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Addiction Phenomenology In Substance Use  
And Non-Substance use Disorders

A thesis

submitted in fulfilment

of the requirements for the degree

of

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by

**Andre David McLachlan**

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## Abstract

There is growing research evidence and public concern over the burgeoning of disorders which share common features with substance addictions. In order to investigate the presence and role of addiction features in disorders outside of substance addictions, symptoms of addiction were explored within three addiction groups: alcohol dependence (AD), an established addiction (n = 24); pathological gambling (PG) a disorder with growing empirical support as an addiction (n = 20); and compulsive shopping (CS), a proposed 'novel' addiction (n = 20).

Participants were recruited from either the general population, or from the Auckland Salvation Army Bridge residential alcohol and drug treatment programme; Salvation Army Oasis Gambling Service; Pacific Peoples Addiction Service Incorporated; or Te Kahui Hauora O Ngati Koata Trust. Participants completed a battery of self-report measures comprising a demographics questionnaire; Addictive Disorder Questionnaire (ADQ); anxiety and depression subscales of the Symptom Checklist 90 Revised (SCL-90R); Barratt Impulsivity Scale II-r; and substance specific adaptations of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS).

Three general categories of addiction symptoms: physiological, salience and dyscontrol, were identified as broad aspects of addiction, common across all three groups. Measurable aspects of addiction, including impulsivity, obsessions, anxiety and depression were found to be endorsed similarly across the three addictions, irrespective of the severity of their addiction. Compulsions were found to be higher in the AD group. Higher anxiety was found to be correlated with higher addiction in the behavioural addictions (CS and PG), whereas depression and anxiety were associated with higher addiction severity in the AD group.

The results provide support for broadening addiction diagnostic definitions, to be more encompassing of the psychological and physiological experiences of each symptom; and developing different diagnostic categories for non-substance addictions that reflect the severity of the addiction. Results also provide evidence for developmental phases of addiction, from an early 'hedonistic' impulsive phase, to a compulsive phase, in which increased dyscontrol, mood and anxiety, marks the severity of the addiction.

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## 1. Introduction

With the advancement and increased availability of technology, researchers propose that modern western culture is producing individuals who are in constant pursuit of gratification, making them particularly prone to addiction, obsession, and excess (Eckersley, 2005). Based on a wealth of research literature describing addiction to alcohol and illicit drugs (substance addiction), addiction researchers have drawn parallels to a range of disorders, which share similar addiction features, yet are not influenced by the ingestion of drugs. These researchers have followed the examples set by substance addiction research methodology, in order to produce evidence which supports the proposition of addiction occurring outside of ‘traditional’ substance addictions. Eckersley (2005) proposed that large numbers of individuals are medicating themselves through a range of behaviours to “take the edge off the 21<sup>st</sup> century” (p 161). Therefore it is conceivable that many of these disorders of ‘excess’ may become ‘the’ addiction(s) of the 22<sup>nd</sup> century.

The purpose of this study is to identify, explore and understand the common cognitive and behavioural phenomena that occur within substance and non-substance addictions (i.e., the study of addiction phenomenology). Identifying such key common aspects may contribute to a more comprehensive understanding of addiction. This may also provide data and impetus for clinicians to access efficacious treatment based on existing literature, beyond that currently associated with their specific ‘disorder’.

The first part of this thesis will review the relevant literature. This is separated into two sections a) Addiction: description, aetiology, and development of the terms, and associated diagnostic classification; and b) Addiction phenomenology within behavioural disorders. Following this, a set of questions to be investigated in this study are proposed.

## 2. Literature review

### 2.1 Methodology

This literature review used the following online data bases: [Blackwell Synergy](#); [Elsevier ScienceDirect](#); [PsycARTICLES](#); [PsycEXTRA](#) ; Psychology and Behavioral Sciences Collection; and [PsycINFO](#) . Search terms used included: addiction, behavioural addiction, behavioural addiction, behavioural dependence, behavioural dependence, drug, drug abuse, drug dependence, substance use disorders, causal, aetiology, impulse control disorders, impulsivity, compulsions, dyscontrol, craving, salience, and urges.

### 2.2 *Addiction: description, aetiology, and development of the terms, and associated diagnostic classification.*

Theorists from the fields of medicine, psychology, and neurophysiology have attempted to explain the development and maintenance of addiction. Irrespective of the theoretical background, substance addiction phenomenology can be summarized as: a) behaviour aimed at maintaining a physiological homeostasis. This incorporates either attempting to achieve or maintain a pleasurable or sedative ‘state’ by the ingestion of substances. This physiological homeostasis often changes over time, in that increased amounts of the substance are sought to achieve the desired state (tolerance). The ‘addict’ (addicted individual) may also experience negative physiological consequences when unable to maintain this homeostasis (withdrawal) (Chassin, Presson, Rose, & Sherman, 2007; Le Moal & Koob, 2007; Leshner, 1997). Authors have also argued for a psychological homeostasis, where addiction is seen as an attempt to avoid aversive internal ‘states’ such as anxiety, grief and guilt (Goodman, 1990); b) the addiction has developed a salient status, that is, behaviour aimed at seeking substances are now prioritized over important health, social and lifestyle behaviours, and the addict is preoccupied by either the substance or with behaviours associated with obtaining the substance. This behaviour is also commonly referred to as ‘impulsive behaviour’ (Dawe & Loxton, 2004). The individual’s behaviour is also compulsive in nature, responding to external cues (aspects associated with addictive behaviour) and internal cues (such as negative moods, anxiety,

and stress); and finally c) as part of the phenomenology of addiction, and possibly as a result of salience and physiological symptoms, an addict may experience dyscontrol. Dyscontrol reflects the loss of control in reducing or stopping this behaviour, and experiencing negative social, legal or health consequences from continued use.

Despite the myriad of aetiological theories of substance addiction, collectively they represent an interaction of social, environmental, neurophysiological and psychological phenomena, which potentially all provide insight into the transition from substance use to addiction. Explanations for the initial experimentation or use of substances may, in general, be found within social learning theories. Within social learning theory, it is proposed that individuals are seeking the physiological effects (i.e., euphoric, hallucinative, sedating or a combination of these); and associated social behaviour of substance use (i.e., social reinforcement) (McKim, 2002). These physiological and social effects, and associated drug using behaviour, are proposed to be modelled and reinforced within social interactions. These principles may also account for those individuals that abuse substances (i.e., continue to use despite 'some' significant negative consequences). Social learning theory also argues that social context also influences the maintenance of addictive behaviour, citing high addiction rates in low-socio-economic communities (Galea, Nandi, & Vlahov, 2004; Van Oers, Bongers, Van de Goor, & Garretsen, 1999). In this context, it is argued that addiction is influenced by a) a lack of competing reinforcers (Higgins, Alessi, & Dantona, 2002); b) the high accessibility of drugs; and c) the increased prevalence of psycho-social stress and mental illness in low socio-economic communities (Phillips & Johnson, 2001). Addiction has been cited as further complicated in low-socio-economic communities by the interaction between trauma related head injury, and the impact head injuries have in complicating addiction treatment (Barnfield & Leathem, 1998; Dunn, Henry & Beard, 2003). Yet not all people who use substances develop addictions. Research evidence, based on genetic and twin studies of alcoholics and other drug addictions, suggest that some individuals are predisposed to engage in addictive behaviour (Jacob, Waterman, Heath & True et al., 2003).

The field of neuropsychology suggests a range of explanations for the development of some or all aspects of addictive behaviour. Historically, homeostasis has

been proposed to account for the maladaptive behaviour present in addiction, particularly in the case of alcohol and heroin (Littleton, 2001). Withdrawal and tolerance are proposed to account for the brain adjusting to the presence of drugs at a neurochemical level (Le Moal & Koob, 2007). Once this adjustment has been made, tolerance is produced in which the subject needs to use increasing amounts in order to achieve the desired affect. Likewise withdrawal is proposed to account for the adverse response when this neuroadaptation is 'uncovered' by the abrupt cessation of substance use (Le Moal & Koob, 2007). Neuropsychological theories also suggest that deficits in neurotransmitter functioning may contribute to the occurrence of addiction. These theories suggest a reward deficit syndrome, in which individuals seek increasing amounts of substances in order to maintain a homeostatic balance; this is accompanied by impairment in executive functioning, resulting in reduced ability to restrain addiction behaviour (Dawe & Loxton, 2004). Le Moal and Koob (2007) proposed that a key aspect in the development of substance addiction is the transition from impulsive use to compulsive use. Impulsive use is argued to be a form of positive reinforcement (impulse based on seeking hedonic pleasure and/or social reinforcement), whereas compulsive use is argued to be a form of negative reinforcement (compulsion based on the removal of negative affective states or withdrawal symptoms). The phenomena of dyscontrol described earlier can be argued to be associated with either/or both damage to executive functioning (as discussed), and changes in social functioning and mental health over the course of the addiction.

Both neurological and psychological theories propose arguments for the development of a drive or 'wanting' aspect of addictive behaviour, that is different from the initial 'liking' of the substance (pleasurable effects)(Robinson & Berridge, 2001). It is argued that with repeated administration of the substance, that the addictive behaviour increases in salience, and items related to participating in the addictive behaviour, such as people, places and paraphernalia, act to cue the pursuit of the behaviour (Mckim, 2002). Psychological theories propose that addictive behaviour is mediated by the cognitive elaboration of these initial cues (Kavanagh, Andrade, & May, 2004). This is proposed to partly account for the increased tension and arousal associated with pursuit of substances, and the common urge (craving or preoccupation) associated with the addiction.

Based on these theories, it is possible to see the distressing cycle of addiction, where individuals who develop addictions, may be predisposed at a neurological level to use substances, and the likelihood of initial use of substances may be mediated by social context. With increased use of substances, the behaviour associated with the initial substance, becomes increasingly more salient and prioritized in the life of the individual, to the detriment of other personal health and social related behaviour. Coupled with potential reduced ability to restrain this behaviour, it is possible that increased negative consequences, and detachment from social supports could increase the salience of addiction related behaviour. This may result in drug seeking behaviour to reduce tension created from this pressure, and maintaining homeostasis at a neurochemical level.

Despite the wide range of different and inter-related theories of addiction, there is still discussion over both terminology and diagnostic nomenclature in substance addiction. The next section will review the development of diagnostic nomenclature used within the addiction field.

Exploring the development and different aspects of the term addiction, is important not only in better understanding the aspects that define addiction phenomena (Goodman, 1990), but also in order to determine whether the concept of addiction should extend beyond substance addictions (Potenza, 2006). In discussing and understanding the concept of ‘addiction’, it is important to identify that there is a second term ‘dependence’ which is often used interchangeably with the term ‘addiction’. The term ‘dependence’ has historically been proposed to represent a physiological dependence on drug use, evidenced by withdrawal and tolerance symptoms (Le Moal & Koob, 2007), both of which were key symptoms in the early development of diagnostic criteria. This was due to the majority of research into the aetiology, diagnostic criteria, and treatment of addiction over the last 50 years, having revolved around alcohol use disorders, which have tolerance and withdrawal as common features. Dependence has been, and remains to be used as the diagnostic label for specific substance addictions (i.e., alcohol dependence or cannabis dependence). The evolution of the description and diagnosis of addiction has reduced the focus on physiological symptoms as primary and necessary for a diagnosis of dependence, which in part can be attributed to the widening focus on other

drugs that do not produce strong physiological effects. Given the confusion over the use of different terms, and that the term ‘dependence’ does not adequately represent the phenomena of addiction; arguments have been forwarded to replace the term ‘dependence’ with ‘addiction’ in upcoming diagnostic nomenclature (Potenza, 2006).

The term addiction has been used in reference to impaired control over substance use for several centuries (Potenza, 2006). The term addiction was first formally introduced with alcohol dependence in the first Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 1952), although not well defined or explained. In describing the diagnosis of alcohol dependence, it was stated that addiction was ‘usually symptomatic of a personality disorder’ (Saunders, 2006). Rather than being a scientifically developed concept, the term addiction is proposed to have originated as a socially functional label, used to further move substance use disorders from the former disease and moralistic based concepts towards a measurable scientific concept (Davies, 1998). From these early references to the term addiction, it appears that the term was either used interchangeably with dependence, or used as a term to describe a process within the diagnosis of alcohol dependence. Due to confusion and conflict over the use of the term addiction in discussing substance dependence, the term addiction is no longer present in the current DSM-IV (American Psychiatric Association, 1994). In order to orient the reader, this thesis will use the term dependence in reference to current DSM diagnostic labels (i.e., alcohol dependence), rather than describing the total phenomenon under investigation. This is due to dependence (physiological symptoms) only being one of several aspects of addiction phenomenology. The term addiction will therefore be used when discussing the broader phenomenon of substance use disorders, and those disorders which share similar phenomenology.

Not only is there contention over the terms addiction and dependence, a review of issues facing the development of upcoming editions of the DSM (DSM-V) and International Classification of Diseases (ICD) (World Health Organization, 1992) (ICD-11) by Cottler and Grant (2006), proposed that the associated working groups would most probably be charged with discussing the ‘mélange’ of terms used to describe addictive behaviours. Due to the need to better understand the terms that describe addictive

behaviour, the next section will review and discuss the development of the diagnostic criteria which describe and represent current substance addiction phenomenology.

There are two key diagnostic classification systems which were developed in the 19<sup>th</sup> century. The ‘International Classification of Diseases’ (ICD), currently in its 10<sup>th</sup> edition (ICD-10) (World Health Organization, 1992). The ICD is overseen by the World Health Organisation (WHO), which in 1946 undertook a revision of competing national disease classification systems in order to produce a system acceptable to all participating WHO nations (Saunders, 2006). The second common diagnostic classification system is the Diagnostic and Statistical Manual of Mental Diseases (DSM), currently in its fourth edition (DSM-IV). The DSM was based on early work in the United States of America, by the American Psychiatric Association (APA). Development of classification criteria began in 1917, and these were first published as the Diagnostic and Statistical Manual of Mental Diseases (DSM) in 1952. The review of the development of diagnostic classifications within this thesis, will focus on the Diagnostic and Statistical Manual of Mental Diseases (DSM) as this is the standard system used within Australasia; and, a recent review of the ICD-10 and DSM-IV reported that differences between the two diagnostic classifications were minimal and could be resolved (Saunders, 2006).

Early in the development of the DSM (APA, 1952), alcohol use disorders were categorized as personality disorders. Diagnostic developments within the DSM, in relation to alcohol disorders, changed very little with the publication of DSM-II (American Psychiatric Association, 1968), where, as with the original DSM, the evidence of withdrawal was seen as a key condition in order to receive a diagnosis of alcohol dependence. Following the development of more comprehensive and integrated biological, psychological, and social theories of alcohol use disorders in the late 1960’s and mid 1970’s (Sellman, 1994), the publication of DSM-III in 1980 provided for the first time, diagnostic criteria, with an expanded description of the disorders (Saunders, 2006). Alcohol use disorders were also separated into alcohol abuse and alcohol dependence, seen as disorders in their own right (Sellman, 1994). Based on research, mainly on alcohol and opiate users, the DSM-III-R (APA, 1987) extended the previous alcohol dependence criteria into a generic set of substance dependence diagnostic criteria,

with specific diagnostic codes for each substance (Hughes, 2006). Much of these diagnostic criteria and course specifiers are present in the current DSM edition (DSM-IV).

Table 1 presents current DSM and ICD diagnostic criteria, summarized under three key phenomenological categories, namely physiological, dyscontrol and salience. Symptoms within each category are numbered for ease of description and reference.

The following description will outline the three diagnostic categories presented in Table 1, primarily using alcohol as an example. The first category, ‘physiological symptoms’, includes tolerance (symptom 1); and the processes of withdrawal (symptom 2). The process of withdrawal has been a key contention between alcohol and opiate dependence, and other drugs such as amphetamines, cannabis and hallucinogens. This contention is based on findings that many drugs (such as cannabis) do not produce characteristic withdrawal symptoms found in drugs such as opiates and alcohol; and that some drugs, such as beta-blockers for hypertension, produce aspects of tolerance and withdrawal, yet do not necessarily produce many of the common characteristic addiction behaviours or consequences, such as drug seeking and interference with life-functioning (Potenza, 2006). In an argument for the recognition of a withdrawal syndrome for cannabis dependence, Budney (2006) outlined the defining characteristics of substance withdrawal. He described withdrawal as:

“abstinence effects (withdrawal) that (a) occur reliably, (b) are not exceptionally rare, (c) have a specific time-course that includes a return to baseline state, (d) abate with readministration of the drug, (e) are due to deprivation of a specific substance and (f) appear to be clinically significant” (Budney, 2006, p127).

Due to the inconsistencies in the description and applicability of withdrawal, the current DSM-IV-TR incorporates some drug specific withdrawal criteria, such as grand mal seizures for alcohol withdrawal, although many withdrawal features are still common across different drugs, including insomnia, anxiety and nausea (Budney, 2006). Despite the focus on withdrawal as a purely physiological process, recent animal studies have suggested that the core symptoms of withdrawal may be behavioural and emotional responses to reductions in addictive behaviour, and associated changes in neurological reward centres in the brain (Budney, 2006).

Table 1

*Summary of DSM-IV and ICD-10 substance addiction diagnostic criteria into key symptom categories*

Category	Symptom	DSM-IV (American Psychiatric Association, 1994. p108)	ICD-10 (World Health Organization, 1992. p75).
Physiological	1	Tolerance, as defined by either of the following: (a) A need for markedly increased amounts of the substance (b) Markedly diminished effect with continued use of the same amount of the substance.	Evidence of tolerance, such that increased doses of the psychoactive substance are required in order to achieve effects originally produced by lower doses
	2	Withdrawal, as manifested by either of the following: (a) The characteristic withdrawal syndrome for the substance (b) The same (or closely related) substance is taken to relieve or avoid withdrawal symptoms.	A physiological withdrawal state when substance use has ceased or been reduced, as evidenced by: (a) The characteristic withdrawal syndrome for the substance; or (b) Use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms
Dyscontrol	3	There is persistent desire or unsuccessful efforts to cut down or control substance use.	<i>No equivalent criterion</i> , but text states that ‘the subjective awareness of compulsion to use drugs is most commonly seen during attempts to stop or control substance use’
	4	The substance is often taken in larger amounts or over longer periods than was intended.	Difficulties in controlling substance-taking behaviour in terms of its onset, termination or levels of use
	5	The substance use is continued despite knowledge of having persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance	Persisting with substance use despite clear evidence of overtly harmful consequences. Efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm
Salience	6	<i>No equivalent criterion</i>	A strong desire or sense of compulsion to take the substance
	7	Important social, occupational, or recreational activities are given up or reduced because of substance use.	Progressive neglect of alternative pleasures or interests because of psychoactive substance use. Important social, occupational or recreational activities are given up or reduced because of substance use
	8	A great deal of time is spent in activities necessary to obtain the substance	Increased amount of time necessary to obtain or take the substance or to recover from its effects

Despite not being included in diagnostic criteria, there are other important physiological phenomena in substance addictions. Different drugs have different drug and dose specific psychoactive (physiological) affects, such as depressant, arousal and hallucinogenic. Following on with alcohol as an example, euphoria is produced with moderate doses of alcohol, whereas a depressed affect is produced with higher doses (Le Moal & Koob, 2007).

The second category, dyscontrol, relates to an individual having a lack of ability to control how much, how often, and in what circumstances drug use occurs, and continued use despite negative consequences (symptoms 3, 4, and 5). Relapse, incorporated in symptom 3, has a significant impact on public perceptions of drug users and the effectiveness of drug treatment (O'Brien and McLellan, 1996). It has been estimated that between 60 and 80% of individuals will relapse within 12 months of completing treatment (McLellan, Lewis, O'Brien, Herbert & Kleber, 2000; O'Brien & McLellan, 1996).

The final category, salience, refers to the status (importance) the stimuli (the drug and drug use paraphernalia) has in the allocation (amount and effort) of attention and behaviour of the individual (symptoms 7 and 8). Salience symptoms describe the narrowing of the behavioural repertoire in order to obtain and seek substances, and a general prioritising of drug related activities over behaviours necessary for wellbeing such as employment, health and relationships. So in a sense, salience contributes to the production of dyscontrol. Both salience and dyscontrol have been proposed to be represented by self-reports of 'craving' (thoughts or urges desiring a specific substance); a sense of compulsion to seek and use the substance; and a perceived reduced ability to restrain drug seeking and using behaviour (symptom 6). Physiological symptoms such as withdrawal and tolerance are said to be underlying 'drives' which either enhance the desire or craving to seek or use substances (Le Moal & Koob, 2007). Despite wide spread self-reports and psychometric measures of specific drug craving, craving is not incorporated in DSM-IV diagnostic criteria, although is maintained in the ICD-10.

A range of cognitive and behavioural symptoms are evident within substance addiction, but not necessarily included within both diagnostic criteria reviewed. These include functional psychological aspects such as the use of substances for positive

reinforcement, or to reduce negative affect; cravings to seek and use substances; and ambivalence about the use of substances and its associated consequences (Chassin, Presson, Rose, & Sherman, 2007).

Co-occurring psychiatric disorders are another common characteristic, which are not accurately described or represented in the diagnostic criteria. Recognizing, understanding and responding to co-occurring psychiatric disorders has significant implications regarding addiction treatment outcomes. The co-occurrence of substance use and psychiatric disorders has been found to worsen the course of both the psychiatric disorder and addiction; produce poorer clinical outcomes; increase the risk of suicide, impairment and disability; and result in higher use of health services. (Burns, & Teeson, 2002; Merikangas, Mehta, & Molnar, et al., 1998).

