first subscale was composed of 14 items; the second was composed of 12 items; the third was composed of 13 items; and the fourth subscale was composed of 12 items.

4.5.1 Uni-dimensionality of the Integrity subscales

The postulation that the subscales would be uni-dimensional was supported by the Scree tests for the different subscales. Accordingly, one factor was extracted for each subscale. The items with the lowest loadings on the extracted factor were systematically deleted until uni-dimensionality was achieved for the subscale. In the

process, 15 items in total were deleted; three items from subscale 1; six items from subscale 2; two items from subscale 3; and four items from subscale 4.

The four subscales demonstrated uni-dimensionality. The factor loadings in subscale 1 varied from 0.55 to 0.71; in subscale 2, from 0.48 to 0.70; in subscale 3, from 0.56 to 0.67; and in subscale 4, from 0.51 to 0.70. The items in subscale 1 explained 37.8% of the total variance; the items in subscale 2, 33.9% of the variance; the items in subscale 3, 38.3% of the variance; and the items in subscale 4, 37.3% of the variance.

After inspecting the items that loaded meaningfully on the four factors, it was decided to label Factor 1 Honesty, Factor 2 Morality, Factor 3 Responsibility and Factor 4 Norm-abiding.

4.5.2 Reliability of the final Integrity Scale – Comparison of the development and validation samples

The reliability analysis was done on the final 38 items after the refined subscale structures had been identified (via EFA procedures) and uni-dimensionality had been achieved. The reliability coefficient (Cronbach's alpha) of the Integrity Scale for the development sample is given in Table 4.7. For overall integrity, a high reliability coefficient of 0.91 was obtained. The reliabilities of each of the subscales ranged from $\alpha = 0.74$ to $\alpha = 0.82$, which was viewed as at least adequate ($\alpha > 0.70$) (Nunnally & Marlowe, 1997).

A comparison of the development sample with the validation and total samples in terms of the reliability coefficients of the different integrity subscales shows that the reliability coefficients do not vary substantially. Thus, the reliability results on a different sample (i.e. validation sample) are similar to those found for the development sample. Therefore, further support was found for the reliability of the Integrity Scale.

The item-total correlations of the items in the final Integrity Scale were above 0.30, indicating that the items were measuring the underlying construct of integrity. The variances of the items were all above 1.50 (standard deviation of 1.225). Thus, the items discriminate sufficiently between individuals (Bennett & Robinson, 2000).

Table 4.7

Reliability of the Final Integrity Scale (Cronbach's alpha)

SUBSCALE	NO. OF ITEMS	DS (after EFA) (N = 588)	VS (after EFA) (N = 588)	Total sample (N = 1176)
Honesty	10	0.82	0.80	0.81
Morality	10	0.81	0.79	0.80
Responsibility	11	0.80	0.78	0.79
Norm-abiding	7	0.74	0.72	0.73
Integrity	38	0.91	0.90	0.90

Note. DS - Development sample; VS - Validation sample

4.6 EVALUATING THE MEASUREMENT MODELS

Confirmatory factor analysis was performed on all the scales used in this study. This was done in order to investigate the goodness-of-fit between the measurement models and the obtained data. LISREL 8.80 (Jöreskog & Sörbom, 1996) was used to perform separate confirmatory factor analyses (CFA) on all nine scales.

The initial results of the Confirmatory Factor Analysis (CFA) are discussed per scale in terms of the fit index of the Root Mean Square Error of Approximation where $RMSEA < 0.08$ indicates a reasonable good model fit and $RMSEA < 0.05$ indicates a very good fit of the data (Diamantopoulos & Siguaw, 2000). The results therefore indicated whether the measurement model achieved good fit or fitted poorly in terms of RMSEA. Different steps were followed depending on whether the results indicated good or poor model fit. If poor fit was found, the modification indices were investigated in order to determine the possibility of increasing model fit.

The fit of the model can be improved through the freeing of model parameters (Diamantopoulos & Siguaw, 2000). This involves looking at the theta-delta modification indices. Large modification index values (> 6.6349 at a significance level

of 0.01) are indicative of parameters that, if set free, would improve the fit of the model significantly ($p < 0.01$) (Diamantopoulos & Siguaw, 2000; Jöreskog & Sörbom, 1993). Hence, in each of the measurement models described in this chapter, attempts have been made to improve the goodness of fit indices through the use of the theta-delta modification indices.

4.6.1 Evaluating the Measurement Model Fit of the CWB scale

The goodness-of-fit statistics for the CWB measurement model are indicated in Table 4.24 and discussed in the following section.

4.6.1.1 Results: Absolute Fit Measures

CFA was performed on all 19 items in the CWB scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that generally good model fit had not been achieved although the RMSEA = (0.064) was within reasonable limits (< 0.08). However; the fit of the measurement model was improved through the use of the theta-delta modification indices. After a close inspection of the theta-delta modification indices, a decision was made to exclude items inper1; orga10 and orga11. This improved the model fit, resulting in an RMSEA value of 0.0563.

The fit indices reported in Table 4.24 indicate that the CWB refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.86 falls within the 2 to 5 range of good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.081 achieved a value that is indicative of close fit (> 0.05). The standardised Root Mean Square Residual (SRMR) value of 0.048 is below the 0.05 threshold, providing evidence of relatively good model fit. A positive picture is also expressed by the Goodness of Fit Index (GFI). The GFI value of 0.91 for the measurement model is close to 1 and above 0.90. This indicates that good absolute fit has been achieved for the measurement model.

4.6.1.2 Results: Incremental Fit Measures

The results of the incremental fit indices indicate that the measurement model achieve Normed Fit Index (NFI), Non-normed Fit Index (NNFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Relative Fit Index (RFI) indices that are > 0.90 , which represents good fit. These comparative indices therefore, appear to reveal a positive picture of model fit. The measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

The CWB items loaded significantly (> 0.50) on the latent variable (see Table 4.8). This means that all items significantly represent the dimension they were designed to reflect.

4.6.2 Evaluating the Measurement Model Fit of the Conscientiousness scale

CFA was performed on the remaining 32 items in the Conscientiousness scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that a generally acceptable model fit had been achieved (RMSEA = 0.0582). A RMSEA $< .08$ indicates an acceptable model fit with the data (Diamantopoulos & Siguaw, 2000).

Table 4.8

Completely Standardised Solution for CWB: LAMBDA-X

	CWB
Inper2	0.63
Inper3	0.61
Inper4	0.67
Inper5	0.51
Inper6	0.66
Inper7	0.62
Orga1	0.63
Orga2	0.62
Orga3	0.66
Orga4	0.65
Orga5	0.50
Orga6	0.66
Orga7	0.64
Orga8	0.65
Orga9	0.70

Orga12 0.52

The fit indices reported in Table 4.24 indicate that the Conscientiousness refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.99 falls within the 2 to 5 range of good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.00 achieved a value that is not indicative of close fit. The standardised RMR value of 0.0595 marginally misses the 0.05 threshold. The GFI value of 0.84 for the measurement model is below the 0.90 level that is indicative of good fit. Overall the absolute fit indices demonstrated that the measurement model achieved reasonable fit with the data.

The results of the incremental fit indices indicate that the measurement model achieved Normed Fit (NFI), Non-Normed Fit (NNFI), Comparative Fit (CFI), Incremental Fit (IFI) and Relative Fit (RFI) indices that are all > 0.90, which represents good fit. These comparative indices generally appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide an acceptable explanation of the observed covariance matrix.

The completely standardised lambda X matrix is used to determine the significance of the factor loadings hypothesised by the conscientiousness measurement model. This is indicated in Table 4.9. All except 13 items loaded significantly (> 0.50) on the latent variable. Although 13 items had lower values, the values were still within acceptable limits (> 0.30), except for two items (Order 5 and Deli1). This means that 30 of the 32 items satisfactorily represent the dimension they were designed to reflect.

4.6.3 Evaluating the Measurement Model Fit of the Agreeableness scale

CFA was performed on the remaining 27 items in the Agreeableness scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was

found that reasonable model fit had not been achieved (RMSEA = 0.0852) (> 0.08). However; the fit of the measurement model was improved through the use of the theta-delta modification indices. After a close inspection of the theta-delta modification indices, it was decided to exclude items trust7; str2r; str4r; str6r; str7r; altr1rev; comp6rev; comp7rev; comp8rev and tender4r. This improved the model fit significantly, resulting in a RMSEA value of 0.0549.

The fit indices reported in Table 4.24 indicate that the agreeableness refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.77 falls within the 2 - 5 range, indicating good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.120 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.059 marginally misses the 0.05 threshold, providing evidence of a relatively good model fit. The GFI value of 0.91 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

Table 4.9

Completely Standardised Solution: LAMBDA-X

Conscientiousness	
compe1	.456
compe3	.601
compe7	.488
compe8	.553
order2	.665
order3re	.354
order4	.666
order5re	.259
order6	.483
order7re	.299
dut1	.588
dut3	.359
dut4re	.347
dut5	.455
dut6	.548
dut7	.682
ach2	.505
ach4	.668
ach6	.560
ach7	.600
selfdis1	.656
selfdis2	.401

selfdis3	.563
selfdis5	.564
selfdis7	.392
selfdis8	.568
deli1re	.230
deli2	.620
deli3rev	.385
deli4	.604
deli7	.681
deli8	.592

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90, which represents good fit. These comparative indices therefore, appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

Table 4.10

Completely Standardised Solution: LAMBDA-X (refined scale)

	Agreeableness
trust4	.318
trust8	.488
str5	.300
altr2	.414
altr4	.538
altr6	.466
altr7	.633
altr8	.471
comp1	.424
mod4	.466
mod6	.329
mod7	.285
tender1	.482
tender5	.460
tender6	.626
tender7	.473
tender8	.527

The factor loadings of the refined scale are indicated in Table 4.10. Although only four of the Agreeableness items loaded significantly (> 0.50) on the latent variable, the values for the rest of the items were still within acceptable limits (> .0.30). One item (Mod7 = 0.29) only marginally missed the cut-off point of 0.30 and it was

decided to maintain the item. This means that all items represented the dimension they were designed to reflect satisfactorily.

4.6.4 Evaluating the Measurement Model Fit of the Neuroticism scale

CFA was performed on the remaining 26 items in the Neuroticism scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0317). A RMSEA < .05 indicates a good model fit with the data (Diamantopoulos & Siguaaw, 2000).

The fit indices reported in Table 4.24 indicate that the Neuroticism refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.59 misses the 2 - 5 range, indicating an over fitting model. The p-value Test of Close Fit (RMSEA < 0.05) = 1.00 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.045 providing evidence of good model fit (< 0.50). The GFI value of 0.92 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the increment fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90, which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

With regard to the completely standardised factor loadings, all items with the exception of 11 items loaded significantly (> 0.50) on the latent variable (see Table 4.11). Although 11 items had lower values, eight values were still within acceptable limits (> 0.30), except for two items (Depress5 and Selfcon7). One item (Anx6 = 0.29) only marginally missed the cut-off point of 0.30 and it was decided to maintain the

item. This means that 24 of the 26 items represented the dimension they were designed to reflect satisfactorily.

4.6.5 Evaluating the Measurement Model Fit of the Adjustment subscale

CFA was performed on the remaining six items in the Adjustment subscale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0410). A RMSEA < .05 indicates a good model fit with the data (Diamantopoulos & Sigaw, 2000).

Table 4.11

Completely Standardised Solution: LAMBDA-X

	Neuroticism
anx2	.423
anx4	.551
anx6	.285
anx8	.567
anger1	.521
anger3	.396
anger5	.467
anger7	.485
anger8	.557
depres2	.598
depres4	.557
depres5	.266
Depres6	.511
depres7	.590
depres8	.580
selfcon1	.389
selfcon3	.604
selfcon5	.451
selfcon7	.235
impuls2	.399
impuls4	.334
impuls6	.396
impuls7	.533
vul1	.560
vul3	.544
vul5	.599

The fit indices reported in Table 4.24 indicate that the adjustment refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.99 marginally misses the 2 to 5 range of good fit. The p-value Test of Close Fit (RMSEA

< 0.05) = 0.667 achieved a value that is indicative of close fit (> 0.50). The standardised RMR value of 0.032 shows good model fit. A positive picture is expressed by the Goodness of Fit Index (GFI). The GFI value of 0.99 for the measurement model is above the 0.90 level that is indicative of good fit. This indicates that the adjustment measurement model has achieved the acceptable good fit level.

The results of the incremental fit indices indicate that the measurement model achieved Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI) and Relative Fit Index (RFI) indices that are > 0.90 which represents good fit. These comparative indices generally appear to reveal a positive picture of model fit.

The completely standardised factor loadings (see Table 4.12) were generally significant and substantial (> 0.5), except for one item (Item 1) with a relatively low loading (0.316) on the hypothesised adjustment latent factor. As is evident, all items were reasonable (> 0.30) indicators of their respective latent factors.

Table 4.12

Completely Standardised Solution: LAMBDA-X (Refined scale)

	ADJUSTMENT
Emosta1r	.316
emosta2r	.618
Emosta3r	.572
Emosta4r	.661
Emosta6r	.565
Emosta8r	.549

4.6.6 Evaluating the Measurement Model Fit of the External Locus of Control Scale

CFA was performed on the remaining seven items in the external locus of control scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0403). A RMSEA $< .05$ indicates a good model fit with the data (Diamantopoulos & Siguaw, 2000),

The fit indices reported in Table 4.24 indicate that the External Locus of Control refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.95 misses the 2 to 5 range, indicating an over fitting model. The p-value Test of Close Fit (RMSEA < 0.05) = 0.738 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.033 reached the 0.05 threshold, providing evidence of relatively good model fit. The GFI value of 0.98 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90, which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

The completely standardised factor loadings (see Table 4.13) were generally significant and substantial (> 0.5), except for one item (Item 8) with a relatively low loading (0.373) on the hypothesised External Locus of Control latent factor. As is evident, all items were reasonable (> 0.30) indicators of their respective latent factors.

Table 4.13

Completely Standardised Solution: LAMBDA-X (Refined scale)

	External Locus of Control
locus1	.647
locus2	.614
locus3	.541
locus4	.547
locus5	.682
locus6	.571
locus8	.373

4.6.7 Evaluating the Measurement Model Fit of the Fearfulness scale

CFA was performed on all eight items in the Fearfulness scale (after reliability testing, see Table 4.6). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.045). A RMSEA < .05 indicates a good model fit with the data (Diamantopoulos & Siguaaw, 2000).

The fit indices reported in Table 4.24 indicate that the Fearfulness refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.16 falls within the 2 to 5 range, indicating good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.667 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.037 falls within the 0.05 threshold, providing evidence of a relatively good model fit. The GFI value of 0.97 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90, which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

Table 4.14

Completely Standardised Solution: LAMBDA-X

	Fearfulness
Fear1	.636
Fear2	.522
Fear3	.721
Fear4	.701
Fear5	.641
Fear6	.531
Fear7r	.365
Fear8	.508

The completely standardised factor loadings (see Table 4.14) were generally significant and substantial (> 0.50), except for one item (Item 7) with a relatively low loading (0.365) on the hypothesised Fearfulness latent factor. As is evident, all items were reasonable (> 0.30) indicators of their respective latent factors.

4.6.8 Evaluating the Measurement Model Fit of the Personalised Power scale

CFA was performed on all eight items in the Personalised Power scale (After reliability testing, see Table 4.5). After initial inspection of the fit statistics, it was found that good model fit had not been achieved (RMSEA = 0.140). A RMSEA $< .08$ indicates a reasonable model fit with the data (Diamantopoulos & Siguaw, 2000). However, the fit of the measurement model was improved through the use of the theta-delta modification indices. After a close inspection of the theta-delta modification indices, a decision was made to exclude items soc2 and soc3. This improved the model fit significantly resulting in an RMSEA value of 0.0583.

Table 4.15

Completely Standardised Solution: LAMBDA-X (refined scale)

	PERSONALI- SED POWER
soc1	.297
soc4	.562
soc5	.314
soc6	.696
soc7	.643
soc8	.440

The fit indices reported in Table 4.24 indicate that the Personalised Power scale refined measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 4.99 falls within the 2 to 5 range, indicating good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.190 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.036 is within the 0.05 threshold, providing evidence of a relatively good model fit. The GFI value of 0.98 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90 , which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

With regard to the completely standardised factor loadings, all items with the exception of items 1, 5 and 8, loaded significantly (> 0.50) on the latent variable (see Table 4.15). Although the three items had lower values, the values were still within acceptable limits (> 0.30). This means that all items represent the dimension they were designed to reflect satisfactorily.

4.7 EVALUATING THE MEASUREMENT MODEL FIT OF THE INTEGRITY SCALE

In this section the goodness of fit indices for the five integrity dimensions are discussed.

4.7.1 Evaluating the Measurement Model Fit of the Honesty subscale

CFA was performed on the remaining 10 items in the Honesty subscale (after EFA, see Table 4.7). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0504) as an RMSEA $< .05$ indicates good model fit with the data (Diamantopoulos & Sigaw, 2000).

The fit indices reported in Table 4.20 indicate that the Honesty measurement model presents acceptable fit with the data for the developmental sample. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.49 falls within the 2 to 5 range, indicating good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.46 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.043 is within the 0.05 threshold, providing evidence of relatively good model fit. The GFI value of 0.96 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90 , which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

The completely standardised LAMBDA-X matrix indicates that the bulk of the Honesty items loaded significantly on the latent variable (> 0.50), with the exception of two items, which means the items satisfactorily (> 0.30) represent the dimension they were designed to reflect. This is shown in Table 4.16.

Table 4.16

Completely Standardised Solution for Honesty: LAMBDA-X

HONESTY	
S2int10r	0.502
S2int18r	0.667
S2int30r	0.479
S2int34r	0.537
S2int42r	0.564
S2int46r	0.548
S2int52r	0.622
S2int54r	0.551
S2int66r	0.514
S2int94r	0.488

4.7.2 Evaluating the Measurement Model Fit of the Morality subscale

CFA was performed on the remaining 10 items in the Morality subscale (after EFA, see Table 4.7). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0428). A RMSEA $< .05$ indicates a good model fit with the data (Diamantopoulos & Siguaw, 2000).

Table 4.17*Completely Standardised Solution for Morality: LAMBDA-X*

MORALITY	
S2int28r	0.517
S2int49r	0.525
S2int61r	0.570
S2int71r	0.598
S2int73r	0.583
S2int76r	0.539
S2int83r	0.600
S2int86r	0.639
S2int88r	0.613
S2int95r	0.574

The fit indices reported in Table 4.20 indicate that the Morality measurement model presents acceptable fit with the data for the developmental sample. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.08 falls within the 2 to 5 range, indicating good fit. The p-value Test of Close Fit (RMSEA < 0.05) = 0.79 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.036 is within the 0.05 threshold, providing evidence of a relatively good model fit. The GFI value of 0.97 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved (NFI), (NNFI), (CFI), (IFI) and (RFI) indices that all are > 0.90, which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

The completely standardised LAMBDA-X matrix indicates that the Morality items loaded significantly on the latent variable (> 0.50), which means the items represent the dimension they were designed to reflect (see Table 4.17).

4.7.3 Evaluating the Measurement Model Fit of the Responsibility subscale

CFA was performed on the remaining 11 items in the Responsibility subscale (after EFA, see Table 4.7). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0404). A RMSEA < .05 indicates good model fit with the data (Diamantopoulos & Siguaaw, 2000).

Table 4.18

Completely Standardised Solution for Responsibility: LAMBDA-X

RESPONSIBILITY	
S2int3re	0.413
S2int27r	0.514
S2int29r	0.420
S2int39r	0.510
S2int48r	0.622
S2int58r	0.521
S2int77r	0.620
S2int82r	0.536
S2int89r	0.490
S2int96r	0.583
S2int97r	0.675

The fit indices reported in Table 4.20 indicate that the Responsibility measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.96 marginally misses the 2 - 5 range, indicating an over fitting model. The p-value Test of Close Fit (RMSEA < 0.05) = 0.89 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.037 is within the 0.05 threshold, providing evidence of relatively good model fit. The GFI value of 0.97 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90, which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

The completely standardised LAMBDA-X matrix indicates that the Responsibility items loaded significantly on the latent variable (> 0.50) except for three items which are still within acceptable levels (> 0.30). It can be concluded that the items represent the dimension they were designed to reflect satisfactorily (see Table 4.18).

4.7.4 Evaluating the Measurement Model Fit of the Norm-abiding subscale

CFA was performed on all seven items in the Norm-abiding subscale (after EFA, see Table 4.7). After initial inspection of the fit statistics, it was found that good model fit had been achieved (RMSEA = 0.0377) as an RMSEA $< .05$ indicates good model fit with the data (Diamantopoulos & Sigua, 2000).

The fit indices reported in Table 4.20 indicate that the Norm-abiding measurement model presents acceptable fit with the data. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.84 misses the 2 to 5 range, indicating an over fitting model. The p-value Test of Close Fit (RMSEA < 0.05) = 0.80 achieved a value that is indicative of close fit (> 0.05). The standardised RMR value of 0.032 is within the 0.05 threshold, providing evidence of relatively good model fit. The GFI value of 0.98 indicates that good absolute fit has been achieved for the measurement model (> 0.90).

The results of the incremental fit indices indicate that the measurement model achieved NFI, NNFI, CFI, IFI and RFI indices that all are > 0.90 , which represents good fit. These comparative indices therefore appear to reveal a positive picture of model fit.

The overall measurement model can therefore be said to provide a credible explanation of the observed covariance matrix.

With regard to the completely standardised factor loadings, the completely standardised LAMBDA-X matrix indicates that the Norm-abiding items loaded significantly on the latent variable (> 0.50), with the exception of two items (see Table 4.19). Although the two items had lower values, the values were still within

acceptable limits (>0.30). This means that all items represent the dimension they were designed to reflect satisfactorily.

Table 4.19

Completely Standardised Solution for Norm-abiding: LAMBDA-X

NORM-ABIDING	
S2int16r	0.564
S2int23r	0.486
S2int26r	0.449
S2int38r	0.500
S2int41r	0.601
S2int50r	0.654
S2int74r	0.639

4.7.5 Evaluating the Measurement Model Fit of the 1st-order integrity scale

The Satorra-Bentler Scaled Chi-Square of 1276.732 ($p < 0.01$) indicated that the null hypothesis of exact fit could be rejected (see Table 4.24). The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.55 falls outside the 2 to 5 acceptable model fit range, thereby indicating an over-fitting model. The RMSEA is an important value to consider when evaluating model fit. According to Diamantopoulos and Siguaaw (2000), values smaller than 0.05 indicate good fit and values below 0.08 indicate reasonable fit. The RMSEA value of this model (0.0307) therefore presents good fit. The p-value for test of Close fit (1.00) indicates that the null hypothesis of close fit cannot be rejected, and therefore the first-order measurement model shows close fit.

The Root Mean Square Residual (RMR) of the structural model was found to be 0.124. According to Kelloway (1998) low values are an indication of good fit. This scale, however, is sensitive to the scale of measurement of the model variables and it is therefore difficult to determine what qualifies as a low value. Kelloway further states that LISREL provides the standardised RMR which is a better index and indicates that values lower than 0.05 represents good fit. The standardised RMR value of this model is 0.0483 and it therefore indicates a good fit with the data.

The goodness-of-fit index (GFI) ranges from 0 to 1 and “is based on the ratio of the sum of the squared discrepancies to the observed variance” (Kelloway, 1998, p. 27). Values above 0.90 indicate a good fit of the model. The GFI (0.90) of this model achieved the ideal value of 0.90. Thus, according to the absolute fit indices, the integrity first-order model shows good fit.