Both clinical and population studies identify a strong co-occurrence of substance addiction with mood and anxiety disorders (Adamson, Todd, Sellman, Huriwai, & Porter, 2006; Burns, & Teeson, 2002; Goodwin, Fergusson, & Horwood, 2004; Merikangas et al., 1998). A cross-national clinical population, including different studies within the United States of America, and from within Canada, Germany and the Netherlands (International Consortium in Psychiatric Epidemiology; Merikangas et al., 1998) found similar comorbidity data to large North American population studies (The Epidemiological Catchment Area Survey, Robins & Regier, 1991; and National Comorbidity Study, Kessler, McGonagle, & Zhao et al., 1994; Kessler, Zhao, & Blazzer et al., 1997). Data from both these studies found 26-37% of those persons with alcohol dependence also had a lifetime history of mood disorder (with depression being the most common), whereas 32 - 37% met lifetime criteria for an anxiety disorder. Clinical studies have also highlighted the role of personality traits such as novelty and sensation-seeking, and general impulsivity in the development of substance addiction (Glantz, 1999; Glantz & Pickens, 1992; Le Moal & Koob, 2007).

In summary, the previous outline of the three diagnostic categories identified the commonalities inherent within addiction, such as the prioritisation of a substance (salience); a loss of control over addiction behaviour, and resulting negative consequences (dyscontrol); and the occurrence of varying forms of withdrawal and tolerance to a substance (physiological). The previous discussion also identified the limits

of diagnostic criteria in representing addictive phenomenology across different drugs. These limitations include the different aspects of withdrawal, and a lack of coverage of the full dimensions of addictive phenomenology, such as the prevalence of co-occurring psychiatric disorders. In order to understand the potential for exploring substance addiction phenomenology outside of substance specific addictions, and the potential methods for achieving this, the next section will review research which describes the development of addiction research, from an initial focus on opiates and alcohol, to a more 'inclusive' focus on different types of drugs. This review will highlight both the challenges and process of identifying generic and substance specific addiction phenomenology.

Research into substance addiction now extends well beyond alcohol, with a wide range of research evidence describing the effects of opiates, cannabis, amphetamines and nicotine, to name but a few. Experts in different fields of drug addiction research continue to argue that addiction manifests itself in different ways between drugs, proposing that it is "implausible that each and every drug of dependence should produce the exact same clinical dependence profile" (Hughes, 2006. p 138). There are also disagreements in utilizing substance specific diagnostic criteria based on the pharmacological effects of the drug. Researchers have argued that many of the presentations found in different drug addictions, may be individual or social characteristics of the individuals who choose to use specific drugs (Hughes, 2006).

A range of studies have been conducted to analyse the utility of DSM or combined DSM/ICD diagnostic criteria for specific drugs outside of traditionally researched substances (i.e., alcohol). Hughes (2006) undertook a qualitative review of literature concerning the similarities and differences in nicotine versus predominantly alcohol and opiate dependence criteria. The author identified that withdrawal (physiological); compulsive use (salience); difficulty controlling use; and use despite harm (dyscontrol) were all commonly endorsed phenomenon between nicotine and non-nicotine dependencies. Whereas criteria such as 'tolerance'; 'using more than intended'; 'spending a great deal of time obtaining, using, or recovering from the drug'; and 'giving up activities to use the drug', were rarely endorsed by nicotine users. This may be due to

the terms used to describe the phenomena, as many nicotine specific diagnostic scales utilize different definitions, such as smoking daily as a substitute measure of tolerance. The author recommended that future research should profile the rates of endorsement of items across different drugs (i.e., the occurrence of withdrawal across different drugs), as, if significant difference were found, this would suggest that the expressions of dependence may be drug specific rather than generic.

Budney (2006) undertook a review of literature, concerning the similarities and differences between DSM diagnostic criteria and a specific drug – cannabis, utilizing the analysis of item endorsement recommended in the previous study. The author wanted to identify whether the dependence criteria within the DSM all correlated with each other (i.e., formed a unidimensional category), or whether there were multiple factors; and whether patterns of correlations were similar across different substances. Nelson, Rehm, Ustun, Grant, and Chatterji (1999) conducted a factor analysis of the DSM-IV diagnostic criteria using a semi-structured interview, with 519 cannabis users who reported using cannabis at least six times in their life. Participants were part of an epidemiological study, from five countries across six sites, including drug treatment, medical and mental health settings, and the general population. Results showed a good fit with all seven DSM-IV diagnostic items for cannabis, with factor loadings ranging from 0.82 to 0.93, indicating a unidimensional one-factor solution. The authors went on to analyse factor structures across cannabis, opiate, cocaine and alcohol dependence utilizing a parallel method. The authors identified that despite some substances reporting higher or lower loadings for specific criteria, the dependence syndromes were comparable in structure. Swift, Hall, and Teesson (2001) undertook a similar epidemiological study of 722 adults who had reported using cannabis at least five times in the previous year. Of 150 participants who met DSM diagnostic criteria for a diagnosis of substance dependence, using a semi-structured interview, a Cronbach alpha of 0.75 among the seven items was found. Budney, Radonovich, Higgans, and Wong (1998) conducted a clinical population study of 62 adults seeking outpatient treatment for cannabis dependence. The reported rates of responding to individual items were compared to a cocaine treatment sample from within the same study. The cocaine group endorsed more items (7.7 versus 6.3) with difference also found for highest and lowest

items endorsed. Stephens, Babor, Kadden, and Miller (2002) found similar results in a much larger sample of individuals seeking outpatient treatment for cannabis dependence (n=450), endorsing an average of 5.6 of the seven DSM-IV criteria.

The studies discussed reported that different items were endorsed at different rates, by different populations (clinical versus epidemiological) and within each methodology (i.e., different ranking between the two clinical studies). From this research, Budney (2006) proposed that the current diagnostic criteria are applicable across different drugs, including cannabis. The author cited that despite different drugs loading differently on different items, and some drugs showing different overall severity based on the number of items endorsed, that there are more similarities in types and number of items endorsed between different drug dependencies

With regards to cannabis dependence, the author proposed that 4-6 items may represent a severe cut-off criterion for dependence, whereas cocaine may require 6 or 7. Despite this the author states that the 3 or more present cut-off score for a diagnosis is valid across substances, although further research is required, as there are few data available that addresses the issue of diagnostic severity directly.

In summary, from the literature regarding the development and definition of addiction, the early definitions of addiction were based on alcohol dependence, heavily weighted towards its physiological symptoms. Over time research and diagnostic criteria focused on other drugs, resulting in the utilization of generic substance dependence diagnostic criteria. Authors have argued both for and against the benefits of the use of generic diagnostic criteria, yet it appears that a unidimensional dependence syndrome exists, despite some substance specific differences. Some of the ways around these problems potentially lie in the development of substance specific terminology, which represent the broad addiction categories. The three key diagnostic categories proposed - physiological, dyscontrol and salience, represent the key physiological and psychological aspects which underpin addiction, and are inclusive of current generic diagnostic criteria for addiction. These basic concepts of addiction can allow the exploration and comparison of substance and non-substance specific addiction phenomenology.

Based on the increased research into behavioural and psychological phenomenology of addiction, researchers and laymen alike have proposed a range of disorders which encompass much of the common aspects of addiction discussed previously. The second section of this introduction will compare and contrast the key aspects of addiction phenomenology identified in the literature, in disorders outside of the traditional substance addictions.

### *2.3 Addiction phenomenology within behavioural disorders.*

Despite the long association of the term addiction with substance use disorders, there has recently been a shift to focus on non-substance related disorders which share similar addiction phenomenology (Petry, 2006; Potenza, 2006). Recent reviews of DSM-IV and ICD-10 diagnostic criteria have supported this approach by acknowledging the importance of identifying the utility of addictive diagnostic criteria to behaviours outside of traditional substance use disorders, such as pathological gambling, internet addiction, compulsive shopping and potentially certain eating disorders (Saunders, 2006). Proposed changes to diagnostic criteria in the upcoming DSM-V include the creation of two new categories, an obsessive-compulsive category and a behavioural and substance addiction category. The obsessive-compulsive category may include disorders such as obsessive compulsive disorder, obsessive compulsive personality disorder, hoarding, and eating disorders, whereas a behavioural and substance addiction category may include disorders such as substance addiction, pathological gambling, pyromania, kleptomania, internet addiction, and compulsive buying (Petry, 2006).

Despite many non-substance related addictions developing a ground swell of public recognition and support, Griffiths (2000) reported that “there is a form of ‘knee-jerk scepticism’ amongst the academic community – not least among those working in the field of addiction” (p.413). Griffiths (2000) argued that many of the core components of substance addiction such as salience, withdrawal, tolerance, mood modification, conflict and relapse can be shown to occur in non-substance activities. Despite conflict over the recognition of non-substance addictions as diagnosable addictive disorders, authors have recently argued for further research into the classification of non-substance

addictions utilizing the generic substance addiction diagnostic criteria (Petry, 2006). This may in part be due to, ironically, substance addiction research itself being spurred on by research into behavioural addictions (Potenza, 2006). Substance addiction researchers have been able to further redefine its models and definitions of addiction (Phillips, 2006), based on a 'cleaner' understanding of addiction, which is provided in behavioural addictions which are not altered by the ingestion of a drug (Petry, 2006).

In order to gain momentum in the field of non-substance addiction research, Griffiths (2000) proposed that if a non-substance related addiction such as gambling can be shown to be a 'bona fide' addiction, a precedent may be set which "opens the floodgates for other excessive behaviours to be theoretically considered as potential addictions" (p. 414). This section will begin by briefly reviewing the presenting phenomenology of gambling, before reviewing other proposed potential behavioural addictions, with a specific focus on compulsive shopping as a perceived 'novel' addiction. Finally, broad theories of behavioural addiction phenomenology will be reviewed, before developing a set of hypotheses which form the focus of this thesis.

Pathological gambling is leading the way as a non-substance activity becoming recognized as an addictive disorder (Lesieur & Rosenthal, 1991) There is also an increased focus on gambling behaviour, as the prevalence of gambling disorders is increasing, with the access to (proximity) and prevalence of gaming machines; and the development of 'online' (Internet) gambling, which provides access to gambling activities world wide, at anytime from the privacy of home (Korn, 2001). With this increased prevalence, gambling researchers are following hard on the heels of substance addiction research methodology.

Gambling has been identified as a psychiatric disorder in its own right 'pathological gambling', since 1980, and is included within the current DSM (DSM-IV; APA, 2000) as an impulse control disorder. Diagnostic criteria are based on substance dependence criteria such as dyscontrol, tolerance, and mood management. Pathological gambling also has gambling specific criteria including 'chasing' debt (gambling to recoup lost monies), lying (hiding debts) and illegal behaviours (Grusser, Plontzke, & Albrecht, 2005). Lesieur & Rosenthal (1991) described the similarities between

pathological gamblers and substance ‘addicts’ in that pathological gamblers gamble to manage negative affect; increase their bets in order to achieve a desired level of excitement (tolerance/physiological), and report an aroused, euphoric state while gambling (salience). Some gamblers also report ‘withdrawal’ symptoms when they stop gambling (physiological). Pathological gamblers also report neglect of social and recreational activities to the extent that they may go for days without sleeping or eating, and may gamble without getting up to go to the bathroom (dyscontrol) (Lesieur, & Rosenthal, 1991).

Another common aspect between substance addiction and pathological gambling is psychiatric comorbidities. Community samples of pathological gamblers present with higher levels of dysthymia, but not major depressive episodes or manic episodes, than the general population (Crockford & el-Guebaly, 1998). Community and clinical data shows that between 25 and 63% of pathological gamblers meet lifetime criteria for a substance use disorder, and 9 to 16% of patients with a substance use disorder are also found to be probable pathological gamblers (Crockford & el-Guebaly, 1998). Inpatient clinical studies have identified up to 75% of pathological gamblers meeting criteria for a major depressive disorder. A similar clinical study reported 52% of pathological gamblers had recurrent affective disorders and 28% had recurrent major depressive disorder (Crockford & el-Guebaly, 1998). Along with mood disorders, treatment studies have found an increased prevalence of anxiety disorders (Crockford & el-Guebaly, 1998).

Research into the aetiology and neuropharmacology of pathological gambling has taken much the same approach as substance dependence. Results of these studies fit in with recent theoretical models of addiction, which stress the role of the reward system (Everitt, Dickson, & Robbins, 2001; Grusser, Plontzke, Albrech, et al., 2007). Franzen, (2001) demonstrated that “an incentive unique to humans – money – produced patterns of brain activity that closely resembles patterns seen previously in response to other types of reward”, such as drugs, sex and food (Franzen, 2001.p2).

Researchers within behavioural addictions have acknowledged the validity of utilizing existing substance dependence diagnostic criteria, in identifying and measuring addiction phenomenology in behavioural disorders, “It may be expected that a definition which represents an extension of the currently accepted classification schema is more

likely to be accepted than one which represents a departure from it” (Goodman, 1990. p1404). Griffiths (2000) proposed that the ‘failure’ to compare behavioural addictions against existing substance dependence criteria has resulted in perpetuating “the scepticism shown in many quarters of the addiction research community” (p. 416). Petry (2006) proposed that utilizing existing substance addiction criteria for pathological gambling has several advantages over existing pathological gambling criteria, such as a reduced number of criteria to achieve a diagnosis (from 5 currently to 3), and providing a sub-clinical or prodromal category of gambling behaviour (i.e., gambling abuse). These would have clinical application in the provision of early intervention, and differential treatment, of gambling problems.

Petry (2006) also identified that the common addictive phenomenology across substance addiction and pathological gambling is reflected in the fact that five of the seven substance addiction criteria are nearly identical to those found in pathological gambling diagnostic criteria. As with research in the transition from traditional substances such as alcohol to non-traditional substance addiction (discussed earlier), the validity of analysing the endorsement rates of addictive diagnostic criteria has also been acknowledged and used within pathological gambling. Two studies based on North American national surveys, have reported endorsement rates of DSM-IV pathological gambling diagnostic criteria (the National Epidemiologic Survey on Alcohol and Related Conditions, Blanco, Hasin, & Petry et al., 2006; and the Gambling Impact and Behavior Study, Gerstein, Volberg , Toce, & Harwood, et al., 1999). These studies found that many of the diagnostic criteria for pathological gambling were responded to similarly. The authors also proposed that these criteria are similar to those found in substance addiction.

Pathological gambling has been used as an exemplar by many other non substance addictions due to its growing breadth of scientific research (Petry, 2006). A range of other types of human behaviour, which show varying forms and amount of addictive phenomenology, are gathering academic support. These ‘new’ addictions highlight the developing nature of the concept of addiction, these include: internet use (Li & Chung, 2006; Yellowlees & Marks, 2007; Young, 1996); online multiplayer role-play games (Chappell, Eatough, & Davies et al., 2006; Charlton & Danforth, 2007); compulsive sexual behaviour (Schneider et al., 2005); compulsive shopping (Black, 2001; McElroy,

Keck, Pope et al., 1994); and over eating and eating disorders (Davis, & Calridge, 1998; Gold, Frost-Pineda, & Jacobs, 2003; Joranby, Pineda, & Gold, 2005).

Along with an increased attention to a broad range of proposed addictive behaviour, there is growing support for academic and clinical acknowledgment of a publicly perceived 'novel' disorder - compulsive shopping. Problematic shopping symptomology has been evident for over 90 years, and was first termed 'oniomania' by German psychiatrist Emil Kraepelin (Black, 2001). Research into this area had been limited to individual case studies and consumer literature, but has gained increased attention due to the increase in research into compulsive disorders (Black, 2001). The term compulsive shopping and compulsive buying are used in current literature to represent this phenomenon, and are diagnosed under the category 'Disorder of Impulse control not otherwise specified', within the DSM-IV (APA, 2000). As with substance addiction and other behavioural addictions, compulsive shopping is characterized by salience (preoccupations and cravings); dyscontrol (urges or compulsions to shop and purchase, and associated adverse social and legal consequences) (Black, 2001; Faber & O'Guinn, 1992). Individuals diagnosed with this disorder report experiencing: irresistible urges to buy; repeated attempts to reduce their behaviour; powerful emotions while shopping and a negative affect at completion of shopping; and secondary emotions such as guilt and remorse after compulsive shopping episodes. These individuals also report the important role of environmental cues such as colours, sounds, lighting and odours of stores in motivating shopping behaviour (Black, 2001; McElroy, Keck, Pope et al. 1994). One notable distinction from other addictive disorders is that 80 to 90% of compulsive shoppers are female (Faber & O'Guinn, 1992).

As with substance use and other addictive disorders, psychiatric comorbidity is common in compulsive shopping populations, including mood; anxiety (including obsessive-compulsive disorder); substance use; eating; personality; and impulse control disorders (Christenson, Faber, & de Zwaan et al., 1994; Monahan, Black, & Gabel, 1996). In one clinical study 50% of individuals reported a history of anxiety disorders, 45.8% reported substance abuse or dependence, and 20.8% reported an eating disorder (Christenson et al., 1994).

The identification of non substance addictions, with compulsive shopping as an example, highlights the broad representation and utility of existing addiction concepts, and substance addiction diagnostic criteria. Despite this, several theories have been developed to represent non-substance addictions. These will be briefly reviewed in the following section.

Based on research that has identified compulsion and high impulsivity, as key aspects underpinning proposed non-substance addictions, several researchers have explored the similarities and relationship between these behaviours, and Impulse control disorders (ICDs), and Obsessive compulsive disorders (OCDs). The term ‘Obsessive-Compulsive Spectrum Disorders’ (OCSDs) was proposed by Hollander (1993; Hollander & Rosen, 1999). Within OCSDs, it is proposed that different obsessive and compulsive disorders can be grouped under four ‘clusters’. One particular cluster is typified by impulsive behaviours, including pathological gambling, pyromania, sexual compulsions, and compulsive buying. Schmitz (2005) supported this classification scheme, proposing that there is evidence within these disorders of genetic predispositions that manifest neurophysiological changes similar to those identified within substance addiction. Along with pathological gambling and problematic internet use, other ‘Obsessive-Compulsive Spectrum Disorders’ such as pyromania and kleptomania, are reported to involve addictive phenomenology. These include: tension and arousal when approaching or trying to restrain from behaviour (dyscontrol); and the role of pleasure, gratification or relief from tension on participating in the behaviour (salience and mood modification). Case studies from kleptomaniacs have found “sexual excitement followed by relaxation, or a way to relieve stressful situations” (Schmitz, 2005. p157). Similarly, pyromaniacs describe experiencing pleasure or gratification from either or both setting fires or participating in the aftermath (Schmitz, 2005). Collectively these disorders also share the elements of dyscontrol and associated psychosocial consequences experienced within substance addiction. The post-high ‘crash’ experienced by stimulant users (i.e., profound guilt, dysphoria and depression) have also been reported to be experienced by individuals with these disorders, (Schmitz, 2005).

Lejoyeux, McLoughlin, & Ades (2000) conducted a literature review of impulse control disorders, proposing the term 'Behavioural Dependence Disorder', which the authors reported was characterized by "the repetitive occurrence of impulsive and uncontrolled behaviours" (Lejoyeux et al., 2000. p129). Table 2 presents a summary of three published sets of aspects or diagnostic criteria for behavioural addictions.

Table 2

*Summary of proposed behavioural addiction phenomenology*

Category	Phenomenology	Authors		
		1	2	3
Physiological				
Affect	Pleasure (gratification) or relief (tension release) at the time of engaging in the behaviour, or shortly thereafter.	x	x	x
	Hedonic tone in early stage of addiction			x
Withdrawal	Return of the urge and tension over hours, days or weeks			x
	Restlessness or irritability if unable to engage in the behaviour	x		
Tolerance	Need to increase the intensity or frequency of the behaviour in order to achieve the desired effect or diminished effect with continued behaviour of the same intensity	x		
Dyscontrol				
	Recurrent failure to resist impulses to engage in a specified behaviour, which may be harmful to self or others	x	x	
	A feeling of lack of control while engaging in the behaviour	x		
	Frequent engaging in the behaviour to a greater extent or over a longer period than intended	x		
	Repeated efforts to reduce, control or stop the behaviour	x		
	A great deal of time spent in activities necessary for the behaviour, engaging in the behaviour or recovering from its effects	x		
	Frequent engaging in the behaviour when expected to fulfil occupational, academic, domestic or social obligations	x		
	Important social, occupational or recreational activities given up or reduced because of the behaviour	x		
	Continuation of the behaviour despite knowledge of having a persistent or recurrent social, financial, psychological or physical problem that is caused or exacerbated by the behaviour	x		
Saliency				
	Increased sense of tension or excitement immediately prior to initiating the behaviour or unless the behaviour is engaged in.	x	x	x
	Frequent preoccupation with the behaviour or with activity that is preparatory to the behaviour	x		
	External cues unique to a given addiction syndrome			x
	Secondary conditioning by external and internal cues (dysphoria, boredom)			x

*Authors: 1 Goodman (1990); 2 Lejoyeux, McLoughlin, & Ades (2000); 3 Marks (1990)*

The three published sets of aspects or diagnostic criteria for behavioural addictions in Table 2 are categorized under the three categories introduced earlier. Concepts of mood management and reward are incorporated under the category of physiology, to recognize that affective, emotional and physiological aspects of reward (Le Moal & Koob, 1997) and withdrawal (Budney, 2006) can be viewed as internal homeostatic processes.

As presented in Table 2, pleasure and relief, which is also associated with both seeking reward and mood management, was incorporated by all three theories. Emotional aspects of withdrawal, referred to as tension and irritability, were identified by Marks (1990) and Goodman (1990). Tolerance was only identified by Goodman (1990). Goodman (1990) and Lejoyeux, et al., (2000) identified dyscontrol as a key aspect, although Marks (1990) did identify an urge to participate in a 'counterproductive behaviour'. The remaining 7 aspects of dyscontrol are arguably incorporated in the first dyscontrol symptom. The broad range of dyscontrol items by Goodman (1990), reflect the development of these items from existing substance dependence criteria. Once again the difference here may be the use of terminology; in this case, Goodman (1990) appears to have extensively defined a single concept. All three theories identify a key aspect of salience, 'increased tension or excitement immediately prior to initiating addictive behaviour'. Whereas Goodman (1990) identified preoccupation, and Marks (1990) identified the involvement of internal and external cues in influencing addictive behaviour.

In summary, all three diagnostic categories had at least one item endorsed by each theory, although tolerance was only supported by one theory and withdrawal by two. The lack of concurrence may in part be due to the use of terminology. In addition, two of the theories proposed key aspects, whereas Goodman (1990) proposed a set of diagnostic criteria. Diagnostic criteria are understandably more comprehensive in nature, as they act to describe and differentiate broader key aspects. It is also evident from these theories, that behavioural addictions can be represented by the three standard substance addiction diagnostic categories, and by an overall unidimensional concept of addiction. What is also evident from the above descriptions is that much of the wording for these categories is representative of the psychological aspects of addiction.

From the research reviewed, it is evident that addiction research was founded on alcohol dependence, has branched across different substances, and now has some scientific support to acknowledge pathological gambling as an addictive disorder. Despite this crossing of boundaries, there is still scepticism over a range of new proposed addictive disorders, such as compulsive shopping. In order to fill this gap in current knowledge, overall this study aims to determine if there is a set of common addiction phenomenology. More specifically, this thesis sets out to answer the following research questions:

- a. Is there a set of common characteristics which are present in addictive behaviour across compulsive shopping, pathological gambling and alcohol dependence?  
And if so, are those items which are not common to all three disorders, related to the specific substance or activity related to each disorder?
  
- b. Do people with compulsive shopping and pathological gambling exhibit similar rates of anxiety and mood disturbance (depression) as observed in those with alcohol dependence? Does the level of anxiety/mood disturbance score relate to the severity of addictive disorder?

### 3. Method

#### *3.1 Ethics*

Ethical approval was obtained from the Waikato University Psychology Department Ethics Committee for Human Research on 5/9/2006. Enquiries were made to Te Kahui Hauora O Ngati Koata Trust, and the Salvation Army, regarding obtaining ethical approval to advertise for participants within their organisations. Both agencies gave the researcher permission to advertise for participants in their respective services, but stressed to the users of their services, that their participation was in no way compulsory.

#### *3.2 Participants*

Recruitment of participants took place in a variety of ways. Alcohol dependent (AD) participants were recruited by posting fliers at the Salvation Army Hamilton Bridge Programme, a service which provides individual and group therapy options for individuals with alcohol and/or drug use concerns. Fliers were also posted, and a presentation made by the researcher to residents at the Auckland Salvation Army Bridge residential programme (a drug and alcohol residential treatment programme).

Pathological Gambling (PG) participants were recruited by posting fliers at three services which provided dedicated gambling counselling. These included, the Salvation Army Oasis Centre, and Pacific Peoples Addiction Service Incorporated, both services based in Hamilton; and Te Kahui Hauora O Ngati Koata Trust, based in Nelson. A presentation was also made by the researcher at a bi-monthly combined Nelson Problem Gambling Foundation and Te Kahui Hauora O Ngati Koata Trust end of year service users meeting and social event.

Compulsive shopping (CS) participants were advertised for via 41 budget advisory services, whose email addresses were listed as members of the New Zealand federation of Family Budgeting Services Incorporated. Advertising also involved

initiating 'threads' on 'Savingsadvice.com' a budgeting and financial forums; and on both 'Ebay.com' and 'trademe.co.nz' online auction and shopping websites. An article on the study, including a request for compulsive shopping participants was within The Hamilton Press (25/10/06; see appendix A).

All advertisements, including online, newspaper, and fliers that were both emailed and posted, listed the research goals and participants sought, along with researchers contact details (See appendix B for alcohol dependent, pathological gambling and compulsive shopping participant recruitment fliers). Participants were invited to contact the researcher for further information about the study, or to make an appointment to participate.

All participants were between the ages of 18 and 60 years. Participants who responded to either the PG or AD groups self reported having a diagnosis which met the criteria to participate in these groups. The CS group responded to advertising, which asked for individuals who found it difficult to control their buying, leading to conflict and problems with their relationships and general wellbeing The Compulsive Buying Screen (CBS) was administered to the CS group in order to identify the presence of Compulsive Buying.

A total of 64 participants were recruited. 24 participants were recruited in the Alcohol dependent (AD) group; 20 in the Pathological gambling (PG) group and 20 in the Compulsive Shopping (CS) group. The age of the participants ranged from 19 – 60 yrs, with a mean of 34.9 (SD = 10.8). 51.6% of participants (n 33) were female, and 48.8% (n = 31) were male. Of the total population, 43.8% (n= 28) identified as unemployed; 54.7% (n=35) identified as employed either fulltime or part time; and 1 identified as a student (1.6%). Table 3 presents participants age, gender, and occupation by group.

As presented in Table 3, the PG participants had a higher mean age compared to AD and CS participants respectively. Both the PG and AD groups were predominantly male, whereas the entire CS population was female. The PG had the highest percentage of participants in employment, followed by CS, with AD participants having the lowest.

Table 3

*Age, Gender, and Occupation categorized by addiction group*

Group	Age		Gender		Occupation		
	Mean	Male	Female	Employed	Unemployed	Student	
AD (n=24)	34	70.8%(n=17)	29.2% (n=7)	33.3% (n=8)	62.5% (n=15)	4.2% (n=1)	
PG (n=20)	38	70% (n=14)	30% (n=6)	75% (n=15)	25% (n=5)	0%	
CS (n=20)	33	0%	100%	60% (n=12)	40% (n=8)	0%	

*AD = alcohol dependence participants; PG = pathological gambling participants; CS = compulsive shopping participants.*

Participants identified their ethnic group(s) as New Zealand European/Pakeha 57.8% (n 37); 26.6% Maori (n 17) and 3.1% Pasifika (n 2). 12.5% self-identifying as either Indian, German, American, Asian, and identified mixed heritage, including Maori and Pacific Islands, Pacific Islands and Asian, and Asian and European (n 8). These data are presented by group in Table 4.

Table 4

*Self reported ethnicities of each group of participants*

Ethnicity	CS n=20		PG n=20		AD n=24	
	n	%	n	%	n	%
European/Pakeha	11	55	11	55	15	62.5
Maori	4	20	8	40	5	20.8
Euro/Maori	1	5	0	0	0	0
Pacific Islands	1	5	0	0	1	4.2
Indian	1	5	0	0	0	0
Maori/Pacific	1	5	0	0	0	0
Asian/European	1	5	0	0	0	0
Samoan/Chinese	0	0	1	5	0	0
NZ German	0	0	0	0	1	4.2
English	0	0	0	0	1	4.2
American	0	0	0	0	1	4.2

*AD = alcohol dependence participants; PG = pathological gambling participants; CS = compulsive shopping participants.*

As shown in Table 4, all three groups had similar numbers of Maori and Pakeha/European participants. Pacific and Asian ethnicities self-reported by either specific ethnic group (i.e., Chinese or Samoan) or as Pacific or Asian.

22 participants identified as having one or more diagnoses of mental illness. These data are presented in Table 5.

Table 5

*Self-reported mental illness diagnoses by addiction group*

Disorder	CS n=20		PG n=20		AD n=24		Total n=64	
	n	%	n	%	n	%	n	%
Depression	5	25	6	30	5	20.8	16	25
Anxiety	4	20	1	5	1	4.2	6	9.4
Comorbid Anxiety and depression	3	15	1	5	1	4.2	5	7.8
Bipolar 1			1	5	3	12.5	4	6.3
Head injury	1	5	2	10	0	0	3	4.7
PTSD	1	5	1	5	0	0	2	3.1
Other (Agoraphobia; Obsessional neurosis; borderline)	1	5	2	10	0	0	3	4.7

*AD = alcohol dependence participants; PG = pathological gambling participants; CS = compulsive shopping participants.*

As shown in Table 5, the highest reported occurrence of mental illness was depression, which was comparable across each of the three groups. The AD group reported a higher rate of Bipolar than both CS and PG, whereas the CS group self-reported higher rates of anxiety and co-morbid anxiety and depression than both the AD and PG groups. The CS and PG also presented with additional major mental illness, medical problems and personality disorders, including PTSD, Agoraphobia, Obsessional Neurosis, Borderline Personality Disorder; and Head Injuries.

Addictive disorders were also self reported by participants. There was some cross over of addictive disorders amongst participants. The highest co-occurrence was found with alcohol dependence (n=3) within the Compulsive Shopping group (CS), followed by one Alcohol Dependent participant identifying having ‘problems with gambling’. Substance (drug) dependence or problematic use was reported across all groups AD (n=2), PG (n=2), and CS (n=3).

### *3.3 Measures*

Initially, a demographic and qualitative information questionnaire was developed. A screening tool for Compulsive Shopping was also sought, as there is currently no established treatment provider or widely used screening or diagnostic measures for compulsive shopping within New Zealand. No screening tools for alcohol dependence or pathological gambling were sought, as participants with these specific diagnoses were advertised for, particularly within the associated treatment services (of which a confirmed diagnosis is usually required to receive services).

Following these initial questionnaires, measures were sought which addressed the two questions. These measures are presented under the headings of ‘Measuring Key aspects of addiction’ (A) Addiction Diagnostic Criteria, and (B) Physiology, Dyscontrol, and Salience phenomenology. Measures associated with the second question are addressed under the heading ‘Measuring Key aspects of addiction’ (C) Anxiety and Depression.

### *3.4 Demographics and qualitative information questionnaire*

The Demographic and qualitative information questionnaire developed for this study (see appendix C), covered topics such as: name; age; gender; ethnicity; employment status including employed (part time or fulltime), unemployed, or student. Participants also self-reported psychiatric diagnoses. In addition, each participant was asked whether they consider their identified disorder to be an addiction, and whether they consider the alternative two disorders studied to be addictive disorders. Participants were given space

to make any comments related to their experience in completing these forms and/or their experience of the disorder in question.

### *3.5 Compulsive Shopping Screen*

A range of self-report instruments have been developed for diagnosing and measuring different aspects of Compulsive Shopping, including the Compulsive Buying Measurement Scale (Valence, D'Astous, & Fortier, 1988); the Addictive Buying Indicator (ABI) (Scherhorn, Reisch & Raab, 1990); the Yale Brown Obsessive Compulsive Scale – Shopping Version (Monahan, Black, & Gabel, 1996); and the Compulsive Buying Scale (CBS; Faber & O'Guinn, 1992)

The Compulsive Buying Scale (CBS; Faber & O'Guinn, 1992) is a screening instrument utilized to identify compulsive buyers. The CBS was chosen for this study as it is still widely used in research and practice, has been identified as an important tool in screening for compulsive buying (Black, 2001). The CBS is also one of the simplest, and presently widely used screening tools for compulsive buying available. The CBS has been shown to have good predictive validity, able to differentiate compulsive from non-compulsive buyers (Black, Gabel, & Hansen, 2000; Mohahan, Black & Gabel, 1996). The CBS has been reported to have good content validity, and external validity (accurate diagnosis of 92%) (Faber & O'Guinn, 1992). The CBS also shows wide applicability, having been used in clinical and population studies, and has been administered in person and over the phone (Mitchell, Burgard, & Faber et al., 2006).

The Compulsive Buying Screen (CBS) (Faber & O'Guinn, 1992), (see appendix D), consists of seven statements representing specific behaviours and feelings related to Compulsive Buying: Items 1 and 6 reflect a need to spend money; item 2 an awareness that spending is abnormal; items 3 and 4 that they are experiencing a loss of control; item 5 that spending in order to improve mood; and item 7 identifies financial problems. All items are on a Likert rating scale. Item 1 is rated from 1 strongly agree to 5 strongly disagree. Items 2 to 7 are rated on frequency 1 very often to 5, never (Faber & O'Guinn, 1992).

Based on previous epidemiological studies by Faber and O'Guinn (1992), a cut off score of two standard deviations above the mean for shopping behaviour was used to classify a 'compulsive buyer'. The use of two standard deviations above the mean to classify psychopathology is common with other psychometric measures (Faber & O'Guinn, 1992).

In order to answer the first question, measures were sought that could measure and differentiate specific and general addictive phenomenology.

### *3.6 Measuring Key aspects of addiction (A): Addiction Diagnostic Criteria*

Despite the development of behavioural addiction features (Goodman, 1990; Lejoyeux et al., 2000; and Marks, 1990), there is a lack of data available for comparing item endorsement rates (diagnostic criteria) across behavioural addictions, or between behavioural and substance addictions. Due to the overarching purpose of comparing addictive phenomenology across substance and behavioural addictions, diagnostic criteria for substance dependence was used to produce a generic 'Addictive Disorders Questionnaire' (ADQ) (See appendix E, for addiction specific versions of the ADQ). As discussed in the introduction, this approach is supported by Saunders (2006), who cited the importance of identifying the utility of addictive diagnostic criteria to behaviours outside of traditional substance use disorders.

Items on the ADQ were developed to closely match the standard DSM-IV diagnostic criteria for Alcohol Dependence. One symptom is selected from the International Classification of Diseases-10th Revision (ICD-10: World Health Organization 1990); 'a strong desire or sense of compulsion to take drugs or alcohol' to represent the concept of craving (salience), which is the only symptom significantly different from those found in the DSM diagnostic criteria (Grant & Towle, 1991). The development of the ADQ was carried out to both measure the severity of the addiction, and to provide a set of addiction symptoms which may identify substance or activity specific aspects of addiction in each group.

Following recommendations from studies which sought to improve the accuracy of substance diagnostic criteria (Budney, 2006; Budney et al., 1998; Hughes, 2006; Nelson et al., 1999; Swift et al., 2001), Questions were asked specific to the substance (i.e., alcohol) or activity (i.e., gambling or shopping) (i.e., Have you experienced a strong desire or sense of compulsion to gamble?). Also descriptors were added to the criteria for withdrawal to encompass both the physiological and emotional aspects of withdrawal, as recommended by Schmitz (2005) and Budney (2006) (i.e., Have you found that during periods of no shopping that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are relieved by shopping?).

The questionnaire is a self-report yes/no questionnaire, with 11 questions exploring areas related to dyscontrol, salience, and physiology. Scoring on the ADQ is based on the diagnostic criteria in the DSM-IV (American Psychiatric Association, 2000). A score of  $\geq 3$  is deemed to be indicative of dependence (American Psychiatric Association, 2000) As identified by Budney (2006), severity scores can be deemed different for specific substances (i.e., 4-6 for cannabis, and 6-7 for cocaine). This study utilized the higher severity cut-off score of  $\geq 7$  for the ADQ.

### *3.7 Measuring Key aspects of addiction (B) physiological, dyscontrol, and salience phenomenology*

Aspects related to the physiological symptom category were measured within items on the ADQ. In order to measure both salience and dyscontrol, measures were sought which addressed impulsivity, craving and compulsion.

Several researchers have found similarities between the nature of obsessions and compulsions in Obsessive Compulsive Disorder (OCD) and those found in a range of other disorders, including substance addictions and the specific populations used in this study. Obsessions share similar features of intrusive thoughts and cognitive elaboration referred to as craving in the Elaborated Intrusion (EI) theory of addiction (Kavanagh, Andrade, & May, 2004). This can be seen as a key reflection of salience; whereas compulsions reflect the occurrence of dyscontrol evident in addiction phenomenology.

The Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) (Goodman, Price, Rasmussen et al., 1989) is a widely used measure of obsessions, compulsions, and severity in Obsessive Compulsive Disorder (OCD). The Y-BOCS differs from other measures of OCD as it does not focus on the content of patients' symptoms, instead it focuses on the subject's experience of the symptoms. The Y-BOCS is primarily used as an outcome measure, sensitive to changes in both obsessions and compulsions.

Based on the premise that obsessions reflect cognitive elaboration, and that compulsions can reflect both cued behaviour and compulsive behaviour; and that collectively both obsession and compulsion are argued to represent the construct of craving (Gau, Liu & Lee et al., 2005), the Y-BOCS has been adapted for specific addiction populations. These include, Alcohol (Yale-Brown Obsessive Compulsive Scale - heavy drinking, Y-BOCS-hd; Modell, Glaser, Mountz, Schaltz, & Cyr, 1992), Pathological Gambling (The Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling, PG-YBOCS; Pallanti, DeCaria, Grant, Urpe, & Hollander, 2005), and Compulsive Shopping (The Yale-Brown Obsessive Compulsive Scale-Shopping Version, Y-BOCS-SV; Monahan, Black, & Gabel, 1996).

The Yale-Brown Obsessive Compulsive Scale - heavy drinking (Y-BOCS-hd) (Modell, Glaser, Mountz, Schaltz, & Cyr, 1992) (see appendix F) was developed on the basis of clinical findings which showed similarities between urges and desires to drink heavily and obsessive-compulsive disorders (OCD) (Modell et al., 1992).

The YBOCS-hd is one of the widest used measures on craving in alcohol dependence populations (Gau, Liu & Lee et al., 2005). The YBOCS-hd has been modified by other researchers into the Obsessive Compulsive Drinking Scale (Anton, Moak & Latham, 1995). Yet the YBOCS-hd is still widely used, and has been translated and trialled in several different languages (Gau, Liu & Lee et al., 2005).

The YBOCS-hd has been shown to discriminate effectively between alcohol abusers and normal drinkers, and has been reported to have good internal consistency (Federoff, Sobell, Agrawal, Sobell, & Gavin, 1999), and strong construct validity (Connor, Feeny & Young, 2005). Of the instruments for the assessment of alcohol craving, the YBOCS-hd and its modified versions (Obsessive Compulsive Drinking

Scale, Anton, Moak & Latham, 1995) have been the most frequently used in alcoholism studies (Gau, Liu & Lee et al., 2005).

The Y-BOCS-hd is a 10-item clinician-administered questionnaire that measures the severity of symptoms over a recent time interval (usually within the past one/two weeks), and has been used for both assessment and treatment planning (Federoff et al., 1999; Modell et al, 1992). Federoff et al., (1999) introduced a self-administered version of the YBOCS-hd. Each item of the Y-BOCS-hd is rated from 0 (no symptoms) to 4 (extreme symptoms), basically characterizing and quantifying symptoms. The Y-BOCS-hd yields obsessive (items 1 – 5) and compulsive (items 6 – 10) subscales scores as well as a total scale score. Higher scores on the Y-BOCS-hd sub-scales and total score reflects greater symptom severity and poorer functioning (Federoff et al., 1999; Modell et al, 1992). A cut-off score of  $\geq 7$  (total score), has been proposed to differentiate alcohol dependent participants from normal controls (Modell et al, 1992).

The Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling (PG-YBOCS) (Pallanti, DeCaria, Grant, Urpe, & Hollander, 2005) (see appendix F), was developed in much the same way as the YBOCS-hd, following the same scoring procedure, with wording representing severity and interference caused by gambling thoughts and behaviours. Grant, Kim, & Odlaung (2007) utilized a cut off score of 15 or greater as a measure of gambling severity for inclusion in a recent study. As with the development of the Y-BOCS-hd, the PG-YBOCS was developed due to clinical overlap in OCD and pathological gambling symptoms (Blazczynski, 1999; Frost, Meagher, & Riskind, 2001). The PG-YBOCS has been found to be an effective measure of severity and change in symptoms in pathological gambling populations (Pallanti, DeCaria, & Grant et al., 2005), and is reported to have good psychometric properties, including, good inter-rater reliability for total score, item-total correlations, and for each subscale (Pallanti, DeCaria, & Grant et al., 2005). The PG-YBOCS also compared well to other measures of pathological gambling, showing convergent, discriminant and content validity (Pallanti, DeCaria, & Grant et al., 2005).

The Yale-Brown Obsessive Compulsive Scale-Shopping Version (Y-BOCS-SV) (Mohahan, Black, & Gabel, 1996) (see appendix F), was developed following clinical findings showing similarity in both obsessional thoughts and compulsive behaviours related to buying (Black, Gabel, Hansen, & Schlosser, 2000; Mitchell, Burgard, Faber, Crosby, & de Zwaan, 2006).

The Y-BOCS-SV is administered and scored similarly to the Y-BOCS-hd. The wording of the Y-BOCS-SV covers questions related to severity and interference caused by buying and shopping thoughts and behaviours. The Y-BOCS-SV was originally developed to measure severity and change of compulsive buying, which is not adequately measured in the Compulsive Buying Screen (CBS) (Faber & O'Guinn, 1992; Monahan, Black, & Gabel., 1996). The YBOCS-SV has been reported to have good psychometric properties, including, good convergent and discriminant validity (Mohahan et al., 1996), test-retest and interrater reliability, and face and construct validity (Koran, Chuong, & Bullock et al., 2003). In addition, it has been shown to be a reliable and valid measure of severity and change (Koran, Chuong, & Bullock et al., 2003; Mitchell, Burgard, & Faber et al., 2006). However much of this data was generated from studies using small sample sizes. As with previous adaptations of the Y-BOCS, a cut off score has been proposed ( $\geq 16$ ; Mueller, et al., 2007), although the study in which this is used does not identify whether it is for measuring addiction severity or for diagnostic purposes.

These adapted versions of the Y-BOCS were chosen for use within this study, as the Y-BOCS allows analysis of different aspects of addiction phenomenology in its subscales (i.e., obsessions and compulsions) and the total score (craving); have measures specific to each group, yet compare the same constructs, which makes it possible to compare results; and were readily available and appropriate for use by the researcher.

There are a range of instruments used to measure another aspect of compulsive behaviour and dyscontrol – impulsivity. Webster and Jackson (1997) identified a diverse number of definitions of impulsivity, and an equally diverse number of assessment measures.

Although the literature shows that these measures don't correlate very highly (Webster & Jackson, 1997).