Comparative fit is an incremental fit index that “measures the relevant improvement in the fit of the researcher’s model over that of a baseline model, typically the independence model” (Kline, 2011, p.208). The incremental fit indices, namely the NFI (0.96), NNFI (0.98), CFI (0.98), IFI (0.98) and RFI (0.95) are all above 0.90, which indicates good comparative fit relative to the independence model.

Overall, the examination of the goodness-of-fit indices resulted in the conclusion that the integrity first-order model displays good fit with the data.

4.7.6 Evaluating the Measurement Model Fit of the 2nd-order integrity scale

The Satorra-Bentler Scaled Chi-Square of 1061.143 ($p < 0.01$), indicates that the null hypothesis of exact fit can be rejected (see Table 4.24). The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 1.61 falls outside the 2 to 5 acceptable model fit range, thereby indicating an over-fitting model. The RMSEA is an important value to consider when evaluating model fit. According to Diamantopoulos and Siguaaw (2000), values smaller than 0.05 indicate good fit and values below 0.08 indicate reasonable fit. The RMSEA value of this model (0.032) therefore presents good fit. The p-value for test of Close fit (1.00) indicates that the null hypothesis of close fit cannot be rejected, and therefore the second-order measurement model shows close fit.

The Root Mean Square Residual (RMR) of the integrity second order model is found to be 0.133. According to Kelloway (1998) low values are an indication of good fit. This scale, however, is sensitive to the scale of measurement of the model variables and it is therefore difficult to determine what qualifies as a low value. Kelloway further states that LISREL provides the standardised RMR which is a better index and

indicates that values lower than 0.05 represents good fit. The standardised RMR value of this model is 0.051 and it therefore indicates good fit with the data.

The goodness-of-fit index (GFI) ranges from 0 to 1 and “is based on the ratio of the sum of the squared discrepancies to the observed variance” (Kelloway, 1998, p. 27). Values above 0.90 indicate good fit of the model. The GFI (0.89) of this model marginally failed to achieve the ideal value of 0.90. Thus, according to the absolute fit indices, the integrity second-order model shows good fit.

Comparative fit is an incremental fit index that “measures the relevant improvement in the fit of the researcher’s model over that of a baseline model, typically the independence model” (Kline, 2011, p. 208). The incremental fit indices namely the NFI (0.96), NNFI (0.98), CFI (0.98), IFI (0.98) and RFI (0.95), are all above 0.90, which indicate good comparative fit relative to the independence model.

Overall, the examination of the goodness-of-fit indices resulted in the conclusion that the integrity second-order measurement model displays good fit with the data.

4.7.7 Measurement model fit of the integrity subscales: A comparison of the developmental and validation samples

A comparison of the Honesty subscale between the developmental and validation samples in terms of the absolute, relative and comparative fit indices shows good model fit for both samples (see Table 4.20).

The goodness of fit indices for the Morality subscale shows that for both the developmental and validation samples, the absolute, relative and comparative fit indices indicate good model fit.

Similar to the conclusions derived with regard to the Honesty and Morality subscales model fit, the absolute, relative and comparative fit indices for the Responsibility subscale show that good model fit has been achieved for both the developmental and validation samples.

The fit indices unanimously indicate that the norm-abiding measurement model showed satisfactory model fit for both the developmental and validation samples, as indicated by the absolute, relative and comparative fit indices.

The first-order measurement models for both developmental and validation samples generally indicate satisfactory model fit.

The second-order measurement models for both developmental and validation samples generally indicate satisfactory model fit, as well.

The similar model fit indices of the developmental and validation samples show that the integrity subscales provide a credible explanation of the underlying integrity latent dimension.

Table 4.20

Measurement model fit of the integrity subscales: A comparison of the developmental and validation samples

	$S-B\chi^2/df$	<i>RMSEA</i>	<i>p_{close fit}</i>	<i>SRMR</i>	<i>GFI</i>	<i>NFI</i>	<i>NNFI</i>	<i>CFI</i>	<i>IFI</i>	<i>RFI</i>
HONESTY (DS)	2.49	.05	.46	.043	.96	.97	.97	.98	.98	.96
HONESTY (VS)	3.16	.061	.079	.049	.95	.95	.96	.97	.97	.94
MORAL (DS)	2.08	.043	.79	.036	.97	.98	.98	.99	.99	.97
MORAL (VS)	2.35	.048	.576	.041	.96	.97	.98	.98	.98	.96
RESPONS (DS)	1.96	.04	.891	.037	.97	.97	.98	.99	.99	.96
RESPONS (VS)	2.23	.046	.703	.042	.96	.96	.97	.98	.98	.95
NORM (DS)	1.84	.038	.80	.032	.98	.98	.99	.99	.99	.97
NORM (VS)	1.32	.023	.957	.027	.99	.98	.99	.99	.99	.98
INTEG 1st order (DS)	1.55	.031	1.00	.048	.90	.96	.98	.98	.98	.95
INTEG 1st order (VS)	1.66	.034	1.00	.048	.89	.95	.98	.98	.98	.95
INTEG 2 nd order (DS)	1.61	.032	1.00	.051	.89	.96	.98	.98	.98	.95
INTEG 2 nd order (VS)	1.69	.034	1.00	.051	.89	.95	.98	.98	.98	.94

Note. S-B χ^2 , Satorra-Bentler Scaled Chi-square; df = Degrees of Freedom; RMSEA, Root Mean Square Error of Approximation; Pclose fit, P-Value for Test of Close Fit (RMSEA < 0.05); SRMR, Standardised Root Mean Residual; GFI, Goodness-of-fit Index; NFI, Normed Fit Index; NNFI, Non-normed fit index; CFI, Comparative fit index, IFI, Incremental fit index; RFI, Relative fit index. INTEG = Integrity; MORAL = Morality; RESPONS = Responsibility; NORM = Norm-abiding; DS, Developmental sample; VS, Validation sample.

Reliability of the refined (final) scales (after CFA)

The reliability coefficients of the final refined scales ranged from 0.64 to 0.91. The corrected-item-total correlation loadings and the number of items retained are all indicated in Table 4.21.

Table 4.21: Reliability of refined (final) scales (after CFA)

Scale	Cronbach's alpha	Item- Total correlation	Number of items retained
Conscientiousness	0.89	0.213 – 0.606	32
Agreeableness	0.79	0.262 – 0.521	17
Neuroticism	0.88	0.244 – 0.553	26
Integrity	0.91	0.310 – 0.555	38
Adjustment	0.70	0.221 – 0.510	6
Locus of control	0.76	0.289 – 0.559	7
Fearfulness	0.79	0.278 – 0.611	8
Personalised Power	0.64	0.264 – 0.487	6
CWB	0.90	0.453 – 0.657	16

4.8 FITTING THE OVERALL MEASUREMENT MODEL

The path diagram for the overall refined measurement model is presented in Figure 4.1. The path diagram for the measurement model is an illustration showing that all items comprising each of the scales and sub-scales that were used in this study appeared to load significantly on the respective latent variables.

4.9 EVALUATING THE STRUCTURAL MODEL FIT

Based on the items constituting the refined final measurement models (see Table 4.21 for the number of items retained and reliability of the final scales), the item parcels for the structural model were subsequently calculated. Two random item parcels were created for each of the latent variables used in the study because of the large number of items involved (see Figure 4.1). According to Little, Cunningham, Shahar, and Widaman (2002) item parcelling can be advantageous over using the original items due to the fact that: (1) estimating large numbers of items is likely to result in spurious correlations; (2) subsets of items from a large item pool will likely share specific sources of variance that may not be of primary interest; and (3)

solutions from item-level data are less likely to yield stable solutions than solutions from parcels of items.

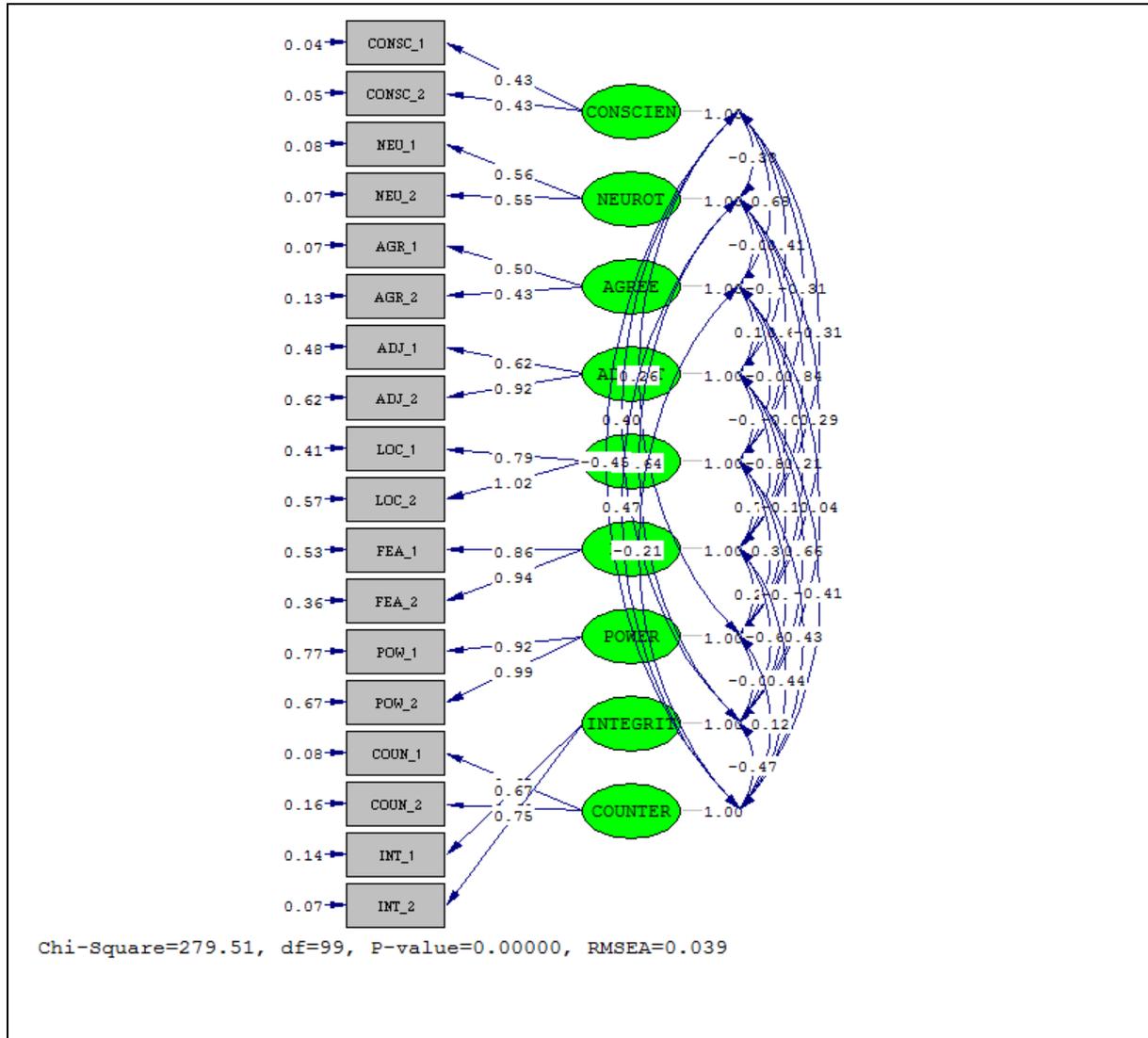


Figure 4.1: Path diagram for the overall refined measurement model

According to Jöreskog and Sörbom (1996, p. 171), the overall model is a “combination of a structural equation system among latent variables η 's and ξ 's and measurement models for observed y 's and x 's where all variables, observed and latent, are assumed measured in deviations from their means”. All the fit statistics of the structural model are shown in Table 4.24.

The Satorra-Bentler Scaled Chi-Square of 279.507 ($p < 0.01$), indicates that the null hypothesis of exact fit can be rejected. The χ^2/df ratio was calculated using the Satorra-Bentler Scaled Chi-Square. The χ^2/df ratio of 2.82 falls within the 2 - 5 range, the acceptable model fit range. The RMSEA is an important value to consider when evaluating model fit. According to Diamantopoulos and Siguaw (2000), values smaller than 0.05 indicate good fit and values below 0.08 indicate reasonable fit, therefore the RMSEA value of this model (0.039) presents good fit. The p-value for test of Close fit (0.999) indicates that the null hypothesis of close fit cannot be rejected, and therefore the structural model shows close fit.

The Root Mean Square Residual (RMR) of the structural model was found to be 0.0314. According to Kelloway (1998) low values are an indication of good fit. This scale, however, is sensitive to the scale of measurement of the model variables and it is therefore difficult to determine what qualifies as a low value. Kelloway further states that LISREL provides the standardised RMR which is a better index and indicates that values lower than 0.05 represent good fit. The standardised RMR value of this structural model is 0.032 and therefore good fit with the data is indicated.

The goodness-of-fit index (GFI) ranges from 0 to 1 and “is based on the ratio of the sum of the squared discrepancies to the observed variance” (Kelloway, 1998, p. 27). Values above 0.90 indicate good fit of the model. The GFI (0.97) of this model achieved the ideal value of 0.90. Thus, according to the absolute fit indices the structural model shows good fit.

Comparative fit is an incremental fit index that “measures the relevant improvement in the fit of the researcher’s model over that of a baseline model, typically the independence model” (Kline, 2011, p.208). The incremental fit indices, namely the NFI (0.988), NNFI (0.988), CFI (0.992), IFI (0.992) and RFI (0.981) are all above 0.90, which indicate good comparative fit relative to the independence model.

Overall, the examination of the goodness-of-fit indices resulted in the conclusion that the structural model displays good fit with the data.

Table 4.22*Unstandardised GAMMA (γ) Matrix*

	INTEGRIT	COUNTER
CONSCIEN	.327 (.058) 5.605	-.362 (.064) -5.683
NEUROT	-.220 (.072) -3.069	.162 (.077) 2.114
AGREE	-.239 (.049) -4.904	.023 (.051) .447
ADJUST	.271 (.108) 2.503	.246 (.118) 2.082
LOCUS	.132 (.070) 1.869	.203 (.071) 2.833
FEAR	-.253 (.107) -2.362	.061 (.117) .525
POWER	.041 (.043) .968	.106 (.042) 2.519

Note. CONSCIEN, Conscientiousness; AGREE = Agreeableness; NEUROT = Neuroticism; INTEGRIT = Integrity; ADJUST = Adjustment; LOCUS = Locus of control; POWER = Personalised power; COUNTER, Counterproductive work behaviour; FEAR = Fearfulness.

4.10 RELATIONSHIPS BETWEEN LATENT VARIABLES

According to the results of the fit indices it is concluded that the structural model fit the data reasonably well. At this stage it was necessary to test the relationships between the endogenous and exogenous latent variables in order to assess whether these linkages specified at the conceptualisation phase were in fact supported by the data (Diamantopoulos & Siguaw, 2000). In order to assess these relationships, three relevant issues had to be looked at. The first issue was to examine the signs of the parameters representing the paths between the latent variables to determine whether

the direction of the hypothesised relationships was as theoretically determined. Secondly, it was essential to investigate the magnitudes of the estimated parameters because this provides important information regarding the strength of these relationships. Lastly, the squared multiple correlations (R^2) indicate the amount of variance in the endogenous variables that is explained by the latent variables that are linked to it (Diamantopoulos & Siguaw, 2000).

The parameters to be assessed were the freed elements of the gamma (Γ) (Table 4.22) and beta (B) matrices (Table 4.23). The unstandardised gamma matrix was used to evaluate the strength of the estimated path coefficients γ_{ij} which express the significance of the influence of ξ_j on η_i . These unstandardised γ_{ij} estimates are significant if $t > |1.96|$ (Diamantopoulos & Siguaw, 2000). A significant γ estimate would entail that the related H_0 -hypothesis will be rejected in favour of the relevant H_a -hypothesis.

4.10.1 Relationship between conscientiousness and integrity

The t value of the link between Conscientiousness and integrity is greater than 1.96 (see Table 4.22). A significant ($p < 0.05$) positive relationship is therefore evident between Conscientiousness (ξ_1) and integrity (η_1). $H_{03}: \gamma_{11} = 0$ can be rejected in favour of $H_{a3}: \gamma_{11} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.2 Relationship between agreeableness and integrity

The t value of the link between Agreeableness and integrity is greater than 1.96 (see Table 4.22). A significant negative ($p < 0.05$) relationship is therefore evident between Agreeableness (ξ_3) and integrity (η_1). $H_{04}: \gamma_{13} = 0$ can be rejected in favour of $H_{a4}: \gamma_{13} > 0$. Therefore hypothesis 4 was not supported.

4.10.3 Relationship between neuroticism and integrity

The t value of the link between Neuroticism and integrity is greater than 1.96 (see Table 4.22). A significant negative ($p < 0.05$) relationship is therefore evident between Neuroticism (ξ_2) and integrity (η_1). $H_{05}: \gamma_{12} = 0$ can be rejected in favour of

$H_{a5}: \gamma_{12} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.4 Relationship between Adjustment and integrity

The t value of the link between Adjustment and integrity is greater than 1.96 (see Table 4.22). A significant positive ($p < 0.05$) relationship is therefore evident between Adjustment (ξ_4) and integrity (η_1). $H_{06}: \gamma_{14} = 0$ can be rejected in favour of $H_{a6}: \gamma_{14} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.5 Relationship between External locus of control and integrity

The t value of the link between External locus of control and integrity is less than 1.96 (see Table 4.22). A non-significant relationship is therefore evident between External locus of control and integrity. This means that $H_{07}: \gamma_{15} = 0$ can be accepted in favour of $H_{a7}: \gamma_{15} > 0$, which suggests that the proposed relationship between these two latent variables was not supported.

4.10.6 Relationship between Fearfulness and integrity

The t value of the link between fearfulness and integrity is greater than 1.96 (see Table 4.22). A significant negative ($p < 0.05$) relationship is therefore evident between fearfulness (ξ_6) and integrity (η_1). $H_{08}: \gamma_{16} = 0$ can be rejected in favour of $H_{a8}: \gamma_{16} > 0$. Therefore hypothesis 10 is supported.

4.10.7 Relationship between Personalised power and integrity

The t value of the link between Personalised power and integrity is less than 1.96 (see Table 4.22). A non-significant relationship is therefore evident between Personalised power (ξ_7) and integrity (η_1). $H_{09}: \gamma_{17} = 0$ can be accepted in favour of $H_{a9}: \gamma_{17} > 0$, which suggests that the proposed relationship between these two latent variables was not supported.

4.10.8 Relationship between conscientiousness and counterproductive work behaviour

The t value of the link between Conscientiousness and counterproductive work behaviour is greater than 1.96 (see Table 4.22). A significant negative ($p < 0.05$) relationship is therefore evident between Conscientiousness (ξ_1) and counterproductive work behaviour (η_2). $H_{010}: \gamma_{21} = 0$ can be rejected in favour of $H_{a10}: \gamma_{21} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.9 Relationship between Agreeableness and counterproductive work behaviour

The t value of the link between Agreeableness and counterproductive work behaviour is less than 1.96 (see Table 4.22). A non-significant-relationship is therefore evident between Agreeableness (ξ_3) and counterproductive work behaviour (η_2). $H_{011}: \gamma_{23} = 0$ can be accepted in favour of $H_{a11}: \gamma_{23} > 0$, which suggests that the proposed relationship between these two latent variables was not supported.

4.10.10 Relationship between Neuroticism and counterproductive work behaviour

The t value of the link between Neuroticism and counterproductive work behaviour is greater than 1.96 (see Table 4.22). A significant positive ($p < 0.05$) relationship is therefore evident between Neuroticism (ξ_2) and counterproductive work behaviour (η_2). $H_{012}: \gamma_{22} = 0$ can be rejected in favour of $H_{a12}: \gamma_{22} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.11 Relationship between Adjustment and counterproductive work behaviour

The t value of the link between Adjustment and counterproductive work behaviour is greater than 1.96 (see Table 4.22). A significant positive ($p < 0.05$) relationship is therefore evident between Adjustment (ξ_4) and counterproductive work behaviour (η_2). $H_{013}: \gamma_{24} = 0$ can be rejected in favour of $H_{a13}: \gamma_{24} > 0$. Therefore hypothesis 12 was not supported.

4.10.12 Relationship between External locus of control and counterproductive work behaviour

The t value of the link between External locus of control and counterproductive work behaviour is greater than 1.96 (see Table 4.22). A significant positive ($p < 0.05$) relationship is therefore evident between External locus of control (ξ_5) and counterproductive work behaviour (η_2). $H_{14}: \gamma_{25} = 0$ can be rejected in favour of $H_{a14}: \gamma_{25} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.10.13 Relationship between Fearfulness and counterproductive work behaviour

The t value of the link between Fearfulness and counterproductive work behaviour is less than 1.96 (see Table 4.22). A non-significant relationship is therefore evident between Fearfulness (ξ_6) and counterproductive work behaviour (η_2). $H_{015}: \gamma_{26} = 0$ can be accepted in favour of $H_{a15}: \gamma_{26} > 0$, which suggests that the proposed relationship between these two latent variables was not supported.

4.10.14 Relationship between Personalised power and counterproductive work behaviour

The t value of the link between Personalised power and counterproductive work behaviour is greater than 1.96 (see Table 4.22). A significant positive ($p < 0.05$) relationship is therefore evident between Personalised power (ξ_7) and counterproductive work behaviour (η_2). $H_{016}: \gamma_{27} = 0$ can be rejected in favour of $H_{a16}: \gamma_{27} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

Table 4.23

Unstandardised Beta (β) Matrix

	INTEGRIT	COUNTER
COUNTER	-.246 (.042)	-5.833

Table 4.24

Goodness-of-fit indices obtained for the refined measurement and structural models (N= 1176)

	S-Bχ^2/df	RMSEA	<i>p</i>_{close fit}	SRMR	GFI	NFI	NNFI	CFI	IFI	RFI
CONSC	2.99	.058	.000	.059	.84	.94	.96	.96	.96	.94
AGREE	2.77	.055	.120	.059	.91	.92	.94	.95	.95	.91
NEURO	1.59	.032	1.00	.045	.92	.96	.98	.98	.98	.95
ADJUST	1.99	.041	.667	.032	.99	.98	.98	.99	.99	.97
LOCUS	1.95	.040	.738	.033	.98	.98	.99	.99	.99	.97
FEAR	2.16	.045	.667	.037	.97	.98	.98	.99	.99	.97
POWER	4.99	.058	.190	.036	.98	.96	.95	.97	.97	.94
CWB	2.86	.056	.081	.048	.91	.97	.98	.98	.98	.97
INTEG 1st order	1.55	.031	1.00	.048	.90	.96	.98	.98	.98	.95
INTEG 2 nd order	1.61	.032	1.00	.051	.89	.96	.98	.98	.98	.95
SMODEL	2.82	.039	.999	.032	.97	.99	.99	.99	.99	.98

Note. S-B χ^2 , Satorra-Bentler Scaled Chi-square; df = Degrees of Freedom; RMSEA, Root Mean Square Error of Approximation; *p*_{close fit}, P-Value for Test of Close Fit (RMSEA < 0.05); SRMR, Standardised Root Mean Residual; GFI, Goodness-of-fit Index; NFI, Normed Fit Index; NNFI, Non-normed fit index; CFI, Comparative fit index; IFI, Incremental fit index; RFI, Relative fit index; CONSC, Conscientiousness; AGREE = Agreeableness; NEURO = Neuroticism; INTEG = Integrity; ADJUST = Adjustment; LOCUS = Locus of control; FEAR = Fearfulness; POWER = Personalised power; CWB, Counterproductive work behaviour; SMODEL = Structural model

4.10.15 Relationship between integrity and counterproductive work behaviour

Table 4.23 indicates that the t value of the link between integrity and counterproductive work behaviour > 1.96 . A significant ($p < 0.05$) negative relationship is therefore evident between Integrity (η_1) and counterproductive work behaviour (η_2). $H_{017}: \beta_{21} = 0$ can be rejected in favour of $H_{a17}: \beta_{21} > 0$, which suggests that the proposed relationship between these two latent variables was supported.