There are a range of behavioural measures, and self-report inventories of impulsivity. A range of computerized behavioural approaches have been developed to measure impulsiveness, including Reaction time measures (MFFT) (Kagan, Rosman, Day, Albert, & Phillips, 1964); The Balloon Analogue Risk Task (BART) (Lejuez, Aklin, Richards, et al., 2003); and The Iowa Gambling Task (GT) (Bechara, 2004).

More appropriate to use within the present study, are the wide range of self-report inventories developed to measure impulsivity. Eysenck et al. (1985) developed the '1.7' a 54-item self-report scale that assesses two broad impulsivity dimensions "impulsiveness" (19 items) and 'venturesomeness' (16 items), and an empathy dimension (19 items). Dickman (1990) developed the Functional and Dysfunctional Impulsivity (FDI) scale, measuring two dimensions of impulsiveness, 'functional impulsivity' (11 items) and 'dysfunctional impulsivity' (12 items). Both the 'FDI' and '1.7' have been reported to have good psychometric properties (Webster & Jackson, 1997).

A range of broad personality scales have been developed which include subscales measuring properties of impulsivity, including the Guilford-Zimmerman Temperament Survey (GZTS) (Guilford & Zimmerman, 1949) a 300 item measure of 10 basic personality dimensions; and the more commonly used Minnesota Multiphasic Personality Inventory (MMPI) (Hathaway & McKinley, 1942), which the current version (MMPI-2) (Butcher, Dahlstrom, & Graham, et al., 1989) has 567 items, taking between 1 and 2 hours to complete. Both these personality inventories have a wide range of data available and excellent psychometric properties (Webster & Jackson, 1997).

One of the oldest and most widely used impulsivity inventories is the Barratt Impulsiveness Scale (BIS) (Barratt, 1959). The BIS is one of the most widely used self report measures of impulsiveness (Spinella, 2007), and has been used across a range of disorders, including alcohol dependence (Castellani & Rugle, 1995; Dom, de Wilde, & Hulsun et al., 2006; Lejoyeux, Feuche & Solomon et al., 1998); pathological gambling (Castellani & Rugle, 1995; Fuentes, Tavares, & Artes et al., 2006; Nower & Blaszczynski, 2006); impulse control disorders, including compulsive shopping, and substance use disorders (Bayle, Caci, & Millet et al., 2003). The BIS has also been used to examine the relationship of impulsivity to relapse in addiction (Bowden-Jones, McPhillips & Joyce, 2006). Findings with BIS in research using objective

neurophysiological and neuroimaging measures in clinical populations, strongly support the validity of the BIS (Spinella, 2007).

The Barratt Impulsivity Scale (BIS – 11) (Barratt & Stanford, 2000) was chosen for inclusion in this study, due to being both a commonly used impulsivity inventory, and having been used within a range of disorders, including pathological gambling (Fuentes, Tavares, & Artes et al., 2006; Nower & Blaszczynski, 2006), and alcohol dependence (Dom, de Wilde, & Hulstijn et al, 2006). The BIS has also been chosen due to the ease of use, compared to larger self-report inventories such as the Guilford-Zimmerman Temperament Survey (GZTS) (Guilford & Zimmerman, 1949), and because this particular version of the BIS was being utilized in other studies at the University where the researcher was based. The BIS was also chosen ahead of behavioural measures such as the Iowa Gambling Task and the Balloon Analogue Risk Task, due to the fact that they both involve the use of money and some element of behaviour similar to gambling, which would pose problems in differentiating substance/activity specific behaviour from generalized behaviours, particularly in the gambling group.

The BIS was originally developed as a unidimensional measure (Barratt, 1959), and has been redefined over time to present different types and different numbers of impulsivity dimensions (Barratt 1983, 1985). Present BIS scales are proposed to measure three dimensions (1) Attentional Impulsiveness, which refers to the characteristics of hectic thinking and hasty decisions; (2) Motor Impulsiveness, which refers to fast reactions and restlessness; and (3) Non-Planning Impulsiveness, which refers to a drive for immediate outcomes and failure to assess long term consequences (Frost, Meagher, & Riskind, 2001).

The version of the Barratt Impulsiveness Scale used within this study (see appendix G) is a 28 item Barratt Impulsiveness Scale–IIr (BIS-IIr) (Barratt, 1994) adapted by Ireland (2004). The BIS is a Likert scale, rated from Rarely/Never (0), to Almost always/always (4). The BIS yields a total score and three subscales assessing different aspects of impulsiveness, as described above. Higher scores on each scale and the total score are indicative of a higher level of impulsiveness. There are no standardized norms for the BIS-11 (Mueller, Mueller, Albert, & Mertens, et al., 2007). However, the

German version of the BIS-11 (Ettelt, Ruhrmann, & Barnow et al., 2006; Preuss, Rujescu, & Giegling et al., 2003) has an impulsivity severity cut-off score of above 60. Due to disagreement within the literature regarding the structure of subscales on the BIS, and that the total score of the BIS is more commonly reported, the present study will report total BIS impulsivity scores.

### *3.8 Measuring key aspects of addiction (C): Anxiety and Depression*

Due to the ‘demographic and qualitative questionnaire’ developed for this study, providing for self-reported psychiatric co-morbidity, it was decided to seek measures which provided a measure of symptom severity, specifically anxiety and depression, both found to be common across the three groups within this study. This may also assist in addressing the key aspects of mood management in behavioural addictions identified by Griffiths (2000).

A range of measures of psychopathology, both self-administered and clinician administered are available, including those designed to screen and diagnose different disorders, such as the Beck Depression Inventory (Beck & Steer, 1984), the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1998), and the Hamilton Depression Rating Scale (HAM-D) (Hamilton, 1960); and those which are designed to identify symptoms of mental illness, such as the Symptoms Checklist 90 revised (SCL-90R) (Derogatis, 1994), and the Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983), an abbreviated version of the SCL-90R. The Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1994) is a self-report questionnaire measuring current symptoms associated with psychopathology. The SCL-90 has been used with a range of populations, including Pathological Gambling (Petry, 2000), and Alcohol Dependence (Kiefer, Helwig, & Tarnaske et al., 2005; Lucht, Jahn & Barnow et al., 2002). Normative data on large samples of psychiatric samples (community based and inpatient) and non psychiatric controls are available. Criterion validation studies have shown strong correlations between SCL-90 scores and other personality and psychiatric comorbidity measures (Petry, 2000). The SCL-90R has been reported to have highly acceptable levels of convergent-discriminant validity with the MMPI (Derogatis, 1994); and concurrent

validity between the SCL-90R depression scale and the Hamilton Rating scale for depression (Hamilton, 1967). Koeter (1992) found that the SCL-90R was comparable to the General Health Questionnaire 28 item screen (GHQ-28) (Goldberg & Hiller, 1979), yet the anxiety subscale of the SCL-90R was preferable to the anxiety information obtained from the GHQ-28.

The SCL-90-R is available in approximately 24 languages, and research has been conducted on its use in populations outside of the United States. The SCL-90 has been used to screen for psychological disorders in non-psychiatric populations. The SCL-90 has also been used to measure severity of symptoms as separate subscales or total scores within a range of different psychiatric populations, and to identify individuals at higher risk of relapse after alcohol detoxification (Lucht, Jahn, Barnow, & Freyberger, 2002).

The Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1994) was chosen for use in this study, as a range of studies have shown excellent reliability and validity when used with a range of disorders, including substance addiction, depression and anxiety disorders (Derogatis, 1994). The SCL-90R is also briefer to administer, readily available to the researcher, and one of a few psychiatric measures that comes in a self-report format. The SCL-90 is also preferable within this study as it has been used online (via the internet) (Vallejo, Jordán, Díaz, et al., 2007), which is one of the methods used within this study; has been used in a wide range of psychiatric and substance dependence populations; is currently being used with New Zealand psychiatric and drug dependent populations at the National Addiction Centre, Otago University; and has been used within Maori populations in New Zealand (Barker-Collo, 2003)

The SCL-90-R contains nine primary symptom scales: somatization; obsessive-compulsive; interpersonal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid ideation; and psychoticism. The SCL 90R also contains three global indices of distress: Global Severity Index; Positive Symptom Distress Index; and Total Index. Each item presents a particular symptom which the respondent rates for how problematic the symptom has been in the past week. Questions are rated on a 5 point scale from not at all (0) to extremely (4). Scale scores are computed by summing the values of each contributing item completed, divided by the total number of items completed. A Global

Severity t score can be calculated, with a t score of 63 or greater meeting “caseness” (Barker-Collo, 2003). Due to anxiety and depression being the main psychiatric symptoms of interest within this study, only these subscales will be reported.

### *3.9 Research procedure*

Interested participants were offered appointments to discuss the research in person, and were then either posted or emailed an information sheet which outlined the research procedure, participant rights and goals of the research (see appendix H, for addiction specific information sheets).

Upon agreement to participate in the research, consent was discussed, and a consent form was signed (see appendix I). If participants chose to participate in the research via email, a consent form was emailed along with other questionnaires, and the information sheet stated that consent was deemed to have been given by the participant by them completing and returning the questionnaires. The research information sheets also provided instructions on completing questionnaires online and the order in which to complete the questionnaires. Otherwise, questionnaires were completed in person at the participating agencies, or at the homes of participants. Alternatively, some participants returned questionnaires by post. Completing the questionnaires took approximately 25 minutes.

The majority of CS participants completed questionnaires via email, whereas the majority of AD participants completed questionnaires in the presence of the researcher at the Auckland Salvation Army Bridge residential programme. Half of the PG participants were clients of the Te Kahui Hauora O Ngati Koata Trust, whom completed questionnaires in the presence of the researcher, whereas the remainder were completed by post, or by clients in the presence of their counsellor at the Salvation Army Oasis Gambling Centre or Pacific Peoples Addiction Service.

Once the questionnaires were completed, participants were offered the option of being debriefed by the researcher. Participants were also offered a ‘koha’ of a \$10 supermarket or ‘The Warehouse’ department store voucher as a thankyou for participating in the research. Vouchers were posted to those who completed

questionnaires by post or email, and in person for participants who completed questionnaires with the researcher.

With regard to cultural competency, the researcher has a 5 year history of working cross culturally within the addiction field. As part of this study the researcher also undertook clinical and cultural supervision. This was undertaken to ensure tikanga (practices and values) and cultural safety (for both participant and researcher) was maintained when working with Maori participants, and when formally meeting staff at Te Kahui Hauora O Ngati Koata Trust.

### *3.10 Data Analysis*

All raw data was entered into SPSS version 11.0 for Windows. Missing data were scored according to published scoring directions for each measure. This programme was then used to calculate scores on the SCL-90 scales, Y-BOCS-SV, YBOCS-hd, Pg-YBOCS; BIS; CBS; and the ADQ. Scoring of all tests was based on published scoring instructions for each measure, except for the ADQ which was developed specifically for this study.

#### 4. Results

As the diagnosis for the alcohol dependent (AD) and pathological gambling (PG) groups were self reported, it was decided to include all those that self reported as compulsive shoppers (CS) in the analysis, even though, based on the Compulsive Buying Screen (CBS), 6 (out of 20 respondents) did not meet the cut off score for a diagnosis of compulsive buying.

Qualitative data from the demographic questionnaire showed that 93.8% (n=60) of participants considered alcohol dependence an addiction; 87.5% (n=56) considered gambling an addiction; and 85.9% (n=55) considered compulsive shopping an addiction. This shows a broad acknowledgement from within an addiction population, of the relevance of addictions outside of substance use.

From results of the Addictive Disorder Questionnaire (ADQ), initial analysis revealed that the AD group showed a greater level of addiction severity than the other two groups (higher scores on the ADQ). The high severity of addiction within the AD group can be related to the majority of subjects being accessed from within a residential alcohol and drug treatment centre. This differs from the other two groups, in which around one third of PG participants and all 20 compulsive shoppers (CS) self-reported not being engaged in any treatment service. Therefore, in order to provide a realistic comparison of cases, and to remove addiction severity as a confound, data was analysed for both the total population, and then for those that met a 'high' addiction severity criteria. The highest third of responses on the ADQ ( $\geq 7$ ) within the pathological gambling (PG), compulsive shopper (CS) and alcohol dependent (AD) groups were classified as meeting 'high' addiction severity, whereas those that scored under this cut-off score, yet still met the ADQ diagnostic cut-off score of  $\geq 3$ , were classified as meeting 'moderate' addiction severity. Results are presented in relation to each research question.

#### *4.1 Research question one*

The first section of the results, addresses the first research question ‘Is there a set of common characteristics which are present in addictive behaviour across compulsive shopping, pathological gambling and alcohol dependence? And if so, are those characteristics which are not common to all three disorders, related to the specific substance or activity related to each disorder?’ Addiction phenomenology of interest, in relation to this question, included compulsiveness, impulsivity and craving. These were addressed by analysing the scores from each addiction group on the Barratt Impulsivity Scale 11 (BIS-11), the total Yale-Brown Obsessive Compulsive Scale (Y-BOCS), and its subscales (obsessive and compulsive), and Addictive Disorder Questionnaire (ADQ).

Each of these three scales has proposed cut-off scores, which are used within studies to establish the severity of the aspect/disorder, and the appropriateness for inclusion in research. On the BIS, overall 58 (of 64) participants met the proposed cut off score for impulsivity ( $\geq 60$ ). As each of the addiction specific Y-BOCS scales had different cut-off scores, results are presented by specific scale. In relation to the YBOCS-hd, 24 (of 24) participants in the AD group met cut-off scores ( $\geq 7$ ); 12 of 20 PG participants met the PG-YBOCS severity cut-off scores ( $\geq 15$ ); whereas only 6 CS participants met the cut-off score on the YBOCS-SV ( $\geq 16$ ). These results indicate that there was a significant level of impulsivity across the total study sample. According to the YBOCS scores, the AD sample presents as meeting proposed severity classification, whereas roughly half of PG met addiction severity, and just over a quarter of the CS met severity cut-off scores for the YBOCS-SV.

In order to compare the scores between each of the three addiction groups, on each of these measures, a series of one way analyses of variance (ANOVA's) were conducted. These results are presented in Table 6.

Table 6

*Mean total scores on the BIS, YBOCS, YBOCS subscales and ADQ for alcohol dependent (AD), pathological gambling (PG) and compulsive shopping (CS) participants.*

Scale	AD (n=24)	PG (n=20)	CS (n= 20)	ANOVA
	Mean (Std dev)	Mean (Std dev)	Mean (Std dev)	
BIS	73.9 (12.7)	70.3 (10.8)	72.1 (9.9)	F(2, 61) = .57, NS
YBOCS	22.5 (7.7)	17.0 (9.8)	13.8 (7.2)	F(2, 61) = 6.4, p < .05
Y- Obsess	9.9 (4.1)	8.7 (4.8)	6.9 (3.5)	F(2, 61) = .57, NS
Y- Compuls	12.6 (4.3)	8.2 (5.5)	6.8 (4.0)	F(2, 61) = .64, p < .05
ADQ	10.3 (1.2)	8.3 (2.3)	6.6 (2.5)	F(2, 61) = 18.1, p < .05

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale; NS = p > .05*

As shown in Table 6, impulsivity scores (as measured by the BIS) did not differ significantly between the three groups, in fact the total scores for each group were very similar. In contrast to the BIS results in Table 6, the Y-BOCS showed a significant difference in scores obtained by each group, with a progressive increase in mean total scores from CS to the highest for the AD group. In order to investigate which groups differed from each other, post hoc tests using a Bonferroni correction were conducted. This analysis revealed that the AD group obtained significantly higher YBOCS scores than the CS group (<0.05). The YBOCS obsession subscale showed no significant differences between the groups, whereas significant differences were evident on the compulsion subscale. Results for the YBOCS compulsion subscale showed significantly higher scores for the AD group than either of the other groups.

Further analysis were carried out to examine the link between aspects of addiction, and in order to identify addiction specific aspects. This was done by correlating impulsivity (BIS) and addiction severity (YBOCS total score and ADQ); and analysing differential

responding to items, on those measures which found significant differences in responding between groups.

Table 7 presents Pearson’s correlations between the BIS and both the ADQ and YBOCS total scales.

Table 7

*Pearson’s correlations coefficients between the BIS and both the ADQ and YBOCS total scales for alcohol dependent (AD), pathological gambling (PG) and compulsive shopping (CS) participants.*

Group	Scale	ADQ	YBOCS
	BIS		
CS (n=20)		.755(**)	.613(**)
PG (n=20)		.509(*)	.581(**)
AD (n=24)		.211	.282

\*= Correlation is significant at the 0.05 level (2-tailed); \*\*= Correlation is significant at the 0.01 level (2-tailed).

AS presented in Table 7, scores on the BIS correlated significantly with both the ADQ and YBOCS in CS and PG addiction groups. This result indicates that impulsivity is correlated with addiction severity in the non substance addictions groups (PG and CS).

In order to determine if there were group specific characteristics in relation to responses to specific items on the YBOCS, subsequent analyses of individual YBOCS items were conducted. These results are summarised in Table 8. When the ANOVA was significant, post hoc tests using a Bonferroni correction were conducted to determine which groups differed from each other.

As shown in Table 8, participants overall did not respond significantly different on most of the obsessive items of the Y-BOCS (items 1-5), except for item 2(<0.05). For this item the AD group scored significantly higher than both the CS and PG groups. On the compulsive subscale (items 6 – 10), significant differences in responses between the

groups were found on items 6, 7, 8 and 10. The AD group scored significantly higher than either of the other two groups on items 6, 8 and 10. For Item 7, the AD group obtained a significantly higher mean score than the CS group only.

The Addictive Disorder Questionnaire (ADQ) was administered as a measure of addiction severity, and to assist in differentiating key aspects of addiction phenomenology. As with the results of the Y-BOCS, the mean scores on the Addictive Disorder Questionnaire (ADQ) (presented in Table 6), steadily increased from the CS group to the highest within the AD group. The ANOVA of the ADQ showed significant differences in responding between the groups. Post hoc tests (using a Bonferroni correction) identified significant differences in responding between CS and PG; CS and AD; and PG and AD. The AD group reported more symptoms (obtained higher scores), and the CS reported the fewest.

Table 8

Mean responses for alcohol dependent (AD), pathological gambling (PG) and compulsive shopping (CS) participants to each item on the YBOCS

Y-BOCS item	AD	PG	CS	ANOVA
	Mean (SD)	Mean (SD)	Mean (SD)	
1. Time occupied by urges/thoughts about ...	2.2 (1.3)	1.9 (1.0)	1.9 (.75)	F(2, 61) = .57, NS
2. Interference due to urges/thoughts about ...	2.1 (.95) ‡*	1.4 (1.1) †	.90 (.79) †	F(2, 61) = 9.4, p < .05
3. Distress associated with urges/thoughts about ...	1.9 (.95)	1.9 (1.3)	1.2 (.77)	F(2, 61) = 3.0, NS
4. Resistance against urges/thoughts of ...	1.9 (1.3)	1.6 (1.3)	1.4 (1.1)	F(2, 61) = .98, NS
5. Degree or control over urges/thoughts about ...	1.9 (1.3)	2.0 (1.2)	1.6 (1.0)	F(2, 61) = .62, NS
6. Time spent in activities related to ...	3.5 (.98) ‡*	1.5 (1.4) †	1.6 (.82) †	F(2, 61) = 28.6, p < .05
7. Interference due to activities related to ...	1.9 (1.2) *	1.3 (1.3)	.70 (.73) †	F(2, 61) = 7.2, p < .05
8. Distress associated with behaviour related to....	2.5 (1.2)	1.7 (1.4)	1.7 (1.1)	F(2, 61) = 3.8, p < .05
9. Resistance against ...	1.9 (1.2)	1.8 (1.3)	1.6 (1.1)	F(2, 61) = .38, NS
10. Degree of control over ...	2.8 (.99) ‡*	2.0 (1.1) †	1.4 (.88) †	F(2, 61) = 10.8, p < .05

† Significantly different to AD; ‡ significantly different to PG; \* significantly different to CS

As there are no standard scoring procedures for the ADQ, several approaches are utilized for analysing results of the ADQ in this study. As the items on the questionnaire were based on the diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM IV Tr; American Psychiatric Association, 2000), the first analysis utilized the standard DSM-IV alcohol dependence diagnostic cut-off score of 3 or more positive responses. Data indicated that all participants met this diagnostic cut-off score, suggesting that the majority of the participants met the diagnostic cut off score for an addictive disorder.

In order to determine if there are group specific characteristics of addiction, in addition to differences in the total score, mean percentages of positive responses to each of the ADQ items for each group were compared. This data is presented in Table 9. Due to the use of binomial data with the ADQ (from a possible yes/no response option), non parametric chi-squared analysis was used to identify significant differences in responding between groups.

From Table 9 it can be seen participants in each of the three groups, were similar in their endorsement on items related to craving (item 4) and dyscontrol (items 9 and 10). In relations to the items which were scored significantly different between groups, the AD group responded 'yes' at a higher percentage than both other groups on all items except for one dyscontrol item (item 11), in which the PG group scored higher (85% vs 79% respectively). The PG group responded positively, significantly more than the CS group for all items except for items 3, 9 and 10.

Over  $\frac{3}{4}$  of AD and PG groups responded positively (at a similar high rate) on physiological items 1 and 2, and one dyscontrol item (item 11). On these 3 items, around  $\frac{1}{2}$  of CS participants endorsed these items. The CS and PG groups between  $\frac{1}{4}$  and  $\frac{3}{4}$  on one physiological item (item 3), and three salience and dyscontrol items (items 5, 6, and 7). This is in contrast with near complete endorsement of these items in the AD group. One physiological item (item 8) showed notable differences in scoring across groups ( $< 0.01$ ), with results ranging from a low 15% (CS) to a moderate 60% (PG) and a high of 92% (AD).