4.11 STRUCTURAL MODEL MODIFICATION INDICES

The modification indices were also investigated in order to determine the extent to which the structural model is successful in explaining the observed covariances amongst the apparent variables. According to Jöreskog and Sörbom (1993), a modification index (MI) indicates the minimum decrease in the model's chi-square value, if a previously fixed parameter is set free and the model is re-estimated. This means that a modification index for a particular fixed parameter indicates that, if this parameter were allowed to be freed in a subsequent model, then the chi-square goodness-of-fit value would be predicted to decrease by at least the value of the index. Large modification index values (> 6.6349) would be indicative of parameters, that, if set free, would potentially improve the fit of the model ($p < 0.01$). However, one should take note of the fact that any adjustment to the model, as suggested by parameters with high MI values, should only be freed if it makes theoretical sense to do so (Kelloway, 1998).

The standardised expected changes are the expected values in the standardised solution if the parameters were freed. In this case, the proposed structural model appears to fit the data reasonably well. Inspection of the modification indices for the Beta matrix suggests that there are no additional paths between any endogenous latent variables that would significantly improve the fit of the proposed structural model.

4.12 SUMMARY

The purpose of this chapter was to report on the results obtained from this study. The chapter commenced with an investigation and refinement of the measuring scales used. This was followed by examining the data, and correcting where possible. The statistical outcome of the hypothesised relationships was also determined. The following chapter discusses the general conclusions drawn from the results in greater depth. Recommendations for future research and possible managerial implications will be presented in conclusion.

CHAPTER FIVE

DISCUSSION OF RESULTS, CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 Introduction

After a detailed discussion on the constructs of personality, integrity and counterproductive work behaviour (CWB), in Chapter 2, Chapter 3 followed with a description of the techniques that were used to analyse the data and produce results. Chapter 4 presented the results obtained from the data analysis process that informed this report on the findings of the study. While the previous chapter presented most of the conclusions to the findings, this chapter identifies the specific meaningfulness and implications of these findings.

This chapter therefore consists of an overview comprising the main purpose of the research, an explanation of the findings evident from the data analysis process, the implications of this research in the managerial context, as well as limitations encountered and suggestions for future research.

5.2 Goal of the study

The goal of this study was to identify the influence of personality and integrity on CWB. The importance of CWB is increasingly highlighted in the literature and emphasis is placed on the cost associated with regard to employee CWB. Personality and integrity are identified antecedents of CWB (O'Neill & Hastings, 2011).

Personality and the construct of integrity go hand in hand and are perceived as key elements in explaining CWB in organisations. A relationship is therefore postulated between integrity, personality correlates of integrity and CWB.

The general goal of this research was: to investigate the relationship between selected personality dimensions and integrity, and how these personality dimensions and integrity are related to counterproductive work behaviour. The specific objectives were:

1. To analyse the relationships between Conscientiousness, Agreeableness, Emotional Instability and counterproductive work behaviour;
2. To analyse the relationship between Conscientiousness, Agreeableness, Emotional Instability and Integrity;
3. To identify other personality correlates of integrity based on the literature study;
4. To analyse the relationship between integrity and counterproductive work behaviour;
5. To analyse the relationships between integrity and selected other personality correlates of integrity;
6. To analyse the relationship between other personality correlates of integrity and counterproductive work behaviour
7. To develop a reliable and valid integrity test for use in the South African context.

Fifteen substantive hypotheses were deduced from the literature study presented in Chapter 2, in order to empirically evaluate the postulated relationships. The results of these hypotheses are discussed in terms of the findings obtained through the data analysis process discussed in Chapter 4.

5.3 Summary of the findings

The research objectives of the present study firstly aimed to ensure that the measurement scales utilised in this study to assess the relationships were construct valid and internally reliable. It was necessary to establish valid and reliable measurement scales to ensure that the best possible statistical results would be attained when further analyses were performed. Exploratory factor analysis (EFA) was utilised to assess the dimensionality and factorial validity of the new integrity

scale only. Confirmatory factor analysis instead of EFA was performed for the rest of the scales to confirm the original factor structure. It was also imperative to explain whether the measurement models, as well as the overall structural model, displayed acceptable fit on the data when fitted by means of separate confirmatory factor analyses. This statistical analysis process is discussed in detail in Chapter 3, whereas the results thereof are reported in Chapter 4.

The findings are discussed in the following section.

5.3.1 Conclusions regarding reliability analysis

The reliability coefficients of all the scales were determined to confirm that each of the items from the various instruments succeed in contributing to an internally consistent description of the specific scale in question. According to Nunnally (1978), only instruments with modest reliability can be used to gather information to test hypotheses. A Cronbach's alpha (which is the indicator of the reliability of the scale) of above 0.70 was considered acceptable, and reliability values below 0.70 qualified for elimination (Kerlinger & Lee, 2000; Pallant, 2010). Item-total correlations of above 0.20 were also considered as indicators of internal consistency (Nunnally, 1978).

The results obtained in the present study indicated that the reliability analyses produced satisfactory results according to the above-mentioned guidelines. Table 5.1 provides a summary of the final reliability results for each of the measuring scales (before CFA). All scales reached reliability scores that exceeded the recommended value of 0.70. The results also indicated that all items presented an Item-Total correlation above the recommended cut-off value (0.20). Most of the measurement scales had some items deleted. It was thus found that all the refined measurement instruments could be considered reliable for gathering information to test hypotheses.

Table 5.1: Measurement scale reliability results

Scale	Number of Items	Cronbach's Alpha
Conscientiousness	32	0.89
Agreeableness	27	0.80
Neuroticism	26	0.88
Integrity	64	0.93
Adjustment	6	0.70
External locus of control	7	0.76
Fearfulness	8	0.79
Personalised power	8	0.70
Interpersonal and Organisational Deviance	19	0.89

5.3.2 Conclusions regarding EFA

The purpose of dimensionality analysis was to confirm the uni-dimensionality of the integrity subscales and, if necessary, remove items with insufficient factor loadings. To examine this uni-dimensionality assumption, Exploratory Factor Analysis (EFA) was performed on all the subscales. Four dimensions were identified for the integrity scale, namely honesty, morality, norm-abiding and responsibility. These dimensions constituted uni-dimensional subscales. The number of items and factor loadings are displayed in Table 5.2. General support could be found in the literature for the four identified dimensions of integrity, in particular for honesty, morality and responsibility (Barnard et al., 2008; Lennick & Kiel, 2011; Palanski & Yammarino, 2007), as well as norm-abiding (Wanek et al., 2003; Van Iddekinge et al., 2005).

Table 5.2: Integrity Measurement scales factor loadings

Scale	Number of Items	Factor loadings
Honesty	10	0.55 to 0.71
Morality	10	0.48 to 0.70
Norm-abiding	7	0.51 to 0.70
Responsibility	11	0.56 to 0.67

5.3.3 Model fit (conclusions regarding measurement models)

To determine the extent to which the indicator variables operationalise the latent variables, the measurement model fit of all the nine measurement models were analysed. The data obtained from the nine measuring instruments were therefore analysed by means of Structural Equation Modelling (SEM). Measurement model fit refers to the extent to which a measurement model fits (is consistent with or describes) the data and provides information about the validity and reliability of the observed indicators (Diamantopoulos & Siguaw, 2000). A decision was made to analyse the measurement model fit separately for each scale of the various measuring instruments through Confirmatory Factor Analysis (CFA).

Table 5.3: Measurement Scale Factor Loadings

Scale	Number of Items	Factor loadings
Interpersonal and organisational deviance	16	0.50 - 0.70
Conscientiousness	32	0.23 - 0.68
Agreeableness	17	0.29 - 0.63
Neuroticism	26	0.24 - 0.60
Integrity	38	0.26 - 0.62
Adjustment	6	0.32 - 0.66
External locus of control	7	0.37 - 0.68
Fearfulness	8	0.37 - 0.72
Personalised power	6	0.30 - 0.70

If poor fit was found, the modification indices of THETA-DELTA were evaluated. Model modification strives to indicate whether any of the currently fixed parameters, if set free, would significantly improve the parsimonious fit of the model. The modification indices (MI) therefore point out the extent to which the chi-square fit statistic decreases when a currently fixed parameter in the model is freed and the model re-estimated (Jöreskog & Sörbom, 1993). Where large modification indices (> 6.6349 at a significance level of 0.01) were found, they were set free in order to improve the fit of the model significantly ($p < 0.01$). Further CFAs were then performed on the refined scale items until the measurement model indicated good fit. The following section presents a summary of the goodness-of-fit indices obtained

from the Confirmatory Factor Analyses performed on each of the measurement models. When assessing overall fit using both the absolute and incremental measures of fit, it would seem that the quality of fit, in all cases, was generally good.

5.3.3.1 *Absolute and incremental fit measures*

An analysis of the indices reported in Table 4.24 indicated that the refined structure of each scale represented an acceptable fit with the data. The RMSEA range of 0.031-0.058 indicated good to reasonable model fit. The p-values of the close fit indices, with the exception of the conscientiousness scale are all above the 0.05 threshold, providing evidence of relatively good model fit. The SRMR values range from 0.032 to 0.059, indicating reasonable fit. The GFI values range from 0.84 to 0.99, indicating reasonable fit. When compared to a baseline model all the scales achieved NFI, NNFI, CFI, IFI and RFI indices above 0.90, which represented good fit.

5.3.3.2 *Conclusions regarding factor loadings*

Factor loadings of items on the factor they were designated to reflect were considered satisfactory if they were larger than 0.50 (Kinneer & Gray, 2004). In most of the cases, the completely standardised factor loading for each item comprising the measurement model achieved the > 0.50 level. This is an indication that each item successfully explains the total variance of scores on the variable concerned. Table 5.3 presents a summary of the final factor loadings obtained for each of the measurement models of the present study.

5.3.4 *Evaluation of structural model*

After it was established that each of the measuring instruments were considered to be both construct valid and internally reliable, the data obtained were further analysed in order to test the absolute fit of the structural model and the direct relationships between the various latent variables. The data were also analysed to determine the significance of the hypothesised paths in the structural model using structural equation modelling. The research objective of this study was to explain the relationship between integrity, personality correlates of integrity and

counterproductive work behaviour. Various statistical techniques could be utilised to examine the relationships between the latent variables represented through the structural model. Structural Equation Modelling (SEM) is the statistical technique that was utilised for this purpose. The goodness-of-fit indices for the structural model are presented in Table 4.24. Conclusions drawn regarding the overall structural model fit are presented in the following section. It was generally concluded that the model shows good fit with the data.

5.3.4.1 *Goodness of fit indices for the structural model*

A thorough interpretation of all the fit indices led to the conclusion that the structural model fitted the data well. A summary of the most important fit indices is presented in Table 4.24. With regard to the results of the absolute fit measures, the Satorra-Bentler Scaled Uni-square statistic ($\chi^2/df = 2.82$) for the structural model indicates acceptable model fit as it falls within the 2-5 range. A look at the RMSEA index (0.039) (< 0.05) as well as a p-value of close fit (0.99, > 0.05) shows that the model fits the data well. Consequently, the close fit null hypothesis was not rejected (H_0 : RMSEA < 0.05). Both the standardised RMR (0.032) and the GFI (0.97) indicated a good fit with the data. With regard to the incremental fit measures, it was found that, when compared to a baseline model, the structural model achieved NFI, NNFI, CFI, IFI and RFI indices that were above 0.90. Thus, it can be concluded that the structural model shows good fit with the data.