Table 9

Mean percentage of participants responding 'yes' to each item on the ADQ, for each of the three groups

ADQ items	Percentage of participants responding 'yes'			Chi Squared
	AD	PG	CS	
1: Do you find that you need to use a lot more/participate in more..... to get the desired affect, than you did when you first started?	92%	85%	45%	$\chi^2 (2) = 17.38, p < 0.01$
2: Do you find that when you use/participate in the same amount of ....., it has less of the desired affects than before?	92%	80%	50%	$\chi^2 (2) = 12.65, p < 0.05$
3: Have you found that during periods of no use ... that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are relieved by .?	92%	50%	55%	$\chi^2 (2) = 16.03, p < 0.01$
4: Have you experienced a strong desire or sense of compulsion to ..?	100%	90%	85%	$\chi^2 (2) = 1.27, NS$
5: Do you spend a great deal of time using, intoxicated, or recovering from the affects of ?	100%	75%	65%	$\chi^2 (2) = 8.13, p < 0.05$
6: Have you used/participated in ..... instead of going to work, or spending time doing things which you are usually involved in, such as time with family or recreation.	92%	55%	55%	$\chi^2 (2) = 13.55, p < 0.05$
7: Have you reduced the amount of time you ....., to spend on these activities due to using, seeking or recovering from the affects of ...?	88%	70%	55%	$\chi^2 (2) = 7.69, p < 0.05$
8: Does your using/participating in ..... make or cause you to become physically or mental/emotionally unwell, despite your continued use?	92%	60%	15%	$\chi^2 (2) = 53.76, p < 0.01$
9: Do you find that when you start using/participating in ..... you end up using/participating more than you planned to?	100%	95%	95%	$\chi^2 (2) = .17, NS$
10: Do you often use/participate in more .....for a longer period of time than you intended to?	100%	85%	90%	$\chi^2 (2) = 1.27, NS$
11: Have you tried unsuccessfully to stop or cut down your ..?	79%	85%	45%	$\chi^2 (2) = 13.36, p < 0.05$

NS =  $p > .05$

In summary, results from the Y-BOCS total and subscales, BIS and ADQ for the total population showed that levels of impulsivity (BIS) and obsession (YBOCS obsession subscale) were similar across all three groups. The significant difference in scoring on the total YBOCS scale is accounted for by significantly higher responding on the compulsive scale. On both the total YBOCS and the compulsion subscale, and the ADQ, the AD addiction group scored significantly higher than both other addiction groups, with CS consistently scoring the lowest of the three groups. Results from analysis of individual items on both the YBOCS and ADQ found similarities and differences in responding between groups. Scores for individual items of the YBOCS obsessive scale showed similar rates of responding across the three groups, whereas the AD group scored significantly higher than the other two groups on items on the compulsion scale. The ADQ results indicated one addiction symptom (ADQ item) reflecting craving and two reflecting dyscontrol were reported similarly across all three addiction groups, whereas significant differences were found on the majority of addiction symptoms in the ADQ. The AD group and PG groups endorsed two physiological and one dyscontrol symptom at a higher rate than the CS group; the AD group endorsed one physiological and one salience symptom significantly higher than both other addiction groups, whereas two dyscontrol symptoms were endorsed significantly differently across all three groups, with the CS group presenting with the least and the AD group with the highest.

#### *4.2 Research question one: effects of addiction severity*

As explained earlier, due to the higher addiction severity in the AD addiction group, the highest third of responses on the ADQ ( $\geq 7$ ) were selected as the high addiction severity cut-off score, in order to remove severity as a confound. Of the three groups, 23 (out of 24) of the AD group met the cut-off score, whereas 15 (out of 20) of the PG and 11 (out of 20) from the CS group met the high addiction severity classification. Those participants that did not meet the high addiction severity cut-off did meet diagnostic cut-off score of  $\geq 3$  on the ADQ. This sample is referred to as the moderate addiction severity sample.

In order to examine the link between addiction severity and addiction phenomenology, including impulsivity (BIS), craving, obsessions and compulsions (YBOCS total scale and its subscales) and compulsive shopping behaviour (CBS), between those with high addiction severity ( $\geq 7$ ) compared to moderate severity ( $< 7$ ), a 3 (AD, PG and CS addiction groups) x 2 (moderate or high addiction severity classification), between subjects analysis of variance (ANOVA) was conducted for each questionnaire. These results are presented in Table 10. There were no significant interactions between addiction severity and addiction group on any of the questionnaires. There were also no significant differences in responding by the three addiction groups. As shown in Table 10, impulsivity scores (BIS) were not significantly different between high and moderate addiction severity groups. However, significant differences were found between high and moderate addiction severity groups on the CBS, YBOCS total, and YBOCS obsession and compulsion subscales, with the high addiction severity group obtaining higher scores in each case.

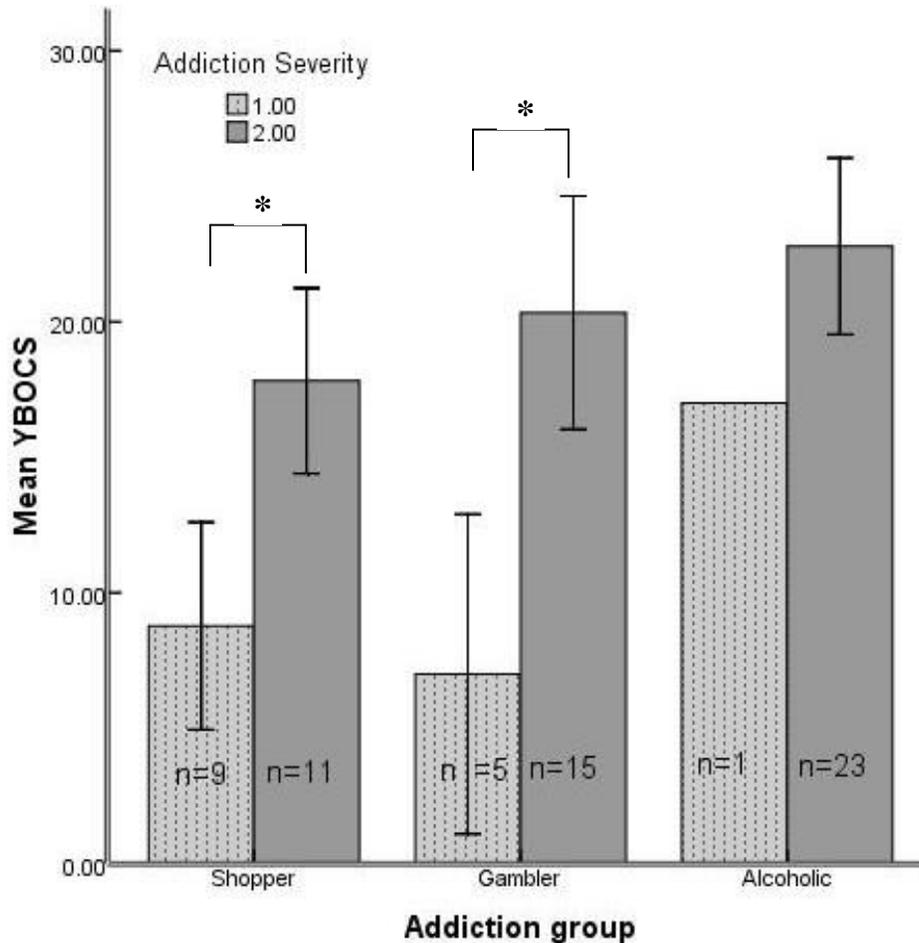
Table 10

Mean scores of high and moderate addiction severity groups on the BIS, YBOCS, and CBS

Scale	CS Mean (Std dev)		PG Mean (Std dev)		AD Mean (Std dev)		ANOVA		
							Group	Addiction severity	Interaction
	H (n= 11)	M (n= 9)	H(n=15)	M (n= 5)	H (n=23)	M (n= 1)			
BIS	77.8 (7.5)	65.1 (7.8)	72.3 (11.4)	64.2 (5.9)	74.0 (12.9)	72.0 (0.0)	F(2,58)=.605	F(1,58)= 2.99	F(2,58)=.480
YBOCS	17.8 (5.7)	8.8 (5.7)	20.3 (8.3)	7.0 (6.6)	22.8 (7.8)	17.0 (0.0)	F(2,58)= 1.36	F(1,58)= 9.90*	F(2,58)=.584
Y- Obsess	8.6 (3.1)	4.8 (2.7)	10.2 (4.3)	4.4 (3.6)	10.0 (4.2)	1 (7.0)	F(2,58)=.389	F(1,58)= 7.29*	F(2,58)= .355
Y- Compuls	9.2 (3.0)	4.0 (3.3)	10.1 (4.9)	2.6 (2.9)	13.7 (4.2)	1 (10.0)	F(2,58)= 2.52	F(1,58)= 9.67*	F(2,58)= .355
CBS	-4.2 (1.7)	-2.9 (2.4)						F(1,58)= 12.50 *	

H= High addiction severity:  $\geq 7$  on the ADQ; M = Moderate addiction severity:  $< 7$  on the ADQ; Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale; NS =  $p > .05$ ; \* =  $p < 0.05$

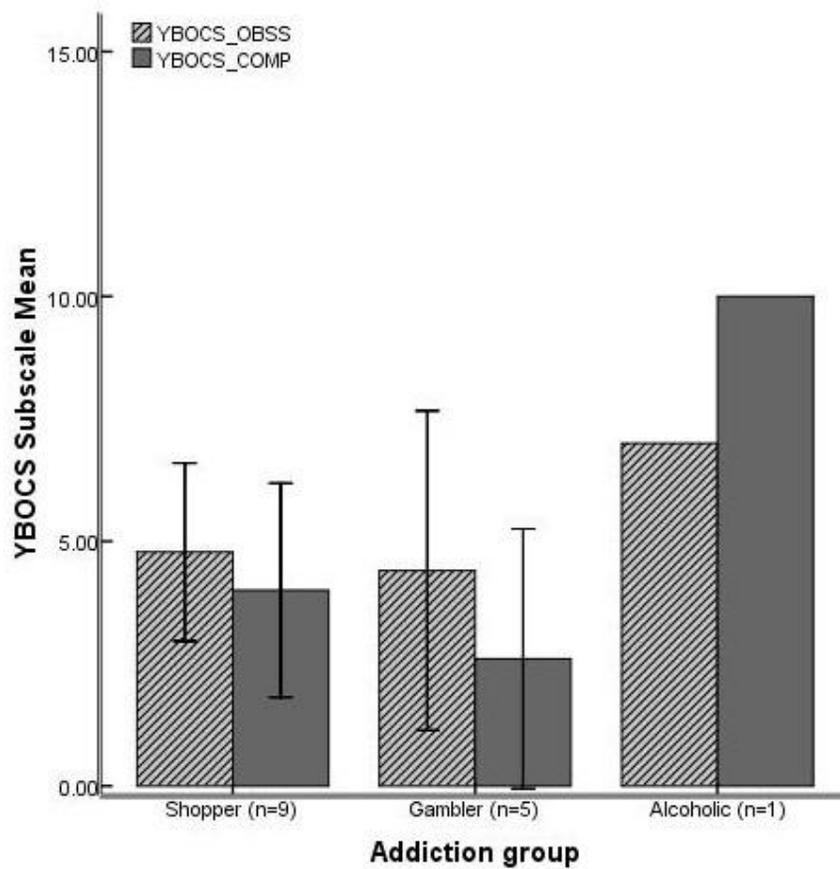
The Y-BOCS mean scores for the total sample is presented in Figure 1 to highlight the differences and similarities between the addiction groups in scoring on the Y-BOCS. Figure 1 shows the significant difference found between high and moderate addiction severity participants on the Y-BOCS for both the PG and CS groups.



Addiction severity: 1=moderate addiction severity; 2=high addiction severity;  
 \* = significantly different < 0.05.

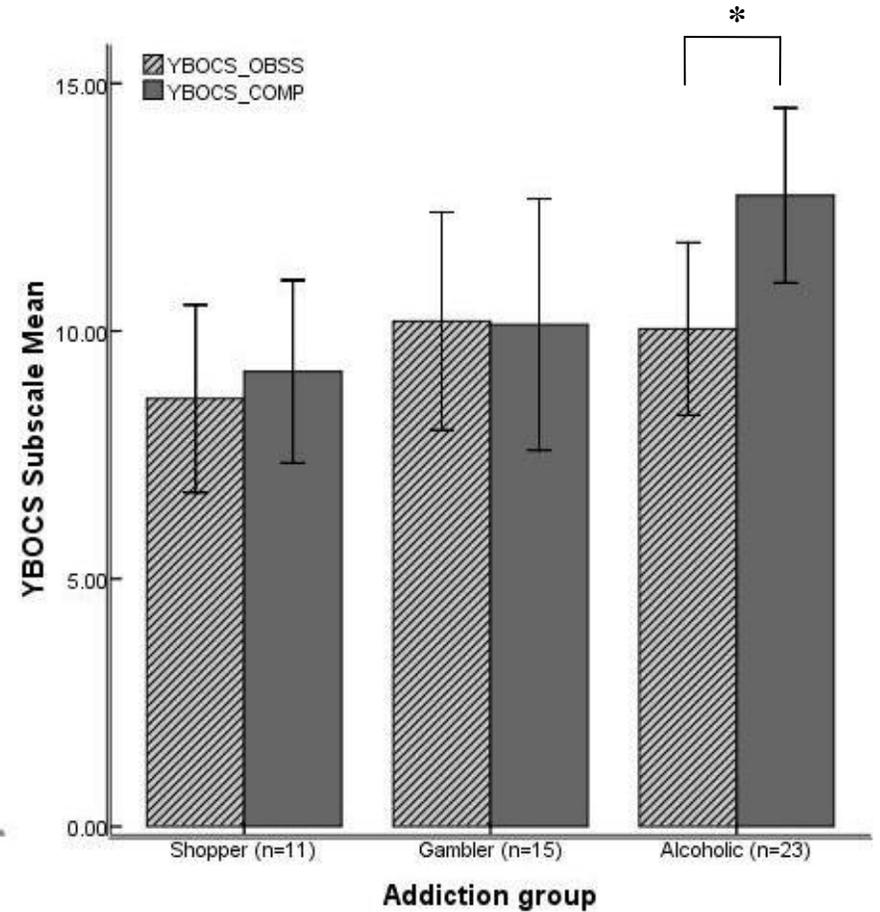
Figure 1. The mean YBOCS score and standard errors for moderate and high addiction severity CS, PG and AD participants

In order to examine the effect of addiction severity on the YBOCS obsession and compulsion subscales, data is presented for both scales for the moderate (Figure 2), and high addiction severity samples (Figure 3).



*YBOCS\_OBSS*=YBOCS obsessions subscale; *YBOCS\_COMP* = YBOCS compulsion subscale; \* = significantly different < 0.05.

*Figure 2.* YBOCS subscales mean scores and standard errors in the moderate addiction severity sample, by addiction group.



*YBOCS\_OBSS*=YBOCS obsessions subscale; *YBOCS\_COMP* = YBOCS compulsion subscale; \* = significantly different < 0.05.

*Figure 3.* YBOCS subscales mean scores and standard errors in the high addiction severity sample, by addiction group.

Figure 2 shows the general similarities between PG and CS groups on the compulsion and obsession subscales, with a tendency to score higher on the obsession subscale than the compulsion subscale, and the lower scores in both these groups as compared to the AD group. Figure 3 highlights how increased addiction severity decreases the differences across the three groups on both the obsessions and compulsion subscales. The obsession subscale is scored similarly across all three groups, whereas the AD group presents as scoring higher than both the PG and CS groups on the compulsion subscale. Despite this, the PG and CS groups compulsion scores are now either equal or above the obsession scores. These results show that increased addiction severity is related to a moderate increase in obsession scores, and a stronger increase in compulsion scores in both CS and PG groups.

Further analyses were carried out to examine the effects of addiction severity on responding to impulsivity, craving, obsession and compulsions, this was done by correlating impulsivity (BIS) and addiction severity (YBOCS total score and ADQ); and analysing differential responding to items, on those measures which found significant differences in responding between groups.

Correlations between the impulsivity and addiction severity were conducted by addiction groups and addiction severity. Results of correlations for the moderate addiction severity group found no significant correlations between addiction groups and either the BIS, ADQ or YBOCS. The results for the high addiction severity sample are presented in Table 11.

Table 11

*Pearson's correlations coefficients between the BIS and both the ADQ and YBOCS total scales for, by addiction groups in the high addiction severity sample.*

Group	Scale	ADQ	YBOCS
	BIS		
CS (n=11)		.603(*)	.624(*)
PG (n=15)		.362	.525(*)
AD (n=23)		.237	.289

\* =Correlation is significant at the 0.05 level (2-tailed).

The results from correlations between these measures show that impulsivity is not correlated with addiction severity (ADQ or YBOCS) in the moderate severity addiction group, whereas there were moderate correlations in the high addiction severity group (Table 11), between the BIS, ADQ and YBOCS in the CS addiction group, and between the YBOCS and BIS in the PG addiction group. The lack of correlations in the AD group in the high addictions severity sample could be due to the general high scoring by the AD group on the BIS, ADQ and YBOCS.

In order to determine if there were group specific characteristics, on individual items, from measures which showed significant differences in responding between groups in the high addiction severity sample, one way analyses of variance (ANOVA) were conducted. When the ANOVA was significant, post hoc tests using a Bonferroni correction were conducted to determine which groups differed from each other on these items. Results for the YBOCS are presented in Table 12. Chi squared analyses were used to identify differences between groups on the mean number of participants responding 'yes' on individual items of the ADQ. These results are presented in Table 13.

The YBOCS results presented in Table 12, showed differences in responding between the AD and CS groups on items 2 and 10, with the AD group scoring significantly higher on both. The AD group also scored significantly higher than the PG and CS groups on item 6. ADQ results presented in Table 13 showed that participants in the high addiction severity group endorsed 9 of the 11 items of the ADQ at a similarly

high rate. Significant differences were found for items related to physiological symptoms (items 2 and 8), with the CS group scoring significantly lower than both the AD and PG groups. One item related to dyscontrol (item 6) was approaching statistically significant difference between groups.

In summary, results showed no significant differences between groups, irrespective of severity classification on the BIS. Moderate correlations were found between impulsivity and addiction severity for CS and PG addiction groups in the high addiction severity sample. Significant differences were found between high and moderate addiction severity participants on the Y-BOCS total, and YBOCS obsession and compulsion subscales, and the CBS. No significant differences were found across addiction groups on the BIS, YBOCS total or YBOCS subscales scores. The general trend for the AD group to score higher across all scales, and for consistently higher scoring in the PG over CS, found in the earlier total sample analysis, was not found in the high addiction severity sample.

Analysis of obsession and compulsion subscales of the YBOCS, showed a general similarity in responding across groups on the obsession subscale, and significantly higher scoring on the compulsion subscale for the AD group. Results also indicated that higher addiction severity resulted in higher compulsion subscale scores. Analysis of responding to individual items on the Y-BOCS and ADQ for the high addiction severity sample, compared to the earlier total sample analysis, showed a reduction in number of items responded to significantly differently in both scales. The Y-BOCS showed a reduction in items responded to significantly differently, from 5 items to 2, whereas the ADQ reduced from 9 to 3 items responded to significantly differently

Table 12.

Mean score for each item of the Y-BOCS for the high addiction severity AD, PG and CS participants

Y-BOCS item	AD (n=23) Mean (SD)	PG (n=15) Mean (SD)	CS (n=11) Mean (SD)	ANOVA
1. Time occupied by urges/thoughts about ...	2.2 (1.3)	2.2 (.94)	2.2 (.75)	F(2, 46) = .00, NS
2. Interference due to urges/thoughts about ...	* 2.1 (.97)	1.7 (.96)	† 1.3 (.79)	F(2, 46) = 3.3, p < .05
3. Distress associated with urges/thoughts about ...	1.9 (.97)	2.3 (1.8)	1.5 (.69)	F(2, 46) = 2.1, NS
4. Resistance against urges/thoughts of ...	1.9 (1.3)	1.7 (1.2)	1.5 (1.0)	F(2, 46) = .56, NS
5. Degree of control over urges/thoughts about ...	1.9 (1.3)	2.3 (1.1)	2.2 (.75)	F(2, 46) = .50, NS
6. Time spent in activities related to ...	*‡ 3.5 (.99)	† 1.9 (.96)	† 1.9 (.70)	F(2, 46) = 16.2, p < .05
7. Interference due to activities related to ...	2.0 (1.2)	1.7 (1.3)	1.1 (.70)	F(2, 46) = 2.4, NS
8. Distress associated with behaviour related to....	2.6 (1.2)	2.1 (1.3)	2.4 (.81)	F(2, 46) = .63, NS
9. Resistance against ...	1.9 (1.2)	2.1 (1.3)	2.0 (1.1)	F(2, 46) = .03, NS
10. Degree of control over ...	* 2.8 (.99)	2.3 (.98)	† 1.8 (.75)	F(2, 46) = 4.0, p < .05

† Significantly different to AD; ‡ significantly different to PG; \* significantly different to CS; NS = > .05

Table 13

*Mean percentage of participants responding 'yes' to each item on the ADQ, for high addiction severity participants*

ADQ items	Percentage of participants responding 'yes'			Chi Squared
	AD	PG	CS	
1: Do you find that you need to use a lot more/participate in more..... to get the desired affect, than you did when you first started?	91%	93%	82%	$\chi^2 (2) = .68, NS$
2: Do you find that when you use/participate in the same amount of ....., it has less of the desired affects than before?	96%	87%	64%	$\chi^2 (2) = 6.62, p < 0.05$
3: Have you found that during periods of no use ... that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are relieved by .?	91%	67%	91%	$\chi^2 (2) = 4.63, NS$
4: Have you experienced a strong desire or sense of compulsion to ..?	100%	100%	100%	$\chi^2 (2) = .00, NS$
5: Do you spend a great deal of time using, intoxicated, or recovering from the affects of ?	100%	93%	82%	$\chi^2 (2) = 1.79, NS$
6: Have you used/participated in ..... instead of going to work, or spending time doing things which you are usually involved in, such as time with family or recreation.	96%	67%	73%	$\chi^2 (2) = 5.96, NS$
7: Have you reduced the amount of time you ....., to spend on these activities due to using, seeking or recovering from the affects of ...?	91%	73%	64%	$\chi^2 (2) = 5.96, NS$
8: Does your using/participating in ..... make or cause you to become physically or mental/emotionally unwell, despite your continued use?	96%	80%	27%	$\chi^2 (2) = 38.55, p < 0.01$
9: Do you find that when you start using/participating in ..... you end up using/participating more than you planned to?	100%	93%	91%	$\chi^2 (2) = .47, NS$
10: Do you often use/participate in more .....for a longer period of time than you intended to?	100%	93%	100%	$\chi^2 (2) = .33, NS$
11: Have you tried unsuccessfully to stop or cut down your ..?	83%	80%	64%	$\chi^2 (2) = 2.58, NS$

*NS = > .05*

### 4.3 Research question two

The second section of the results, addresses the second research question ‘Do people with Compulsive Shopping and Pathological Gambling exhibit comparable rates of anxiety and mood disturbance (depression) with Alcohol Dependence? Does the level of anxiety/mood disturbance score correlate with the severity of addictive disorder? To answer these questions, group responses to both the anxiety and depression subscales of the Symptom Checklist 90 Revised (SCL-90R) were analysed. As with the first research question, results are presented for the total participant sample, and then by addiction severity classification (i.e., moderate and high addiction severity).

Group means for the total sample are presented in Table 14. Two one-way analyses of variance (ANOVA) were conducted to identify significant differences in responding between the three addiction groups. As can be seen in Table 14, there were no statistically significant differences between the three addiction groups, on either the depression or anxiety subscale of the SCL-90R. As with the results of other measures utilized in the present study, the trend for the alcohol dependent group (AD) to score higher than the pathological gambling (PG) and compulsive shopping (CS) groups was still evident.

Table 14

*Mean scores on the Depression and Anxiety subscales of the SCL-90R for the total sample*

Scale	AD (n=24) Mean (Std)	PG (n=20) Mean (Std)	CS (n= 20) Mean (Std)	ANOVA
SCL90R Depression	19.9 (11.7)	18.4 (10.2)	14.8 (10.0)	F(2, 61) = .286, NS
SCL90R Anxiety	13.3 (8.4)	10.5 (8.1)	8.0 (6.9)	F(2, 61) = .096, NS

*NS = > .05*

Although there were no significant differences in responding between addiction groups, in accordance with previous analysis of data in this study, further analyses were conducted to identify differences in responses to the individual items on each of the subscales. These data are presented in Table 15 (depression subscale) and Table 16 (anxiety subscale).

Table 15

*The average rating for each item on the SCL 90R depression subscale for AD, PG and CS for the total sample*

SCL 90R Depression Subscale items	AD (n = 24) Mean (SD)	PG (n = 20) Mean (SD)	CS(n = 20) Mean (SD)	ANOVA
5. Loss of sexual interest or pleasure	1.4 (1.6)	.75 (.97)	1.0 (.97)	F(2, 61) = 1.6, NS
14. Feeling low in energy or slowed down	1.8 (1.1)	1.7 (1.3)	3.5 (6.4)	F(2, 61) = 1.5, NS
15. Thoughts of ending your life	1.1 (1.5)	.90 (1.4)	.40 (.82)	F(2, 61) = 1.6, NS
20. Crying easily	.71 (.95)	1.0 (1.2)	.95 (1.1)	F(2, 61) = .45, NS
22. Feeling of being trapped or caught	1.3 (1.1)	1.1 (1.3)	1.1 (1.3)	F(2, 61) = .16, NS
26. Blaming yourself for things	1.8 (1.3)	1.9 (1.4)	1.2 (1.0)	F(2, 61) = 2.4, NS
29. Feeling lonely	2.2 (1.4)	1.6 (1.4)	1.3 (1.0)	F(2, 61) = 2.5, NS
30. Feeling blue	1.9 (1.2) *	1.9 (1.4)	1.0 (.86) †	F(2, 61) = 4.1, p < .05
31. Worrying too much about things	2.3 (1.1)	2.5 (1.1)	1.8 (1.2)	F(2, 61) = 2.0, NS
32. Feeling no interest in things	1.6 (1.2)	1.7 (1.3) *	.80 (.89) ‡	F(2, 61) = 3.9, p < .05
54. Feeling hopeless about the future	1.9 (1.4)	1.8 (1.6)	1.1 (1.3)	F(2, 61) = 2.4, NS
71. Feeling everything is an effort	1.7 (1.2) *	1.5 (1.3)	.75 (.97) †	F(2, 61) = 3.6, p < .05
79. Feelings of worthlessness	2.0 (1.3) *	1.7 (1.5)	.90 (1.3) †	F(2, 61) = 4.0, p < .05

† = Significantly difference to AD; ‡ = Significantly difference to PG; \* = Significantly difference to CS; NS = > .05

Table 16

*The average rating for each item on the SCL 90R anxiety subscale for the AD, PG and CS for the total sample*

SCL 90R Anxiety Subscale items	AD (n = 24) Mean (SD)	PG (n = 20) Mean (SD)	CS(n = 20) Mean (SD)	ANOVA
2. Nervousness or shakiness inside	1.5 (1.2)	1.5 (1.2)	1.4 (1.3)	F(2, 61) = .08, NS
17. Trembling	1.2 (1.2) *	.45 (.99)	.30 (.57) †	F(2, 61) = 5.0, p < .05
23. Suddenly scared for no reason	.88 (1.2)	.80 (1.3)	.65 (1.0)	F(2, 61) = .19, NS
33. Feeling tearful	1.5 (1.2)	1.4 (1.3)	.70 (.86)	F(2, 61) = 2.7, NS
39. Heart pounding or racing	1.7 (1.2)	1.2 (1.2)	1.2 (1.3)	F(2, 61) = 1.2, NS
57. Feeling tense or keyed up	1.9 (1.0)	1.6 (1.1)	1.3 (1.3)	F(2, 61) = 1.8, NS
72. Spells of terror or panic	1.0 (1.2)	.70 (1.1)	.60 (1.0)	F(2, 61) = .94, NS
78. Feeling so restless you couldn't sit still	1.6 (1.2)	1.6 (1.3)	.80 (1.1)	F(2, 61) = 3.1, NS
80. The feeling that something bad is going to happen to you	1.8 (1.4)	1.3 (1.3)	1.1 (1.1)	F(2, 61) = 2.1, NS
86. Thoughts and images of a frightening nature	1.3 (1.2) *	1.1 (1.5)	.35 (.93) †	F(2, 61) = 3.8, p < .05

† = Significantly difference to AD; ‡ = Significant difference to PG; \* = Significantly difference to CS; NS = > .05

For the depression subscale (Table 15), significant differences were identified between the AD and CS groups, with the AD group scoring higher on items related to low mood (item 30), lack of energy (item 71), and self perception (item 79). Significant differences were also found between PG and CS groups, with PG scoring higher on an item related to lack of interest (item 32). Responding was not significantly different between the groups on the majority of items on the depression subscale.

The only significant differences found on the anxiety subscale (Table 16) were between the AD and PG groups on an item related to physiological characteristics (item 17) and an item related to cognitive symptoms (item 86), with the AD group scoring significantly higher on both. Similar to the depression subscale, responding was not significantly different between the groups on the majority of items on the anxiety subscale.

#### *4.4 Research question two: effects of addiction severity*

In order to identify the effect addiction severity had on responding to both the depression and anxiety subscales, participants were categorized (utilizing the ADQ cut-off score introduced earlier) as either moderate ( $< 7$ ) or high ( $\geq 7$ ) addiction severity. A 3 (addiction groups) by 2 (addiction severity classification), between subjects analysis of variance (ANOVA) was conducted. These results are presented in Table 17. As can be seen in Table 17, high addiction severity participants scored significantly higher than moderate addiction severity participants on both the depression and anxiety subscales of the SCL-90R. There were no significant differences between groups, and no significant interactions between group and addiction severity for either subscale.

In order to determine if there were group specific characteristics, on individual items, on the depression and anxiety subscales in the high addiction severity sample, a one way analyses of variance (ANOVA) was conducted. Results identified no significant differences for the high addiction severity sample, on any individual items between groups, on either the anxiety or depression subscales.

Table 17

*Effects of addiction severity on anxiety and depression in the total sample*

SCL-90R Subscale							ANOVA		
	CS		PG		AD		Group	Addiction severity	Interaction
	Mean (Std dev)		Mean (Std dev)		Mean (Std dev)				
H (n= 11)	M (n= 9)	H (n=15)	M (n= 5)	H (n=23)	M (n= 1)				
Depression	44.4 (8.9)	35.9 (14.7)	49.3 (9.6)	42.4 (7.9)	50.4 (10.2)	37.0 (0.0)	F(2,58) = 1.30	F(1,58) = 5.02*	F(2,58) = .148
Anxiety	44.5 (8.6)	31.3 (18.9)	49.6 (10.8)	45.4 (14.7)	51.0 (0.0)	45.0 (0.0)	F(2,58) = 1.17	F(1,58) = 5.68*	F(2,58) = .314

*H= High addiction severity:  $\geq 7$  on the ADQ; M = Moderate addiction severity:  $< 7$  on the ADQ; NS =  $> .05$ ; \* =  $p < 0.05$*

In order to identify the severity of depression and anxiety within the present sample, mean scores on each subscale were compared to published psychiatric outpatients, and non psychiatric norms (Derogatis, 1997). Psychiatric outpatients norms were chosen for comparison, as the majority of the total population were either engaged in an outpatient service or not receiving any services. Despite the alcohol dependent group predominantly being engaged in a residential alcohol and drug treatment programme, it was decided to compare results to psychiatric outpatient norms, as not all respondents self reported a diagnosed mental illness (on demographic data collection), so could not necessarily be categorized as 'psychiatric' inpatients.

As published norms are presented by gender, results of the present sample are also presented by gender. A series of one-sample t tests were conducted to identify significant differences between the published norms and the total participant sample. These results are presented in Table 18. These results show that male and female participants obtained significantly higher scores than non-psychiatric patient norms on both the anxiety and depression subscales. When compared to psychiatric outpatient norms, men did not score significantly different on either the depression or anxiety subscale, whereas the female participants scored significantly lower on both.

In order to explore the link between addiction severity and severity of mood and anxiety, scores for both the moderate addiction severity and high addiction severity samples, were compared against published norms. This data is presented in Table 19 (moderate addiction severity) and Table 20 (high addiction severity).

Table 18

*One sample t-test comparison of published non psychiatric (NP) and outpatient psychiatric (OP) norms against total sample (n = 64)*

	Male (n = 31)					Female (n = 33)				
	S	NP	t	OP	t	S	NP	t	OP	t
Dep	49	34	t(30) = 8.0, p < .05	51	t(30) = -1.0, NS	44	35	t(32) = 4.3, p < .05	49	t(32) = -2.7, p < .05
Anx	49	32	t(30) = 6.8, p < .05	47	t(30) = .72, p NS	42	37	t(32) = -2.1, p < .05	47	t(32) = -2.9, p < .05

*Dep = SCL-90R depression subscale; Anx = SCL-90R anxiety subscale; S: Study participants; NP: Non-psychiatric population norms; OP: Outpatient population norms; NS = > .05*

Table 19

*One sample t-test comparison of published norms against Moderate addiction severity sample (n = 15)*

	Male (n = 5)					Female (n = 10)				
	S	NP	t	OP	t	S	NP	t	OP	t
Dep	39	34	t(4) = 1.9, p NS	51	t(4) = -3.9, p < .05	37	35	t(9) = .52, p NS	49	t(9) = -3.2, p < .05
Anx	33	32	t(4) = .11, p NS	47	t(4) = -1.6, p < .05	32	37	t(9) = -.76, p NS	47	t(9) = -2.4, p < .05

*Dep = SCL-90R depression subscale; Anx = SCL-90R anxiety subscale; S: Study participants; NP: Non-psychiatric population norms; OP: Outpatient population norms; NS = > .05*

Table 20

*One sample t-test comparison of published norms against high addiction severity sample (n = 49)*

	Male (n = 26)					Female (n = 23)				
	S	NP	t	OP	t	S	NP	t	OP	t
Dep	49	34	t(25) = 8.5, p < .05	51	t(25) = -.04, NS	44	35	t(22) = 5.9, p < .05	49	t(22) = -1.5, NS
Anx	51	32	t(25) = 9.7, p < .05	47	t(25) = 2.4, NS	46	37	t(22) = .50, p < .05	47	t(22) = -.53, NS

*Dep = SCL-90R depression subscale; Anx = SCL-90R anxiety subscale; S: Study participants; NP: Non-psychiatric population norms; OP: Outpatient population norms; NS = > .05*

Data presented in Table 19 shows that male and female participants in the moderate addiction severity sample did not respond significantly different than non-patient norms, on either the depression or anxiety subscales. Compared to the outpatient population norms, both male and female participants scored significantly lower on both subscales. Data presented in Table 20 shows that male and female participants in the high addiction severity sample responded significantly higher than non-patient norms, on both the depression and anxiety subscales. Compared to the outpatient population norms, both male and female participants did not score significantly different on either subscale. These results show that the higher the addiction severity, the closer responding was to outpatient psychiatric norms.

In order to answer the question of whether increased addiction severity is associated with increased anxiety and depression, correlations were conducted between the Addictive Disorder Questionnaire (ADQ) and the anxiety and depression subscales of the SCL-90R, for the total participant sample. Due to the use of binomial data in the ADQ, non parametric Spearman correlation coefficients were conducted. This analysis showed that a significant relationship exists between depression and addiction severity ( $r = .416$ ,  $p < .01$ ) and anxiety and addiction severity ( $r = .510$ ,  $p < .01$ ). The data also showed that a significant relationship exists between anxiety and depression ( $r = .812$ ,  $p < .01$ ). Further Spearman correlations were conducted for each of the addiction groups in the total sample, in order to examine the link between anxiety, depression and addiction severity. These results are presented in Table 21.

Table 21

*Spearman's correlation between mean ADQ, depression, and anxiety scores for the three addiction groups*

Group	Scale	
		ADQ
Compulsive Shopper (n=23)	Depression	.364
	Anxiety	.515(*)
Pathological Gambling (n=23)	Depression	.361
	Anxiety	.539(*)
Alcohol Dependent (n=23)	Depression	.179
	Anxiety	.182

\* =Correlation is significant at the 0.05 level (2-tailed).

The data presented in Table 21 shows that higher addiction severity (ADQ) is associated with higher levels of anxiety for the CS and PG groups. No significant association between addiction severity and depression was found for the AD group. To further explore the affect of addiction severity on anxiety and depression, Spearman correlation coefficients were conducted for moderate and high addiction severity groups on the ADQ, and SCL-90R anxiety and depression subscales. Results indicated no significant correlations between moderate or high addiction severity samples, with either the depression or anxiety subscales.

As the ADQ was specifically developed for use within this study, as both a way of identifying different aspects of addiction phenomenology, and as a measure of addiction severity, Pearson correlation coefficients for the total sample, were computed for an established measure of addiction severity (total YBCOS scale), and the YBOCS obsession and compulsion subscales, with both the depression and anxiety subscales. These results are presented in Table 22. Results indicated that the YBOCS and both the obsession and compulsion YBOCS subscales, correlated with anxiety and depression in the total sample.

Table 22

*Pearson's correlation coefficients for depression, anxiety, Y-BOCS total and subscales for total sample*

N =64	Scale	
	Depression	Anxiety
Y-BOCS	.448(**)	.473(**)
Y- Obsess	.417(**)	.416(**)
Y- Compuls	.428(**)	.470(**)

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale;*

*\*\* =Correlation is significant at the 0.01 level (2-tailed).*

Further correlations were conducted to explore the impact of addiction severity (moderate and high) on the link between the YBOCS and its subscales, and the anxiety and depression subscales. When classified by moderate addiction severity, no correlations were found between the YBOCS or its subscales, with depression or anxiety. Results for the high addiction severity sample are presented in Table 23. Results showed correlations between all scales in the high addiction severity sample.

Table 23

*Pearson's correlation coefficients for depression, anxiety, Y-BOCS total and subscales for the high addiction severity sample*

n =49	Scale	
	Depression	Anxiety
Y-BOCS	.365(*)	.407(**)
Y- Obsess	.311(*)	.341(*)
Y- Compuls	.353(*)	.398(**)

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale;*

*\*\* =Correlation is significant at the 0.01 level (2-tailed).*

In order to identify differences in correlations on these measures by addiction group, correlations were conducted for the total sample addiction groups. These data are presented in Table 24.

Table 24

*Spearman's correlation coefficients for total sample, by addiction groups for depression, anxiety, and Y-BOCS total and subscales*

Group (n=64)	Scale	Depression	Anxiety
CS (n=20)	Y-BOCS	.287	.246
	Y- Obsess	.308	.250
	Y- Compuls	.245	.223
PG(n=20)	Y-BOCS	.368	.413
	Y- Obsess	.389	.407
	Y- Compuls	.312	.377
AD (n=24)	Y-BOCS	.476(*)	.538(**)
	Y- Obsess	.379	.408(*)
	Y- Compuls	.506(*)	.591(**)

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale;*

*\*= Correlation is significant at the 0.05 level (2-tailed); \*\*= Correlation is significant at the 0.01 level (2-tailed).*

As shown in Table 24, correlations were only found in the AD group, where the YBOCS total and YBOCS compulsive scale correlated with both anxiety and depression, and the obsession subscale correlated with anxiety. In order to identify the effect of addiction severity on correlations, correlations were conducted for the moderate and high addiction severity sample, on each group on these measures. These data are presented in Table 25 (moderate addiction severity) and Table 26 (high addiction severity).

Table 25

*Spearman's correlation coefficients for moderate addiction severity sample, by addiction groups for depression, anxiety, and Y-BOCS total and subscales*

Group (n=15)	Scale	Depression	Anxiety
CS (n=9)	Y-BOCS	.341	-.118
	Y- Obsess	.506	-.035
	Y- Compuls	.176	-.177
PG(n=5)	Y-BOCS	-.605	-.113
	Y- Obsess	-.584	-.093
	Y- Compuls	-.627	-.136
AD (n=1)	Y-BOCS	#	#
	Y- Obsess	#	#
	Y- Compuls	#	#

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale; # = could not be calculated due to only one participant in group*

Table 26

*Spearman's correlation coefficients for high addiction severity sample, by addiction groups for depression, anxiety, and Y-BOCS total and subscales*

Group (n=49)	Scale	Depression	Anxiety
CS	Y-BOCS	-.247	.066
	Y- Obsess	-.259	.066
	Y- Compuls	-.193	.054
PG	Y-BOCS	.385	.272
	Y- Obsess	.443	.315
	Y- Compuls	.268	.188
AD	Y-BOCS	.457(*)	.529(**)
	Y- Obsess	.356	.397
	Y- Compuls	.492(*)	.584(**)

*Y- Obsess = YBOCS Obsession subscale; Y- Compuls = YBOCS Compulsion subscale; \*= Correlation is significant at the 0.05 level (2-tailed); \*\*= Correlation is significant at the 0.01 level (2-tailed).*

From the analysis of moderate and high addiction severity (Table 25 and Table 26 respectively) significant correlations were only found for the AD addiction group, in the

high addiction severity sample. These correlations were between the YBOCS and YBOCS compulsion subscale with both anxiety and depression.

In summarising the relationship between anxiety, depression and addiction phenomenology, results for the total sample showed no significant differences in scoring between groups on either the depression or anxiety subscales of the SCL-90R. Despite no significant differences in mean responding to the scales, significant differences were found between groups for 4 individual items on the depression subscale, and 2 items on the Anxiety subscale. When data was re-categorized as either high or moderate addiction severity, the high addiction severity population was found to score significantly higher on both anxiety and depression than the moderate addiction severity population. No significant differences in responding between addiction groups in the high addiction severity sample were identified on either anxiety or depression, and in this population, there were also no significant differences on any of the individual items for either subscale.

When compared to published non-psychiatric and psychiatric outpatient norms, the total, and high addiction severity sample, scored significantly higher on the depression and anxiety subscales than published non-psychiatric population norms, and similar to psychiatric outpatient norms, whereas the moderate addictions severity group scored similar to non psychiatric norms.

The relationship between addiction severity and anxiety and depression were explored by conducting correlations between two measures of addiction severity, the ADQ and YBOCS. Correlations were also conducted between the YBOCS obsession and compulsion subscales and anxiety and depression in order to differentiate possible impact of obsessions and compulsions on anxiety and depression.

Total sample analysis identified significant correlations between anxiety and ADQ addiction severity for PG and CS participants, whereas, there were no correlations found between addiction severity (ADQ) and depression or anxiety when correlated by addiction groups, or moderate and high addiction severity.

Correlations between the YBOCS and the YBOCS obsession and compulsion subscales, with both depression and anxiety, found that the YBOCS and its subscales

correlated with both anxiety and depressions in the total sample. No correlations were found for the YBOCS and its subscales with anxiety and depression in the moderate severity addiction group, whereas correlations were found between all scales in the high addiction severity sample. When correlations were computed for each of the three addiction groups on these measures, correlations were found between all scales, except obsession and depression in the AD group. When reclassified by moderate and high addiction severity by group, on these measures, once again only correlations were found for the AD group. Correlations for the AD group were found between the total YBOCS and compulsion subscale on anxiety and depression.