To ensure a thorough assessment of the structural model, it was also necessary to investigate the modification indices to determine the extent to which the model explained the observed covariances amongst the manifest variables. Examination of the modification indices suggested that there were no additional paths between any latent variables that would significantly improve the fit of the proposed structural model.

An examination of the Beta and Gamma matrices was conducted in order to establish the significance of the theoretical linkages proposed by the structural model, as illustrated in Figure 3.1. The interpretation of these results provided information with which to determine whether the theoretical relationships specified at

the conceptualisation stage were in fact supported by the data. The following section provides a discussion regarding the interpretation of these results.

5.3.5 *The relationship between conscientiousness and integrity*

A significant positive relationship was found between conscientiousness and integrity ($t = 5.61, p < 0.05$). Consequently, hypothesis 3 was supported (see Table 4.23). This is in agreement with the literature (Ones, Viswesvaran & Schmidt, 1993; Sackett & Devore, 2001; Sackett & Wanek, 1996; Sackett & Wiemann, 2007). According to Costa and McCrae (1992), conscientiousness is a component of what was once defined as character; individuals who score high on conscientiousness are scrupulous, punctual and reliable. Of the Big Five personality factors, conscientiousness consistently emerged as the factor with the highest correlation with integrity.

Conscientious individuals are strong-willed, determined and purposeful. A great deal of the conscientiousness domain of the Big Five personality factors has its roots in self-control, which contains the actions of planning, organising and completing tasks. The facets of conscientiousness are competence, order, dutifulness, achievement striving, self-discipline and deliberation (Costa & McCrae, 1992). According to Costa and McCrae (1992), conscientious individuals are efficient, self-confident, thorough, resourceful, organised, precise, methodical, ambitious, industrious, enterprising, determined, persistent and energetic.

The term integrity stems from the Latin word *integer* which means completeness and wholeness, the quality of being blameless, uncorrupted, unimpaired and uncompromised. Ones (1993) proposed that the theoretical basis for the lack of integrity can be found in Gough's Construct of Organisational Delinquency, which is based on psychopathic theory. Organisational Delinquency is characterised by, amongst others, impulsiveness, lack of sorrow, inability to form close or lasting relationships, blaming others for failures, a deficient sense of responsibility and inadequate dependability. A person of integrity, on the other hand, has a certain concentration of consistency and purity (Shapiro & Adams, 1998). Integrity implies

that a person acts in accordance with relevant norms and moral values (Six, De Bakker & Huberts, 2007). The manifestation of integrity in the work situation entails two components. An individual of integrity acts in accordance with acceptable ethical principles. Furthermore, such an individual obeys the ethical codes, rules or principles that apply to the work situation. In the context of this research, integrity is defined as behaviour that is congruent with expected ethical work norms in the workplace.

Conscientiousness explains the biggest variance in integrity tests. Berry, Sackett and Wiemann (2007) and Sackett and Wanek (1996) say that it appears that integrity is measured by a very broadly defined construct of conscientiousness. This is applicable to both overt and personality-based integrity tests.

Considering the literature and the findings of this research, it can be concluded that conscientiousness and integrity are positively related, i.e. individuals of high integrity are likely to be conscientious in the work context.

5.3.6 The relationship between agreeableness and integrity

A significant negative relationship was found between agreeableness and integrity ($t = -4.90, p < 0.05$). Consequently, hypothesis 4 was rejected (see Table 4.23). This is in disagreement with the literature (Ones, Viswesvaran & Schmidt, 1993; Sackett & Devore, 2001; Sackett & Wanek, 1996; Sackett & Wiemann, 2007).

In essence, agreeableness reflects interpersonal disposition. Individuals who score high on agreeableness are primarily altruistic. They have a sympathetic attitude towards others and are eager to help (Costa & McCrae, 1992).

The facets of agreeableness are trust, straightforwardness, altruism, compliance, modesty and tender-mindedness. High scorers on agreeableness can be described as forgiving, trusting, peaceable, warm, soft-hearted, gentle, generous, kind, tolerant and sympathetic.

Agreeableness is one of the Big Five personality dimensions that explain significant variance in integrity tests (Hough, 1992; Ones, Viswesvaran & Schmidt, 1993; Sackett & Devore, 2001; Sackett & Wanek, 1996).

The reason why the findings of this research deviate from previous research is difficult to explain. It is possible that agreeableness represents a complex construct that was not sufficiently measured in this study (the majority of the items were deleted as poor items). Language and semantic difficulties may also have played a role in the responses to some of the test items. The relationship between agreeableness and integrity may be moderated by other variables. Furthermore, individuals with high agreeableness could be associated with low assertiveness and consequently lack of resistance against group pressure or deviant norms.

5.3.7 The relationship between neuroticism and integrity

A significant negative relationship was found between neuroticism and integrity ($t = -3.07$, $p < 0.05$). Consequently, hypothesis 5 was supported (see Table 4.23). This is in agreement with the literature (Ones, Viswesvaran & Schmidt, 1993; Sackett & Devore, 2001; Sackett & Wanek, 1996; Sackett & Wiemann, 2007). According to Costa and McCrae (1992), individuals who score high on neuroticism (in contrast to emotional stability) are more susceptible to psychological distress; are prone to irrational ideas; and have difficulty controlling their impulses. The facets of neuroticism are anxiety, angry hostility, depression, self-consciousness, impulsiveness and vulnerability. Some of the adjective checklist items describing this personality domain are; moody, defensive, irritable, sarcastic, self-centred, loud, hasty, excitable, impulsive, angrily hostile and careless. Conceptually, these traits can be linked to low integrity and counterproductive work behaviour. Although conscientiousness explains the largest part of the variance in integrity tests, agreeableness and emotional stability (neuroticism) also contributes to the construct of integrity.

5.3.8 *The relationship between conscientiousness and counterproductive work behaviour*

A significant negative relationship was found between conscientiousness and counterproductive work behaviour ($t = -5.68, p < 0.05$). Consequently, hypothesis 10 was supported (see Table 4.23). This is in agreement with the literature (Cullen & Sackett, 2003; Ones, Viswesvaran & Schmidt, 2003; Salgado, 2002; O'Neill & Hastings, 2011; Hastings & O'Neill, 2009). The facets of conscientiousness comprise competence, order, dutifulness, achievement striving, self-discipline and deliberation (Costa & McCrae, 1992).

Counterproductive work behavior constitutes voluntary behaviour that is harmful to the organization and its members (Rotundo & Sackett, 2003; Spector & Fox, 2002). It encompasses a wide spectrum of behaviours ranging from minor to serious (Bennett & Robinson, 1995) and different forms of CWB co-occur (Ones & Viswesvaran; Sackett & Devore, 2001).

Of the Big Five personality factors, conscientiousness has consistently been found as the factor with the highest negative correlation with counterproductive work behaviour (O'Neill, Lewis & Carswell, 2011; Hastings & O'Neill, 2009). Generally, it has been found in the literature that three of the Big Five personality dimensions, i.e. conscientiousness, agreeableness and neuroticism, are related to CWB and mostly in that sequence, with conscientiousness demonstrating the strongest negative correlation with CWB (Ménard, Brunette & Savoy, 2011; O'Neill, Lewis & Carswell, 2011; Jensen & Patel, 2011). It appears that individuals who are dependable and achievement striving (two of the facets of the conscientiousness dimensions) generally avoid CWB. Ones *et al.* (2003) pointed out that the strength of this relationship is relatively large. They emphasise that the correlation between dependability and the avoidance of CWB was 0.47 in sixty-six studies consisting of 113 427 research subjects. According to Mount *et al.* (2006), conscientiousness and neuroticism are the best predictors of organisation-directed CWB. Dependable individuals are reliable, rule compliant and dutiful; achievement orientated individuals are hardworking, goal-directed and persistent.

The findings of this research are therefore congruent with the literature and the relationship between these two variables makes conceptual sense.

5.3.9 The relationship between agreeableness and counterproductive work behaviour

A non-significant relationship was found between agreeableness and counterproductive work behaviour ($t = 0.45$, $p < 0.05$). Consequently, hypothesis 11 was not supported (see Table 4.23). This is contrary to the literature (Cullen & Sackett, 2003; Hastings & O'Neill, 2009; Ones, Viswesvaran & Schmidt, 2003; O'Neill & Hastings, 2011; Salgado, 2002).

The reason for this deviance from previous research is difficult to explain. It is possible that agreeableness represents a complex construct. Responses to test items may also have been influenced by semantic difficulties, particularly in South Africa's multi-cultural context. Furthermore, the relationship between agreeableness and counterproductive behaviour may be moderated by other variables.

5.3.10 The relationship between neuroticism and counterproductive work behaviour

A significant positive relationship was found between neuroticism and counterproductive work behaviour ($t = 2.11$, $p < 0.05$). This is in agreement with the literature (Cullen & Sackett, 2003; Hastings & O'Neill, 2009; Ones, Viswesvaran & Schmidt, 2003; O'Neill & Hastings, 2011; Salgado, 2002).

In essence, Neuroticism consists of negative emotions such as sadness, anger, guilt, fear and disgust. High scores on this dimension of personality indicate individuals who are prone to irrational ideas and have problems controlling their impulses (Costa & McCrae, 1992). Some of the facets of the Neuroticism domain are angry hostility and impulsiveness. These facets (traits) may conceptually be linked to counterproductive behaviour.

5.3.11 The relationship between adjustment and integrity

A significant positive relationship was found between adjustment and integrity ($t = 2.50, p < 0.05$). Consequently, hypothesis 6 was supported (see Table 4.23). This is in agreement with the literature (Hogan & Hogan, 1989; Wanek, Sackett & Ones, 2003). Adjusted individuals are generally happy, positive, confident and hopeful about the future. It seems to represent or overlap with the cluster “optimism, self-confidence and positive affect” of the Socialisation (so) Scale of the California Psychological Inventory (Ones, 1993) and some facets of the NEO PI-R Neuroticism factors, particularly Depression (Costa & McCrae, 1992). This research indicates that individuals who are happy; who believe that life has treated them well; who are generally free of guilt; who perceive themselves to have few problems; and who believe that other people understand them, generally possess a higher degree of integrity.

5.3.12 The relationship between external locus of control and integrity

A non-significant relationship was found between external locus of control and integrity ($t = 1.87, p < 0.05$). Consequently, hypothesis 7 was not supported (see Table 4.23).

This is contrary to the literature (Wanek, Sackett & Ones, 2003). It was expected that individuals who consider themselves to be controlled by outside forces would have a weaker moral compass, as defined by Barnard, Schmidt and De Beer (2008). The findings, however, could mean that Locus of Control is not linked to Integrity. Alternatively, the relationship may be mediated and or moderated by other variables.

5.3.13 The relationship between fearfulness and integrity

A significant negative relationship was found between fearfulness and integrity ($t = -2.36, p < 0.05$). Consequently, hypothesis 8 was supported (see Table 4.23). This is consistent with the findings by Mumford, Connelly, Helton, Strange and Osburn

(2001) in which the authors argued that personality characteristics such as fear exert their effects in destructive behaviour (such as CWB) by influencing expression of integrity beliefs. If these beliefs are influenced negatively by fear, the individual is likely to engage in CWB which is negatively correlated with integrity. Fearful individuals consider the world to be a hostile place and are prone to worry, fear and anxiety.

Fearful individuals are worried about many things, are often restless, have difficulty sleeping because of worries, are often afraid that terrible things will happen to them, are of the view that their friends think that they worry too much, find decisions about the future stressful and believe that other people will do everything to make their life miserable.

Fearfulness is related to the Neuroticism dimension of the Big Five personality factors, which is linked to disruptive emotions and poor impulse control. Fearfulness may therefore be conceptually related to Integrity.

5.3.14 The relationship between personalised power and integrity

A non-significant relationship was found between personalised power and integrity ($t = 0.97$, $p < 0.05$). Consequently, hypothesis 9 was not supported (see Table 4.23). This is contrary to the literature (Mumford *et al.*, 2001). It was hypothesised that personalised power, being an egoistic desire, would be negatively related to integrity. The non-significant relationship may indicate that the two constructs are distinct. Alternatively the relationship may be mediated and or moderated by other variables.