#### *4.5 Validity of the Addictive Disorder Questionnaire (ADQ)*

As the Addictive Disorder Questionnaire (ADQ) was developed for use within this study, several analysis were undertaken to identify the validity of the ADQ. Correlations were carried out between the ADQ and the YBOCS (an established measure of addiction severity). In addition, results of the ADQ were correlated with the Compulsive Buying Screen (CBS), an established diagnostic screen for compulsive shopping, and the Barratt Impulsivity Scale (BIS), an established aspect of addiction proposed to increase addiction severity). Table 27 presents the total sample results for Pearson’s correlations between the ADQ, BIS, and YBOCS total score. Results showed that the ADQ correlated significantly with the BIS and YBOCS in the total population sample.

Table 27

*Pearson’s correlation between mean ADQ, BIS and YBOCS total score, for the total sample (n=64).*

Scale	BIS	YBOCS
ADQ	.453 (**)	.667 (**)

\*\*= Correlation is significant at the 0.01 level (2-tailed).

As the ADQ items were based on DSM-IV diagnostic criteria, which has a diagnostic cut-off of  $\geq 3$  or above, the response rate to the ADQ for the AD group was computed. All 24 individuals in the AD group met the proposed diagnostic cut-off. When compared by moderate and high addiction severity, all 24 participants met the cut-off score. As mentioned in the introduction, pathological gambling diagnostic criteria in the DSM-IV has several similarities with substance dependence diagnostic criteria. For a diagnosis of pathological gambling,  $\geq 5$  or above items are required. Of the 20 PG participants, 19 participants met the cut-off score, whereas when analysed by addiction severity, all 15 of the high addiction severity group met the cut-off, whereas 4 participants in the moderate addiction severity group met cut-off scores.

Within the analysis of the CS group, 14 of 20 participants that self-identified as compulsive shoppers, met the Compulsive Buying Screen (CBS) cut off score (-1.34) for a classification of 'compulsive shopping'. Of this group, 11 met the ADQ high addiction severity classification. Four individuals who met the CBS criteria did not meet the ADQ addiction severity cut-off score. Three of these participants scored just under the severity cut-off score (6), and one participant scored 4. One participant scored 10 on the ADQ, despite not meeting the cut off score for the CBS (.90).

Based on the data presented, the ADQ accurately identified 11 of 14 participants (78.6%) who met the CBS criteria (accurately differentiating compulsive shoppers from non-compulsive shoppers). The ADQ also accurately identified all AD participants, and all 15 PG participants in the PG group. Despite a positive correlation between the ADQ and both the BIS and YBCOS in the PG and CS addiction groups for the total sample, inconsistent correlations were found when classified by group and addiction severity.

## 5. Discussion

This section will first compare the demographic make up of the present study sample, to other New Zealand addiction samples, before summarizing and discussing the results.

The participants in this study were comparable with regard to gender and age to other samples of addiction treatment seekers in New Zealand (Adamson, Sellman, & Deering, et al., 2006). There was a similar mean age of participants (34), and a similar percentage of Maori (30%) and Pacific (6%) participants. The present study sample had a lower percentage of European participants (38%). This may be due to two of the addiction treatment services that provided access to participants, were predominantly Pacific and Maori specific services. Overall, the participants in the present study sample had a lower mean number of male participants than the profile of clients attending alcohol and other drug services. In this analysis, the sample of compulsive shoppers, which were all women, has skewed the gender profile of the sample. The alcohol dependent and pathological gambling groups had a greater number of male participants (70%) than the New Zealand AOD treatment sample.

The self-reported psychiatric disorders in the present sample, were also similar to those of a recent New Zealand review of coexisting psychiatric disorders in sample of out-patient alcohol and other drug service users (Adamson et al., 2006), and that of other international substance addiction samples (Kessler et al., 1994; Kessler et al., 1997; Robins & Regier, 1991). The present sample reported similar occurrence of two specific disorders, with those reported in the national sample- major depression (25% vs 34%) and Bipolar 1 (16% vs 11%) respectively. There was a lower number of Posttraumatic stress disorder (3.1% vs 31%) and anxiety disorders (9.4% vs 65%) in the present sample. The occurrence of head injuries (4.7%) and personality disorders (4.7%) in the present sample was not able to be compared to the national sample, as the national sample did not comprehensively screen for personality disorders, or report head injuries.

In general the overall occurrence of mood disorders was similar between the present study sample and that of national and international samples. Dissimilarities, such as the low number of anxiety and post traumatic stress disorders in the present sample, may be related to the use of self-report data, rather than comprehensive screening as used

in the study by Adamson et al., (2006). It is likely that the occurrence of psychiatric disorders would have been higher in the present sample, if comprehensive psychiatric diagnostic screening was undertaken. The moderate prevalence of personality disorders and head injuries in the present sample were of particular interest, as they were found in the behavioural addiction groups only (compulsive shoppers and pathological gamblers). One participant spoke about the potential problems associated with not screening for head injuries within addiction populations “I was treated continuously with medication for 32 years, then diagnosed with brain injury in 2005” (from an accident over 30 years ago) (Pathological gambling participant). The following section will discuss the results according to each research question, for the total study sample, and then according to addiction severity.

In order to answer both parts, of the first research question ‘is there a set of common characteristics which are present in addictive behaviour across compulsive shopping, pathological gambling and alcohol dependence?’; and ‘are those characteristics which are not common to all three disorders, related to the specific substance or activity related to each disorder?’, the Addictive Disorder Questionnaire (ADQ) was administered. The ADQ was designed for use within the present study, to broadly identify the presence of addiction phenomenology (addiction diagnostic criteria), and provide a measure of addiction severity (accumulation of positive responses to diagnostic criteria). The diagnostic items were worded specifically for each addiction group, and one item relating to substance withdrawal, was reworded to encompass both the physiological and psychological (mood related) experiences of ‘addicts’, as recommended by Schmitz (2005) and Budney (2006).

As the ADQ was based on the diagnostic criteria in the DSM-IV (American Psychiatric Association, 2000), with the addition of one ICD-10 item ‘craving’ (World Health Organization, 1990), a score of  $\geq 3$  was deemed to be indicative of addiction. The present study introduced a ‘high’ and ‘moderate’ ADQ addiction severity classification in order to remove addiction severity as a confound. Budney (2006) recommended different cumulative scores on the DSM-IV for different addictive substances, such as a diagnostic score of  $\geq 7$  diagnosing for cocaine dependence, compared to 4-6 items for cannabis

dependence. The present study used the higher  $\geq 7$  ADQ score in order to increase the likelihood of the three addiction groups providing a broader range of addiction phenomenology to measure and compare. Those that scored  $< 7$ , yet still  $\geq 3$  on the ADQ, were termed the moderate addiction severity sample.

Analysis of endorsement of addiction diagnostic items on the ADQ, identified three items which were endorsed similarly for the total sample, these were ‘Have you experience a strong desire or sense of compulsion to .....?’; ‘Do you find that when you start using/participating in ..... you end up using/participating more than you planned to?’; and ‘Do you often use/participate in more .....for a longer period of time than you intended to?’. These items indicate some dyscontrol and salience across the total study sample. When reclassified by addiction severity, high addiction severity participants endorsed the majority of ADQ items. The only items that were endorsed differently were items 2 ‘Do you find that when you use/participate in the same amount of ....., it has less of the desired affects than before?’ and item 8 ‘Does your using/participating in ..... make or cause you to become physically or mental/emotionally unwell despite your continued use?’. The AD group scored higher on both these items. These two items can be argued to represent both physiological and dyscontrol items, i.e., item 2, the physiological symptom of tolerance, and item 8, in which it could be argued that the substance contributed to harm at a physiological level, and their was a lack in ability to restrain behaviour. It is not clear whether these physiological and dyscontrol addiction characteristics are substance (i.e., alcohol) specific, as tolerance was also included in item 1, which was not responded to significantly differently across groups, and withdrawal, which would be expected to be responded to higher in the AD group (i.e., due to the direct production of physiological withdrawal at abrupt cesation of continued alcohol use), was endorsed similarly across addiction groups. Several other dyscontrol items were also responded to similarly across the different addiction groups.

From the endorsement rates of diagnostic criteria in the ADQ, it can be seen that the three common addiction categories of physiology, dyscontrol and salience are endorsed similarly across the three addiction groups. Despite some individual items being responded to differently across groups (i.e., ADQ item 2, tolerance), other items measuring the same phenomena (i.e., ADQ item 1) found no differences in responding

between groups. These results support earlier findings by Budney et al., (1998) and Stephens et al., (2002) that reported despite some individual items on the DSM-IV (American Psychiatric Association, 2000) being endorsed differently across different drug types (i.e., cannabis versus cocaine), there are more similarities in types and number of items endorsed. Therefore, from the endorsement of items on the ADQ, no substance or activity specific addiction phenomena were identified. These results provide evidence for alcohol dependence addiction criteria (phenomena) being common across two behavioural addictions - pathological gambling and compulsive shopping.

The use of more comprehensive description and representation of addiction phenomenology (i.e., re-wording of withdrawal to include emotional aspects, and referring to the specific addiction in the ADQ) supports previous arguments for the broadening of addiction diagnostic terminology, in order to represent the psychological and physiological representation of each phenomena, rather than drug specific representations (Budney, 2006; Hughes, 2006). This also supports arguments for a unidimensional addiction construct, in which current substance addiction diagnostic criteria are appropriate for use within non-substance addictions (Budney, 2006; Goodman, 1990; Petry, 2006).

In order to measure specific aspects of established addiction phenomenology, more symptom specific scales were administered. Impulsivity was measured by administering the Barratt Impulsivity Scale (BIS). Obsessions (salience and cognitive elaboration), compulsion (cued responses), addiction severity, and overall craving were measured by administering the published addiction specific adaptations of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), and its subscales (obsession and compulsion).

There were no significant differences in impulsivity across the three addiction groups, and no significant differences between moderate and high addiction severity samples. Irrespective of severity classification, all groups met proposed cut-off scores for impulsivity ( $\geq 60$ ). In relation to results from similar populations, the total AD sample ( $73.9 \pm 12.7$ ) scored higher than comparative studies by Bayle et al., (2003) ( $58.1 \pm 16.1$ ); and Dom et al., (2006) ( $61.7 \pm 17.1$ ). The pathological gambling group ( $70.3 \pm 10.8$ ) scored lower than a study of pathological gamblers with co-morbid psychiatric

disorder(s) by Fuentes et al., (2006) ( $78.66 \pm .68$ ). Despite scoring higher than both other groups on the BIS, the compulsive shopping group ( $72.1 \pm 9.9$ ) scored similarly to a study of kleptomania subjects, including compulsive shoppers by Bayle et al., (2003) ( $72.1 \pm 18.3$ ), yet lower than a study of solely compulsive shoppers (Mueller et al., 2007) ( $84.9 \pm 12.3$ ). The moderate addiction severity group in both the pathological gambling and compulsive shopping groups were higher in impulsivity than that of 'healthy' controls published by Fuentes et al., (2006) ( $59.7 \pm .78$ ).

When analysed by addiction severity, all three addiction groups in the high and moderate addiction severity samples met cut-off scores for impulsivity. The high ( $74.0 \pm 12.9$ ) and moderate ( $72.0 \pm 0.0$ ) addiction severity AD sample still scored higher than comparative studies. The high ( $72.3 \pm 11.4$ ) and moderate ( $64.2 \pm 5.9$ ) PG addiction severity sample continued to score lower than similar studies, whereas the high ( $77.8 \pm 7.5$ ) and moderate ( $65.1 \pm 7.8$ ) CS addiction severity samples scored lower than a study of compulsive shoppers.

The comparison of the impulsivity scores in the present total and addiction severity samples with similar studies, provide evidence that the present AD sample has higher levels of impulsivity than comparative studies, whereas both the PG and CS addiction groups scored lower than comparative studies. As impulsivity has been identified to increase the severity of addiction (Glantz, 1999; Glantz & Pickens, 1992), it is possible that the AD group is a particularly severe AD group, whereas the both the PG and CS groups may be more moderate in addiction severity .

The high level of impulsivity in the present sample supports the occurrence of impulsivity as a common characteristic of addiction. The high level of impulsivity, irrespective of the addiction severity classification of participants, supports arguments that propose that addiction progresses from impulsive use to compulsive use (Le Moal & Koob, 2007). It is possible that those who did not meet severity classification may have been in a prodromal phase of addiction, i.e., the hedonic impulsive phase. If this was the case, the severe group would be expected to have higher scores than moderate addiction severity samples on measures of compulsion, as measured by the YBOCS.

The common occurrence, and high level of impulsivity in the total sample, also supports arguments for the development of sub-clinical classifications for behavioural

addictions (Griffiths,2000; Petry, 2006). It is possible that those participants, who did not meet the high addiction severity cut-off score, may have met a less severe 'abuse' category. This is also supported by results which indicated that the population in this study scored higher than 'healthy controls'. This high level of impulsivity would also be expected, as those that responded to advertisements for participants, identified having a problem in controlling their specific behaviour. Taking this into consideration, participants may have been on one end of a spectrum of addiction. As an example, those who identified as having concerns over controlling their behaviour in the compulsive shopping (CS) group, may have been experiencing significant social (i.e., marital separation), or legal (i.e., debt) problems related to their shopping, yet may not have met the ADQ or the CBS severity cut-off scores. If alcohol was the salient object in this addiction, it would be quite possible that they would meet an 'abuse' classification according to the DSM-IV (American Psychiatric Association, 1994).

Comments from compulsive shopping participants on the demographic and qualitative questionnaire provide further insight and support for prodromal or sub-clinical addiction classifications. Some comments reflected normal aspects of shopping behaviour, such as "I enjoy shopping – great fun", and "spending is more of a problem at Christmas time/special occasions". The more compulsive type of shopping was evident in comments such as "I get a real 'rush' when I shop and feel good only for a while once I have the things. I have sometimes brought things in a shopping frenzy that I didn't even want or need. I throw them away so I don't have to think about them".

Results of the total Yale-Brown Obsessive Compulsive Scale (Y-BOCS), as a measure of craving and addiction severity, indicated significantly higher scoring in the total sample for the alcohol dependent (AD) group over the compulsive shopping (CS) group. When total YBOCS scores were compared to results from similar studies, the alcohol dependent group scores ( $22.8, \pm 7.8$ ) were similar to those found in other studies of alcohol dependent populations Modell et al., (1992), and Ilhan et al., (2006) ( $22.3 \pm 7.7$  and  $20.4 \pm 8.4$ , respectively). The mean total YBOCS score for the pathological gambling group was the same as that found in a study of pathological gamblers by Grant et al., (2007) ( $20.3 \pm 8.3$  and  $20.3 \pm 4.1$ , respectively), whereas the compulsive shopping group score

( $13.8 \pm 7.2$ ) was lower than those found in recent studies of compulsive shoppers (Mitchell et al., 2006; Mueller et al., 2007) ( $22.6 \pm 7.2$  and  $21.2 \pm 6.3$ , respectively). Despite the CS moderate addiction severity sample scoring higher than that of non compulsive shopping controls (Monahan et al., 1996), less than a fourth of CS participants met YBOCS cut-off scores for compulsive shopping severity (Hand & Büttner-Westphal, 1991). Based on these comparisons, the PG and AD sample presented as comparable in addiction severity to other addiction research populations, whereas the compulsive shopping sample, despite meeting established cut-off scores for diagnosis (i.e., from the results of the Compulsive Buying Screen), presented as more moderate in addiction severity. This moderate rate of addiction severity in CS participants can be related to the majority of the CS participants being accessed from the general community, rather than attending any medical or psycho-social interventions, as was found with the AD and PG participants. It is possible that either the CS participants either did not experience significant consequences from shopping in order to seek intervention, or were not aware of available intervention options (budget advisors or generic counseling).

As well as analysing total YBOCS scores, results of the two subscales, obsession and compulsion for the total sample, were compared with other addiction specific research populations, across the three addiction groups. The AD group obtained higher scores on the obsessions ( $9.9 \pm 4.1$ ) and compulsion ( $12.6 \pm 4.3$ ) subscales compared to other studies of alcohol dependent individuals ( $6.6 \pm 3.2$  and  $10.4 \pm 2.8$  respectively) (Fedoroff et al., 1999). The PG obtained lower scores on both the obsessive ( $8.7 \pm 4.8$ ) and compulsive ( $8.2 \pm 5.5$ ) subscales compared to studies of pathological gamblers by Hollander et al., (1998) ( $11.6 \pm 4.0$  and  $13.1 \pm 3.1$ , respectively) and Grant et al., (2007) ( $9.6 \pm 2.6$  and  $10.4 \pm 4.4$ , respectively). Scores for compulsive shopping were not identified in the literature, yet it appears that CS in this sample scored lower than both AD and PG participants on the YBOCS subscales.

Comparison of the total and subscale scores of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) with similar studies support findings from analysis of responding on the ADQ, in which the AD group scored significantly higher than the CS group. In order to identify the link between addiction severity and YBOCS total and

subscale scores, results on these measures for the moderate and high addiction severity sample were analysed.

When reclassified by addiction severity, the differences between AD and CS were no longer found in the high addiction severity sample. Comparison of results of YBOCS total score for the AD group with similar studies (as previously presented) found similar results to those found in the total AD sample (as there was only one participant in the AD group), whereas results for the moderate addiction severity participant ( $8.8 \pm 5.7$ ) was lower than those from comparative studies (introduced earlier). The mean PG -YBOCS total score for the high addiction severity sample was  $20.3 (\pm 8.3)$ . This score was the same as that found in a study by Grant et al., (2007) ( $20.3 \pm 4.1$ ), yet lower than that found in a study by Hollander et al., (2000) ( $26 \pm 6.8$ ). Scores for the moderate addiction severity sample ( $8.8 \pm 5.7$ ) was lower than those found in similar studies. Total YBOCS scores for the high addiction severity CS sample ( $17.8, \pm 5.7$ ) was lower than those found in the studies of compulsive shoppers by Mitchell et al., (2006) and Mueller et al., (2007). ( $22.6 \pm 7.2$  and  $21.2 \pm 6.3$ , respectively), whereas results for the moderate addiction severity sample ( $8.8 \pm 5.7$ ) was lower again.

When obsessive and compulsive subscales in the high and moderate addiction severity sample were compared to similar studies, the high addiction severity AD sample scores were similar to those found in the total sample analysis. Differences reduced between addiction groups in the high addiction severity sample. The high and moderate addiction severity results in the PG sample for the obsessive ( $10.2 \pm 4.3$  and  $4.4 \pm 3.6$  respectively) and compulsive ( $10.1 \pm 4.9$  and  $2.6 \pm 2.9$  respectively) subscales, showed that PG participants in the high addiction severity sample were not different to similar studies, whereas the moderate addiction severity sample was. In the CS sample, results for the high and moderate addiction severity samples on the obsessive ( $8.6 \pm 3.1$  and  $4.8 \pm 2.7$  respectively) and compulsive ( $9.2 \pm 3.0$  and  $4.0 \pm 3.3$  respectively) subscales showed that the high addiction severity CS sample was more similar to PG and AD studies, compared to the total and moderate addiction severity samples.

The similar scores on the YBOCS total scale support the inclusion of craving as a common phenomenon across addiction disorders. Also, the similar scores in the high

addiction severity sample across the three addiction groups, compared to similar studies, supports the separation of high and moderate addiction severity samples, as this has effectively reduced addiction severity as a confound. Comparison of the YBOCS total and subscales scores, with similar studies, also provides further evidence for the severity of the AD sample, compared to the PG and CS group.

Analysis of obsession and compulsion subscales of the YBOCS for both the total, and moderate and high addiction severity samples, showed a general similarity in responding across groups on the obsession subscale, and significantly higher scoring in AD participants on the compulsion subscale. In relation to individual items of the YBOCS scale, individual differences in responding for the total population found 5 differences on individual items, whereas only 3 items were endorsed differently in the high addiction severity sample. One item of note was item 6 'Time spent in activities related to ...'. The CS group score higher than the PG group, yet lower than the AD group on this item. It is difficult to identify whether the CS group were recording their responses in relation to time shopping in a compulsive nature (i.e., purchasing non-essential or beyond their means), compared to essential shopping such as grocery shopping.

Results of the compulsive scale support the proposition of compulsion as a generic aspect of addiction. This is also supported by the similarity in responding to dyscontrol items on the ADQ, which are proposed to be related to compulsive behaviour (i.e., the inability to reduce addiction behaviour). The higher scoring in the AD group is arguably a reflection of the addiction severity of this group (i.e., majority in residential addiction treatment). Results of the obsession subscale also provide support for the inclusion of obsession as a key aspect of addiction phenomenology. This is also supported by similar scoring across the groups on impulsivity (BIS). Impulsivity and obsessions are proposed to reflect the importance (salience) placed on the object of desire, and the level of desire associated with the substance or behaviour.

Results from both the obsession and compulsion scales support the distinction between the impulsive and compulsive phases of addiction, as there were significant differences found between high and moderate addiction severity participants on the compulsions scale, whereas there were no significant differences between groups on the

obsessions scale. The obsessions would represent the salience (appeal/status) of the object or activity, which would be influenced by impulsivity, which occurs on a continuum of normal to severe. Taking this into consideration, both impulsivity and obsessions which were common across addiction groups, may form a prodromal phase of addiction, and which may also have a role in the maintenance of addiction. Whereas compulsions, which the AD group obtained higher scores, could be proposed to represent the transition to dyscontrol, that arguably ‘marks’ the severity of the addiction. This is supported by the Elaborated Intrusion theory (EI) of addiction (Kavanagh et al., 2004), which proposes that the degree of elaboration (obsessional thoughts) of compulsions (urges), increases the strength of cravings, and likelihood of participating in addiction behaviour. The proposition that compulsion and dyscontrol mark the severity of the addiction is supported by the finding that the present AD sample, which were predominantly in residential addiction treatment, were also found to score more highly on the ADQ, YBOCS total, and YBOCS obsessions scales, compared to the behavioural addiction groups (i.e., CS and PG).