5.3.15 The relationship between adjustment and counterproductive work behaviour

A significant positive relationship was found between adjustment and counterproductive work behaviour ($t = 2.08$, $p < 0.05$). Consequently, hypothesis 13 was not supported (see Table 4.23). This is not in agreement with the literature

(Hogan & Hogan, 1989; Wanek, Sackett & Ones, 2003). According to the test items used in this research, well-adjusted individuals are happy; believe that life has treated them well; are relatively free of feelings of guilt; consider themselves to have few problems; are relatively free of sadness; and feel that other people understand them. It was hypothesised that adjusted individuals, being positive, confident and hopeful about the future, would be less hostile and less impulsive. This deviance from the literature may be due to differences in adherence to educational, cultural and socialization factors.

5.3.16 The relationship between external locus of control and counterproductive work behaviour

It was hypothesised that there is a positive correlation between External Locus of Control and Counterproductive work behaviour. A significant positive relationship was found between external locus of control and counterproductive work behaviour ($t = 2.83, p < 0.05$). Consequently, hypothesis 14 was supported (see Table 4.23). According to the literature, External Locus of Control is positively related to Counterproductive work behaviour (Wanek, Sackett & Ones, 2003).

High scorers on external locus of control believe that most of their problems are caused by other people; life has treated them badly; other people often take advantage of them; their life would have turned out better, had they not listened to so many other people; many of their problems have been caused by their friends; some people are trying to make their life a failure; and most of the decisions in their life are made by other people.

Considering the literature and the findings of this research, it can be concluded that individuals with an external locus of control are more inclined to indulge in counterproductive work behaviour.

5.3.17 The relationship between fearfulness and counterproductive work behaviour

It was hypothesised that fearful individuals, perceiving the world as a hostile place, would be more inclined to indulge in counterproductive work behaviour. The conceptual link between fearfulness and Neuroticism formed the basis of this expectation.

In terms of the scale construction that was used in this research, individuals who score high on fearfulness generally reveal the following outlook: They are worried about many things; they are often restless; they have sleeping difficulties because of worries; they are often afraid that terrible will happen to them; their friends tell them that they worry too much; they find decisions about the future stressful; they generally do not sleep well; and they believe that other people are making their life miserable.

A non-significant relationship was found between fearfulness and counterproductive work behaviour ($t = 5.30$, $p < 0.05$). Consequently, hypothesis 15 could not be supported (see Table 4.23). This is contrary to the literature (Mumford, Connelly, Helton, Strange & Osburn, 2001). Fearfulness may, therefore, not be related to counterproductive behaviour or, alternatively, the relationship may be mediated and / or moderated by other variables.

5.3.18 The relationship between personalised power and counterproductive work behaviour

A significant positive relationship was found between personalised power and counterproductive work behaviour ($t = 2.52$, $p < 0.05$). Consequently, hypothesis 16 was supported (see Table 4.23). This is in agreement with the literature (Mumford *et al.*, 2001).

It was hypothesised that there would be a positive correlation between personalised power and counterproductive work behaviour. Personalised power, being an egoistic tendency, was thought to manifest in behaviours for personal gain which may be to

the detriment of the organisation or its members. According to the test items used in this research, individuals who score high on personalised power are of the following view:

They are usually the ones that win arguments; they can easily convince other people to do things for them; if people do not do as they say, they easily become angry; winning is extremely important to them; they get frustrated when other people disagree with them; they will do anything to win; they derive pleasure from being the centre of attention; they derive pleasure from the fact that other people do not know what to expect from them.

Considering the literature and the findings of this research, it can be concluded that individuals high on personalised power are more inclined to indulge in counterproductive work behaviour.

5.3.19 The relationship between integrity and counterproductive work behaviour

A significant negative relationship was found between integrity and counterproductive work behaviour ($t = -5.83, p < 0.05$). Consequently, hypothesis 17 was supported (see Table 4.23). This is in agreement with the literature (Ones, Viswesvaran & Schmidt, 1993; Sackett & Schmidt, 2012; Van Iddekinge, Roth, Raymark & Odle-Dusseau, 2012). This is also in keeping with Six, De Bakker and Huberts (2007) who state that integrity entails acting in accordance with relevant moral values and norms and this is also in support of Palanski and Yammarino's (2007) view that integrity is related to similar values like honesty and trustworthiness. Considering this, it is to be expected that persons of integrity are likely to avoid behaviours that are harmful to the well-being of an organisation or its employees.

5.4 LIMITATIONS OF THIS STUDY AND SUGGESTIONS FOR FUTURE RESEARCH

In this study the nature of the relationship between integrity, personality correlates of integrity and counterproductive behaviour were studied. Although valuable insights were obtained about the relationship between the constructs involved, some limitations need to be considered for the purpose of providing information on how future studies can contribute to the questions addressed in this research.

A non-probability sampling procedure and *ex post facto* research design were used in this study. Furthermore, this was a single source study. This study was also confined to the retail and security industries in South Africa. These factors reduce the ability to generalise the results of this study.

An associated issue is the cross-sectional (correlational) nature of the data, which poses a threat to internal validity because it prevents direction inferences regarding causality. Causal conclusions made from cross-sectional research designs are never more than inferences (Moorman, 1991). A superior alternative to cross-sectional designs is longitudinal designs which are better for testing causality (Moorman, 1991).

Unavoidably, all research suffers from error. A significant source of error is the limitations of the measurement scales used in this study to evaluate the relevant constructs. A major limitation was the many poor items that were deleted, particularly from the three scales of the Big Five Personality Questionnaire. This could have a negative effect on the construct validity of these scales.

Another source of error is the exclusion of many mediating and moderating variables that also influence the relationships between the constructs studied in this research, for example, cognitive ability, demographics, job characteristics, work group characteristics, organisation culture, leader behaviour, security controls, career variables and other variables, such as, psychological contracts and severity of punishment perceptions.

Integrity is, by nature, a sensitive construct that is often contaminated by social desirability. The researcher perceives this to be a major source of error in any research conducted in the integrity domain. Coupled with the sensitivity of the construct is the issue of confidentiality concerns amongst test-takers. Although ample consideration had been given to this aspect and despite the fact that ample precautions were taken to ensure confidentiality, there is no guarantee that the test-takers were completely honest in their responses.

In this study, only self-report ratings of integrity and counterproductive work behaviours were used. Self-ratings may suffer from contamination but this is also true of other sources of criterion data. Nevertheless, it cannot be guaranteed that the criterion ratings were unbiased.

Lastly, although the typology that was used to measure the criterion, despite being a well-researched and reliable typology, it remains of a general nature and it remains possible that there are job behaviours inherent to the sample used in this study that are not necessarily reflected in the typology used.

It is hoped that this study will inspire other scholars to undertake further exploration of the relationships that were investigated, using different samples in different industries and using longitudinal research designs with multiple criterion ratings.

The relationship between the personality construct, agreeableness, and integrity and counterproductive work behaviour needs to be investigated further. Of particular interest is the differential relationship between agreeableness and organisation directed counterproductive work behaviour on the one hand, and interpersonal directed counterproductive work behaviour on the other hand (O'Neill, Lewis & Carswell, 2011; Berry, Ones & Sackett, 2007).

Despite the findings of this study, the construct of integrity requires further conceptual and empirical investigation in order to provide a more refined framework for further studies.

5.5 MANAGERIAL IMPLICATIONS

The scope of this research was to develop a psychometrically sound measuring instrument to assess integrity and to study the relationship between integrity, personality correlates of integrity and counterproductive work behaviour. Widespread interest in counterproductive work behaviour illustrates that this is an important problem with significant cost implications for organisations, which often threatens the wellbeing of companies. A significant relationship between integrity, personality and counterproductive work behaviour is reported in the literature and this has, to a large extent, been replicated in this study.

A reliable and valid measuring instrument to assess integrity in the South African context has been developed by means of this research. The results of the study provide the basis for management to engage in practices to select employees who are likely to demonstrate integrity in the workplace. The selection of such employees with sound integrity has the potential of resulting in significant benefits for individuals, organisations and the economy as a whole. Benefits for individuals include the following:

- A reduction in harassment by co-workers
- A reduction in verbal and physical abuse in the workplace
- A reduction in bullying at work
- A reduction in unsafe behaviour in the workplace
- A reduction in cyber deviance at work

Benefits for organisations include a reduction in the following:

- Theft
- Fraud
- Embezzlement
- Vandalism
- Sabotage

- Harassment
- Property damage
- Substance abuse
- Cyber deviance
- Bullying
- Dishonesty
- Slow and sloppy working
- Assault
- Unsafe behaviours
- Misuse of employee discount facilities
- Unwarranted sick leave
- A reduction in training expenses
- Reduced insurance premiums to insure for losses
- Reduced security costs
- A reduction in selection time and costs by screening applicants for integrity first

Selecting employees with higher integrity has the potential of a more stable workforce through reducing labour turnover, less management time spent on disciplinary matters and counterproductive work behaviour issues.

Considering the above, it is evident that screening employees successfully by means of an integrity test has the potential of substantially increasing the profitability of businesses and contributing towards a more stable business environment.

Benefits for the economy as a whole include the following:

- Less corruption and fraud.
- Increased tax income.
- A more stable private and public sector.

5.6 CONCLUSION

This research found significant relationships between integrity and counterproductive work behaviour; integrity and conscientiousness; integrity and neuroticism; integrity and agreeableness; integrity and adjustment; integrity and fearfulness; conscientiousness and CWB; neuroticism and CWB; adjustment and CWB; external locus of control and CWB; and personalised power and CWB. These results contribute meaningfully to existing literature by providing insights into the strength and directions of relationships among the studied constructs. In practice, it offers useful insight regarding the managerial implications for companies and the possible interventions that can be initiated and developed to promote the creation of a more honest, reliable and productive workforce.

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Appendix 4.1 Reliability output: Conscientiousness Scale**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.889	.898	32

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
compe1	124.90	209.123	.399	.229	.886
compe3	124.58	207.259	.530	.374	.884
compe7	124.83	208.300	.394	.264	.887
compe8	124.54	207.274	.469	.328	.885
order2	124.23	207.835	.595	.510	.884
order3(reversed)	124.90	208.025	.339	.294	.888
order4	124.37	206.287	.568	.443	.884
order5(reversed)	124.98	211.288	.246	.262	.890
order6	124.92	208.500	.400	.266	.886
order7(reversed)	124.98	209.935	.289	.229	.889
dut1	124.65	207.551	.504	.393	.885
dut3	124.87	210.717	.307	.162	.888
dut4(reversed)	124.79	209.919	.310	.205	.889
dut5	124.88	209.270	.377	.245	.887
dut6	124.80	207.243	.471	.370	.885
dut7	124.37	206.083	.590	.466	.883
ach2	124.86	207.988	.411	.301	.886
ach4	124.21	207.685	.601	.450	.884
ach6	124.49	208.768	.476	.447	.885
ach7	124.38	209.023	.484	.476	.885
selfdis1	124.56	206.686	.575	.398	.884
selfdis2(reversed)	124.69	209.613	.341	.247	.888
selfdis3	124.59	207.299	.443	.320	.886
selfdis5	124.62	207.305	.455	.303	.885
selfdis7(reversed)	124.78	210.019	.347	.272	.888
selfdis8	124.42	208.196	.423	.286	.886
deli1(reversed)	125.11	212.133	.213	.237	.891
deli2	124.50	207.521	.511	.329	.885
deli3(reversed)	124.71	208.968	.355	.236	.888
deli4	124.60	206.626	.497	.307	.885
deli7	124.46	206.450	.606	.490	.883
deli8	124.41	207.571	.489	.405	.885

Appendix 4.2 Reliability output: Agreeableness Scale**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.796	.805	27

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
trust4	97.81	135.053	.273	.160	.792
trust7	97.66	134.897	.349	.371	.789
trust8	97.37	135.205	.386	.374	.788
straight2(reversed)	97.67	135.110	.255	.268	.793
straight4(reversed)	97.30	135.411	.268	.164	.793
straight5	98.07	135.463	.209	.206	.797
straight6(reversed)	97.49	133.875	.332	.425	.789
straight7(reversed)	97.35	132.431	.408	.437	.786
altr1(reversed)	97.64	136.933	.211	.164	.795
altr2	97.61	136.445	.280	.182	.792
altr4	97.38	133.811	.437	.282	.786
altr6	97.61	133.198	.349	.228	.789
altr7	97.34	132.078	.494	.341	.783
altr8	97.33	135.907	.312	.211	.791
comp1	97.44	134.778	.330	.197	.790
comp6(reversed)	97.59	136.434	.213	.240	.795
comp7(reversed)	97.10	136.260	.312	.335	.791
comp8(reversed)	97.42	135.246	.276	.273	.792
mod4	97.63	134.193	.351	.196	.789
mod6	98.00	134.753	.251	.245	.794
mod7	98.12	134.453	.253	.301	.794
tender1	97.37	134.305	.372	.237	.788
tender4(reversed)	97.56	135.726	.258	.215	.793
tender5	97.61	134.824	.301	.248	.791
tender6	97.20	131.683	.494	.347	.783
tender7	97.75	132.252	.380	.341	.787
tender8	97.72	132.081	.394	.272	.786

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
101.31	143.970	11.999	27

Appendix 4.3 Reliability output: Neuroticism Scale**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.877	.878	26

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
anx2	64.72	222.180	.358	.195	.875
anx4	64.52	218.396	.504	.298	.871
anx6	63.45	222.030	.315	.182	.876
anx8	64.17	213.902	.531	.351	.870
anger1	63.97	215.045	.492	.326	.871
anger3	64.94	224.469	.328	.173	.875
anger5	64.49	219.719	.402	.204	.874
anger7	64.09	217.840	.452	.326	.872
anger8	64.44	216.887	.503	.325	.871
depres2	64.52	214.901	.537	.341	.870
depres4	64.64	217.112	.494	.312	.871
depres5	63.59	222.431	.299	.150	.877
depres6	64.66	219.044	.432	.269	.873
depres7	64.26	214.231	.544	.352	.870
depres8	64.52	214.853	.527	.346	.870
selfcon1	64.12	219.200	.370	.209	.875
selfcon3	64.65	215.127	.553	.348	.870
selfcon5	64.26	220.149	.411	.207	.874
selfcon7	63.79	223.815	.244	.114	.878
impuls2	64.36	221.379	.363	.193	.875
impuls4	63.63	220.367	.336	.156	.876
impuls6	64.92	224.439	.338	.172	.875
impuls7	64.38	216.890	.476	.282	.872
vul1	64.35	214.235	.497	.308	.871
vul3	64.29	215.775	.492	.289	.871
vul5	64.39	215.206	.525	.357	.871

Appendix 4.4 Initial reliability output for the integrity scale**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.926	.928	82

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
S2 int1	363.73	2406.284	.174	.253	.926
S2 int2(reversed)	366.44	2418.549	.088	.214	.926
S2 int3(reversed)	364.92	2363.560	.407	.310	.925
S2 int4(reversed)	365.50	2398.983	.172	.248	.926
S2 int5(reversed)	366.31	2395.794	.231	.352	.926
S2 int6(reversed)	365.58	2392.282	.227	.316	.926
S2 int8	363.65	2401.485	.236	.326	.925
S2 int10(reversed)	365.61	2378.882	.306	.449	.925
S2 int11(reversed)	364.54	2379.482	.319	.259	.925
S2 int12	364.21	2373.154	.367	.315	.925
S2 int13(reversed)	365.45	2380.681	.290	.256	.925
S2 int14(reversed)	365.11	2369.675	.347	.310	.925
S2 int15	363.72	2411.688	.181	.304	.926
S2 int16(reversed)	364.46	2359.612	.420	.412	.924
S2 int17(reversed)	364.87	2370.051	.364	.343	.925
S2 int18(reversed)	364.56	2347.542	.496	.508	.924
S2 int20(reversed)	363.94	2371.136	.412	.449	.925
S2 int22(reversed)	365.44	2410.226	.136	.259	.926
S2 int23(reversed)	364.25	2378.486	.336	.337	.925
S2 int24	364.07	2377.618	.357	.339	.925
S2 int25(reversed)	364.32	2383.750	.292	.259	.925
S2 int26(reversed)	364.36	2375.985	.363	.343	.925
S2 int27(reversed)	364.70	2365.844	.440	.374	.924
S2 int28(reversed)	363.88	2372.241	.408	.373	.925
S2 int29(reversed)	364.78	2372.278	.327	.320	.925
S2 int30(reversed)	364.82	2366.292	.375	.340	.925
S2 int32(reversed)	364.69	2379.743	.312	.288	.925
S2 int34(reversed)	365.32	2375.924	.336	.423	.925
S2 int35(reversed)	363.64	2398.754	.256	.291	.925
S2 int36(reversed)	363.35	2393.197	.382	.401	.925
S2 int37	363.68	2398.555	.238	.254	.925
S2 int38(reversed)	364.17	2372.341	.403	.380	.925
S2 int39(reversed)	364.29	2373.891	.401	.354	.925
S2 int40(reversed)	364.74	2371.219	.356	.356	.925
S2 int41(reversed)	363.97	2362.871	.507	.428	.924
S2 int42(reversed)	364.32	2352.050	.480	.401	.924
S2 int44(reversed)	364.56	2386.413	.317	.304	.925
S2 int46(reversed)	365.37	2359.709	.412	.376	.925
S2 int47(reversed)	363.90	2386.654	.287	.292	.925
S2 int48(reversed)	364.24	2347.898	.569	.441	.924
S2 int49(reversed)	364.22	2372.393	.407	.364	.925
S2 int50(reversed)	364.10	2351.220	.551	.457	.924
S2 int51	363.55	2418.895	.118	.262	.926
S2 int52(reversed)	364.27	2360.438	.483	.444	.924
S2 int53(reversed)	364.57	2366.887	.352	.326	.925

S2 int54(reversed)	364.87	2350.542	.489	.441	.924
S2 int56(reversed)	364.60	2364.514	.398	.404	.925
S2 int58(reversed)	363.99	2364.726	.479	.417	.924
S2 int59	364.54	2416.092	.093	.286	.927
S2 int60	363.97	2406.970	.185	.295	.926
S2 int61(reversed)	364.20	2372.934	.417	.351	.925
S2 int62(reversed)	364.29	2391.314	.225	.282	.926
S2 int63(reversed)	364.19	2383.118	.332	.274	.925
S2 int64(reversed)	364.03	2365.815	.501	.444	.924
S2 int65(reversed)	364.62	2360.883	.436	.369	.924
S2 int66(reversed)	364.88	2350.596	.486	.449	.924
S2 int68(reversed)	363.77	2373.310	.459	.459	.924
S2 int70	365.17	2433.368	-.004	.178	.927
S2 int71(reversed)	363.62	2381.986	.428	.416	.925
S2 int72(reversed)	364.57	2374.263	.378	.302	.925
S2 int73(reversed)	364.12	2374.425	.418	.376	.925
S2 int74(reversed)	364.20	2358.265	.489	.416	.924
S2 int75	363.80	2420.169	.102	.316	.926
S2 int76(reversed)	363.62	2379.929	.441	.424	.925
S2 int77(reversed)	363.75	2366.670	.512	.425	.924
S2 int78(reversed)	363.81	2377.524	.408	.349	.925
S2 int80(reversed)	365.40	2394.959	.204	.275	.926
S2 int82(reversed)	363.98	2363.838	.470	.385	.924
S2 int83(reversed)	364.19	2375.519	.381	.428	.925
S2 int84	363.92	2415.229	.128	.276	.926
S2 int85(reversed)	364.11	2370.140	.458	.426	.924
S2 int86(reversed)	363.60	2370.295	.528	.508	.924
S2 int87	363.64	2406.119	.221	.308	.926
S2 int88(reversed)	364.07	2359.806	.530	.470	.924
S2 int89(reversed)	364.12	2377.773	.369	.277	.925
S2 int90(reversed)	363.92	2358.246	.521	.454	.924
S2 int94(reversed)	365.53	2376.627	.325	.373	.925
S2 int95(reversed)	364.16	2375.366	.378	.346	.925
S2 int96(reversed)	364.48	2357.023	.470	.414	.924
S2 int97(reversed)	363.88	2359.390	.529	.484	.924
S2 int99(reversed)	363.79	2394.079	.272	.338	.925
S2 int92(reversed)	364.22	2379.590	.369	.306	.925

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
368.89	2435.546	49.351	82

Appendix 4.5 Integrity scale factor structure EFA output

Pattern Matrix^a

	Factor			
	1	2	3	4
S2 int97(reversed)	.652	-.005	-.003	-.048
S2 int96(reversed)	.515	.195	-.098	-.041
S2 int77(reversed)	.481	-.033	.035	-.218
S2 int29(reversed)	.431	.117	-.097	.020
S2 int48(reversed)	.420	.153	.088	-.139
S2 int89(reversed)	.418	-.073	.060	-.077
S2 int24	.397	-.051	.101	.001
S2 int12	.391	-.035	.142	.036
S2 int27(reversed)	.381	.139	.096	-.005
S2 int39(reversed)	.351	.057	.048	-.106
S2 int82(reversed)	.345	.152	-.005	-.144
S2 int53(reversed)	.343	.135	.040	.032
S2 int14(reversed)	.333	.222	-.006	.069
S2 int63(reversed)	.299	.056	-.006	-.112
S2 int10(reversed)	.017	.561	.001	.089
S2 int18(reversed)	.028	.622	.030	-.103
S2 int52(reversed)	.010	.538	.043	-.161
S2 int34(reversed)	.114	.513	.030	.099
S2 int94(reversed)	.104	.507	-.193	-.084
S2 int46(reversed)	.074	.472	.011	-.085
S2 int42(reversed)	.162	.427	.046	-.077
S2 int30(reversed)	.052	.425	.045	-.063
S2 int54(reversed)	.167	.412	.257	.088
S2 int66(reversed)	.104	.403	.238	.005
S2 int40(reversed)	-.148	.323	.249	-.158
S2 int90(reversed)	.223	.302	-.029	-.248
S2 int16(reversed)	.037	.179	.542	.124
S2 int23(reversed)	.033	.000	.518	.054
S2 int74(reversed)	.117	.096	.472	-.042
S2 int41(reversed)	.178	.047	.468	-.042
S2 int50(reversed)	.152	.084	.460	-.113
S2 int35(reversed)	.030	-.088	.404	-.040
S2 int38(reversed)	-.020	.013	.376	-.203
S2 int76(reversed)	.070	-.077	.369	-.255
S2 int99(reversed)	-.023	-.066	.350	-.142
S2 int85(reversed)	-.005	.014	.348	-.298
S2 int32(reversed)	-.003	.134	.337	-.015
S2 int47(reversed)	.154	-.129	.323	-.052
S2 int26(reversed)	-.096	.163	.321	-.178
S2 int71(reversed)	.028	-.012	.033	-.563
S2 int95(reversed)	.055	-.042	-.039	-.550
S2 int83(reversed)	-.013	.049	-.016	-.543
S2 int61(reversed)	.115	.040	-.091	-.531
S2 int73(reversed)	-.022	.101	.004	-.505
S2 int86(reversed)	.158	-.039	.176	-.459
S2 int28(reversed)	-.105	.122	.160	-.440
S2 int49(reversed)	.068	.029	.067	-.438
S2 int88(reversed)	.179	.003	.210	-.353
S2 int25(reversed)	.012	.023	.034	-.350
S2 int36(reversed)	.182	-.148	.132	-.339
S2 int64(reversed)	.291	-.016	.105	-.315

Extraction Method: Principal Axis Factoring.

Rotation Method: Oblimin with Kaiser Normalisation.

a. Rotation converged in 22 iterations.