In order to answer the first part of the second research question ‘Do people with compulsive shopping and pathological gambling exhibit similar rates of anxiety and mood disturbance (depression) as observed in those with alcohol dependence?’ results from the anxiety and depression subscales of the SCL-90R were analysed. There were no significant differences on either subscale, between addiction groups within the total sample, or when reclassified by addiction severity (moderate or severe). Based on comparison to published psychiatric outpatients and non-patient norms (Derogatis, 1994), the subjects in this study scored in a similar range to out-patient psychiatric norms, and significantly higher than non-psychiatric norms on both depression and anxiety. When reclassified by addiction severity, the moderate addiction severity sample scored in a similar range to non-psychiatric norms, whereas the high addiction severity sample scored in a similar range to psychiatric out-patient norms. These results provide evidence to support arguments for anxiety and depression as key addiction phenomena.

The prevalence and severity of depression and anxiety across groups in the high addiction severity sample, also provides evidence that indicates some role for anxiety and

depression in the compulsion or dyscontrol phase of addiction. It is possible that both depression and anxiety has some relationship with failed attempts to restrict addiction behaviour, which has been cited in the literature as ‘secondary emotions’ such as profound guilt and dysphoria (Black, 2001; McElroy, Keck, Pope et al. 1994). There are several possible arguments for the link between anxiety, depression and addiction. It is possible that due to the chronic nature of addiction behaviour, that the associated chronic reoccurring secondary emotions may produce or reflect anxiety and depression. It is also possible that the development of addiction with its associated consequences may contribute to the development of anxiety and depression. Finally, it is possible that both disorders occur simultaneously and increase the severity and chronicity of each other.

In order to answer the second part of the second research question ‘Does the level of anxiety/mood disturbance relate to the severity of addictive disorder?’ For the total sample, significant correlations were found between the anxiety and depression subscales and the ADQ, indicating addiction severity was related to the severity of anxiety and depression in the total sample. When reclassified by addiction severity, the high addiction severity sample showed higher levels of anxiety to be associated with higher levels of addiction severity for the CS and PG groups, whereas no significant relationship was found between depression and addiction for any group. The correlation of anxiety and addiction severity in the pathological gambling and compulsive shopping groups may have been influenced by the high percentage of women in both these groups as compared to the AD group. This is because females showed higher levels of anxiety than males in the total and high addiction severity sample. These results provide evidence for gender specific experiences in addiction. Comments on the demographic and qualitative information questionnaire reinforce this “this may sound silly but my shopping is worse when I am pre-menstrual” (CS participant). This highlights the importance of acknowledging the experiences of different genders when designing addiction coping strategies, particular relapse prevention, which require the identification of addiction cues (triggers for addiction urges).

Significant correlations were also found between anxiety and depression and the YBOCS total (another measure of addiction severity) and obsession and compulsion

subscales. When reclassified by addiction severity, YBOCS total, and the obsession and compulsion subscales scores, correlated with depression and anxiety in the high addiction severity sample, whereas no correlations were found in the moderate addiction severity sample. Results for these correlations by addiction groups identified that only the AD group's scores (YBOCS total and subscales) correlated with depression and anxiety. The correlation between the YBOCS and its subscales with anxiety and depression in the AD sample only, raises the questions as to whether the Y-BOCS may be a better measure of addiction severity in those with alcohol dependence, whereas the ADQ may be a better measure of addiction severity in behavioural addictions. This is supported by literature in which the YBOCS-hd is argued to be a widely used measure of craving in AD samples (Gau et al., 2005), and an excellent measure of addiction severity and dysfunction (Federoff et al., 1999; Modell et al, 1992), whereas recent studies of behavioural addictions have argued for the accumulation of diagnostic items as an accurate measure of addiction severity (Budney, 2006).

In general the prevalence of co-morbid psychiatric disorders, the high anxiety and depression scores on the SCL-90R scales, and relationship between psychiatric symptoms and addiction severity in this sample, highlights the importance of screening for psychiatric disorders when working with these populations, particularly due to the negative impact on the course of addiction, and treatment outcome. This is supported by a recent study of coexisting psychiatric disorders in New Zealand in which Adamson et al., (2006) identified that psychiatric disorders in alcohol and drug addiction populations were “the rule and not the exception” (p.169), and that services need to be capable of screening for psychiatric disorders within the comprehensive assessment of addiction.

The following sections will discuss the validity of measures used, and limitation in the present study, before presenting research and clinical implications.

### *5.1 Validity of measures*

The demographic questionnaire developed for use within this study provided valuable insight into the nature and complexities of compulsive shopping, with one comment identifying the impact of the development of ‘online’ shopping “I spend more time shopping now than I probably ever had before because of (online auction site) – I like

looking for bargains, even if I don't need the item". Participants also reported seeking support or receiving interventions for their shopping behaviour ranging from budget advisors to marriage counselors, citing the severity of their shopping addiction leading to re-mortgaging their home and several 'maxed' credit cards. Participants also reported how they would feel 'aroused' participating in garage sales, and would enter all radio and newspaper competitions no matter what the prizes were.

The Addictive Disorder Questionnaire (ADQ) developed for use within this study was shown to have a strong correlation with another established addiction severity measure (YBOCS), and the ADQ accurately identified 10 of the 14 participants (78.6%) who met the Compulsive Buying Screen (CBS) for compulsive shoppers. Therefore the ADQ presents as a valid measure of addiction severity, differentiating addiction population from normal controls (i.e., compulsive shoppers). Despite the Addictive Disorder Questionnaire providing a broad analysis of endorsement of addiction diagnostic items, a specific change could be made to improve coverage and understanding of symptoms. The rewording of the withdrawal item to incorporate both the psychological and physiological symptoms enhanced the coverage of withdrawal experiences, which could also explain why this item was endorsed similarly across all three groups. In order to better understand withdrawal, it would be advantageous to split the physiological and psychological aspects of withdrawal into two separate items.

Some problems existed with either the presentation or complexity of questionnaires. Several participants reported that they felt that items on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) were 'asking the same thing'. A significant problem also identified through the observation of participants completing questionnaires was the period of time the questionnaires covered. The ADQ and Y-BOCS did not appropriately specify the time period being questioned. The ADQ referred to 'a' 12 month period that their addictive behaviour was the most severe, whereas the Y-BOCS did not refer to any time period. This is in comparison to the SCL-90R which specified 'the past week including today'. It is possible that participants could have focused on time periods specified in one questionnaire (i.e., the ADQ or SCL-90R) when completing the Y-BOCS.

The use of the 28-item BIS 11 also provided some problems in comparing data with existing Barratt impulsivity scales in use, such as the 30 item BIS 11, or the 34 item BIS 10. Future research should consider utilizing more established Barratt scales.

### *5.2 Limitations of present study*

The process and measures used within the present study identified various limitations, and provided both implications for future research and practical applications for individuals working with these populations.

The difference in the way that participants were accessed, such as through specific treatment centres, or via a ‘snow ball’ effect, had the potential to influence the validity of comparing addictive phenomenology. This was due to the potential difference in addiction severity, with alcohol dependent participants in residential treatment; pathological gambling in either support groups or outpatient treatment; and compulsive shoppers who were predominantly from the general public. Despite the similarities of responding between compulsive shoppers and the other two disorders, it is possible that around only four participants had a level of psychological and social impairment which would indicate treatment from a specialist mental health service. This is based on self-reports of participants who identified significant dyscontrol and distress, such as financial and legal problems and impairment of marital relationships, and requests for referral to specialist treatment providers. It is possible with access to compulsive shoppers with a higher level of impairment; in general they may have had higher levels of addiction phenomenology and associated co-occurring psychiatric disorders. The analysis of data by addiction severity was used to reduce addiction severity as a confounding factor.

### *5.3 Research implications*

During the process of accessing the different groups within this study, several key issues were identified regarding accessing addiction samples, particularly compulsive shoppers. Due to there being no established treatment providers for compulsive shoppers (as opposed to the wide range of gambling and alcohol and drug services), a key strategy

in getting relevant compulsive shoppers, was accessing internet message boards on websites related to shopping, auctions and financial management. Due to the inexperience in the use of these sites by the researcher, a thread on compulsive shopping was removed off one specific website. This was due to the researcher posting contact details for the study. Despite the message only being up for one day, the thread provided access to four compulsive shoppers, and the diverse range of public opinion about compulsive shopping. As an example, a message on an internet auction message board identified a relevant ethical dilemma with the study design - the provision of shopping vouchers for individuals who completed questionnaires about compulsive shopping. Utilizing internet message board thread on these websites also provided access to researchers investigating the same topics. Two researchers, one from Scotland and one from America made contact with the researcher, requesting information about compulsive shopping and sharing information about study design. Accessing the broad network of Budget Advisors, as advised in the literature, was another part of the strategy of accessing compulsive shoppers. This identified that compulsive shopping was a significant problem, according to those budget advisors that made contact with the researcher, yet this did not lead to an increase in access to participants.

Providing appropriate vouchers and having personal contact with research participants was another key issues identified in the present study. Two presentations were made to subjects within treatment settings, one was at a residential treatment centre for substance dependence, and the next was at an end of year social event for two problem gambling groups. The personal presentation allowed the researcher to explain and answer questions about the study. Both presentations provided significant engagement with those present. The significant engagement at the alcohol residential treatment centre was assisted by the fact that the place in which participants could redeem vouchers, was on the same road as the treatment centre. Therefore it was possible that the incentive of the voucher was increased, as they were able to be redeemed immediately at completion of the questionnaires.

#### *5.4 Clinical implications*

The continued development of broader terminology when identifying and measuring addiction phenomenology, such as the separation of withdrawal into psychological and physiological items, could provide a more comprehensive understanding of addiction. A more comprehensive account of addiction will potentially be as beneficial to substance addiction researchers, as it is to those in the field of behavioural addictions, especially increasing attention to psychological aspects of addiction, rather than a medical account of addiction based on the psychoactive affects of drugs. Along with the development of diagnostic criteria, results from the present study support previous arguments for the development of sub-clinical diagnostic categories for pathological gambling and compulsive shopping. Further development and research around different phases of addiction (i.e., prodromal or compulsion) may enhance and work in tandem with the development of sub-clinical diagnostic categories. Increased understanding and identification of an ‘addicts’ phase of addiction (i.e., impulsive or compulsive) may potentially guide the allocation of addiction resources (i.e., education and brief interventions for sub-clinical categories).

The findings that support propositions for common addiction phenomenology, in which broader physiological and psychological descriptions increase applicability across addictions, raises several positive clinical applications: screening for co-occurring psychiatric disorders, sharing addiction treatment and training resources, and increasing treatment and early interventions for emerging addictions, such as compulsive shopping.

Screening for co-occurring psychiatric and personality disorders, and the presence of head injuries in addiction populations will assist in differentiating aspects which may be affecting both the maintenance of addiction (i.e., engaging in addiction to modify mood), and affecting the course and severity of the addiction, and potential engagement and compliance with treatment.

With the understanding, that addiction is more than physiological phenomena (i.e., withdrawal and tolerance), attention can now be turned towards common psychological addiction phenomena, such as affect (guilt, dysphoria, depression and

anxiety), craving (i.e., salience and obsessions) and compulsions (i.e., dyscontrol). This broader physiological and psychological conceptualization of addiction, can provide impetus for the exploration of providing non-substance or activity specific addiction training (i.e., theory, assessment, early intervention and treatment). With the provision of non-substance specific addiction training, current alcohol and drug treatment providers (which are markedly more prevalent than both gambling and compulsive shopping service providers) may be able to address a range of different addictive disorders. This broadening of addiction resources (training and treatment) may also address other prevalent disorders identified in the literature, such as compulsive sexual behaviour (Schneider et al., 2005) and over eating and eating disorders (Davis, & Calridge, 1998; Gold, Frost-Pineda, & Jacobs, 2003; Joranby, Pineda, & Gold, 2005). Over eating is a disorder of increasing concern in New Zealand, due to its association with a range of serious medical conditions such as obesity, diabetes and heart disease.

Finally, the acknowledgement of compulsive shopping as having addiction phenomenology comparable with established addictions, such as pathological gambling and alcohol dependence provides support for increasing research and attention to compulsive shopping as a disorder in its own right. An initial avenue where compulsive shopping could be screened for is budget advisory services. This would be particularly effective as the Compulsive Buying Screen (CBS) is a relatively simple and fast measure to administer. Despite the lack of success in utilizing online auction sites, further communication with website owners may identify methods for providing education around the continuum of shopping behaviour (i.e., from normal to compulsive/addiction), posting the CBS, and giving information regarding treatment options and providers. This importance of addressing online compulsive shopping, is particularly relevant in New Zealand at present, with the continued development of specific online trading, shopping and auction sites. It is possible that the burgeoning of these online auctions may attract both compulsive shoppers and pathological gambling due to the experiences of participants in this study who reported that ‘people get crazy closer to the closing of bids and people often pay more for the item than when you buy them new in the shop’. Maybe this *will* be the addiction of the 22<sup>nd</sup> century.

## 6. References

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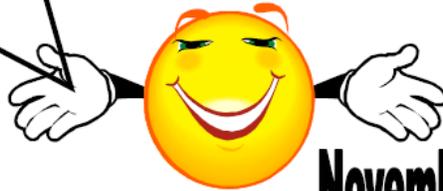
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## Appendix A: Participant recruitment fliers

This appendix contains Participant recruitment fliers for the Alcohol Dependent, Pathological Gambling, and Compulsive Shopping participants, respectively.

**Research participants  
wanted**



**November-December 2006**

**Seeking individuals, 25 to 50 yrs of age with  
Alcohol Dependence, who are interested in  
participating in a study about  
addiction.**

**What do I need to do?**

- Complete some questionnaires (takes around 40 minutes).

**A \$10 Pak 'n' Save voucher is gifted in return for  
your participation.**

If you're interested in participating in this research, contact me

**Andre McLachlan, Researcher  
Waikato University  
(07) 8472351 or  
cell/text 027 676 8922.**



**Research participants  
wanted**



**November-December 2006**

**Seeking individuals, 25 to 50 yrs of age with  
a diagnosis of pathological gambling,  
who are interested in participating in a study  
about addiction.**

**What do I need to do?**

- Complete some questionnaires (takes around 40 minutes).

**A \$10 Pak 'n' Save voucher is gifted in return for  
your participation.**

If you're interested in participating in this research, contact me

**Andre McLachlan, Researcher  
Waikato University  
(07) 8472351 or  
cell/text 027 676 8922.**



## Compulsive Shopping?

### Research Participants Wanted

For some people, shopping is used to manage uncomfortable feelings and/or to increase positive feelings. This often leads to hiding spending, family conflict and debt.?

I am seeking individuals who find it difficult to control their buying, to assist in exploring some of the psychological aspects that contribute to this problem.

This information will aid in understanding and identifying treatment options

This study is confidential and will not include any information which could identify you



**What do I need to do?** Complete some anonymous questionnaires (mainly tick-box, takes around 20 minutes)

**A \$10 Pak 'n' Save or Warehouse voucher is gifted in return for your participation.**

If you're interested in participating in this research, contact me:  
Andre McLachlan (Researcher, Waikato University) (07) 8472351 ; Cell/text 027 676 8922;  
Email: [dahub@xtra.co.nz](mailto:dahub@xtra.co.nz);

or speak to one of the staff at The Hamilton Budget Advisory Services.

## Appendix B: Hamilton Press Newspaper Article

This Appendix contains the article on the research project, published in the Hamilton Press 27/9/06, page 9.

# Shop too much? Help is here

By GEOFF LEWIS

SO, you like to shop. You like to shop a lot. But when does the need to shop move from being a fun pastime to an activity that leads to severe financial debt, breakdown in relationships and families, and impairment at work?

Based on US figures New Zealand should have between 32,000 and 80,000 compulsive shoppers. About 90 per cent are women. Some shop more during periods of emotional stress or depression, others are preoccupied with shopping or browsing from purchases or purchase items that are of little or no use or

value to the individual.

According to Hamilton-based psychology masters degree student Andre McLachlan, compulsive shopping is under-recognised as a disorder. It is less likely to come to the attention of mental health professionals because most of those afflicted end up seeking help from budgeting and debt management services.

The wide availability of online shopping sites and

more recently online auction sites have widened the opportunities for the compulsive shopper to get themselves into real problems.

The issue can extend into another obsessive-compulsive arena, that of compulsive gambling, where shopping can be used as a method of covering up gambling debts, espe-



cially with the help of credit cards.

Mr McLachlan is a community-based therapist with a background in addiction research. As part of his research into compulsive shopping, aimed at understanding the key psychological and emotional aspects, he is seeking individuals who consider themselves compulsive shoppers. Mr McLachlan can be contacted on 027-676-8922 or 07-847-2351.

## Appendix C: Demographic and qualitative information questionnaire

This appendix contains the Demographic and qualitative information questionnaire, developed for use within the present study.

ID#:

## Demographics and qualitative information Questionnaire

Please write/type the information in the boxes required

Age		Gender		Ethnicity	
Employment status (place an x in the appropriate box):	Employed (part time or fulltime)				
	Unemployed				
	Student				
Do you have a diagnosed mental illness and/or addictive disorder (substance dependence or behavioural addiction/compulsive behaviour disorder)? If yes please specify					
Do you consider? (Type Yes or No):		Alcohol Dependence an addiction?			
		Pathological gambling an addiction?			
		Compulsive Buying an addiction?			
Any other information you would like to add regarding issues raised while completing the questionnaires?					

## Appendix D: The Compulsive Buying Screen (CBS)

This appendix contains Faber and O'Guinn's (1992) Compulsive Buying Screen (CBS).

**A Clinical Screener for Compulsive Buying**

**ID #:**

1. Please indicate how much you agree or disagree with each of the statements below. Place an X in the box which best indicates how you feel about each statement.

	<b>Strongly Agree</b>	<b>Somewhat Agree</b>	<b>Neither Agree nor Disagree</b>	<b>Somewhat Disagree</b>	<b>Strongly Disagree</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a. If I have any money left at the end of the pay period, I just have to spend it.					

2. Please indicate how often you have done each of the following things by placing an X in the appropriate box.

	Very often	Often	Some-times	Rarely	Never
	1	2	3	4	5
a. Felt others would be horrified if they knew of my spending habits					
b. Bought things even though I couldn't afford them.					
c. Wrote a check when I knew I didn't have enough money in the bank to cover it.					
d. Bought myself something in order to make myself feel better.					
e. Felt anxious or nervous on days I didn't go shopping.					
f. Made only the minimum payments on my credit cards.					

Faber, R., & O'Quinn, T. (1992). Compulsive Buying Scale, *Journal of Consumer Research, Inc.* 19.

Appendix E: Addictive Disorders Questionnaire (ADQ).

This appendix contains the 'Addictive Disorders Questionnaire' (ADQ), worded for each specific addiction group: Alcohol Dependent, Pathological Gambling, and Compulsive Shopping, respectively.

Alcohol - Addictive disorder questionnaire. Based on Alcohol dependence criteria from DSM-IV and ICD-10.

ID#

When answering the questions, consider a 12 month period in which your alcohol use was most severe, and the symptoms you are responding to led to considerable distress. Place an x in the category box (yes or no) that best represents your experience.

	<b>Yes</b>	<b>No</b>
Do you find you need to use a lot more alcohol to get the desired affect than you did when you first started?		
Do you find that when you use the same amount of alcohol, it has less of the desired affects than before?		
Have you found that during periods of no use of alcohol that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are relieved by drinking?		
Have you experience a strong desire or sense of compulsion to use alcohol?		
Do you spend a great deal of time using, intoxicated, or recovering from the affects of alcohol?		
Have you used alcohol instead of going to work or spending time doing things which you are usually involved in such as time with family or recreation.		
Have you reduced the amount of time you used to spend on these activities due to using, seeking or recovering from the affects of alcohol?		
Does your using make or cause you to become physically or mental/emotionally unwell despite your continued use?		
Do you find that when you start using alcohol you end up using more than you planned to?		
Do you often use alcohol for a longer period of time than you intended to?		
Have you tried unsuccessfully to stop or cut down your alcohol use?		

Gambling - Addictive disorder questionnaire. Based on Alcohol dependence criteria from DSM-IV and ICD-10.

ID#

When answering the questions, consider a 12 month period in which your gambling was most severe, and the symptoms you are responding to led to considerable distress. Place an x in the category box (yes or no) that best represents your experience.

	<b>Yes</b>	<b>No</b>
Do you find you need to gamble more often or higher stakes to get the desired affect than you did when you first started?		
Do you find that when you gamble the same as you use to, it has less of the desired affects than before?		
Have you found that during periods of no gambling that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are relieved by further gambling?		
Have you experience a strong desire or sense of compulsion to gamble?		
Do you spend a great deal of time gambling, or recovering from the affects of gambling?		
Have you gambled instead of going to work or spending time doing things which you are usually involved in such as time with family or recreation.		
Have you reduced the amount of time you used to spend on these activities due to using, seeking or recovering from the affects of gambling?		
Does gambling make or cause you to become physically or mental/emotionally unwell, despite your continued gambling?		
Do you find that when you start gambling you end up gambling more than you planned to?		
Do you often gamble for a longer period of time than you intended to?		
Have you tried unsuccessfully to stop or cut down your gambling?		

**Compulsive Buying - Addictive disorder questionnaire.**

Based on Alcohol dependence criteria from DSM-IV and ICD-10.

When answering the questions, consider a 12 month period in which your shopping/purchasing was most severe, and the symptoms you are responding to led to considerable distress. Place an x in the category box (yes or no) that best represents your experience.

	<b>Yes</b>	<b>No</b>
Do you find you need to shop/purchase more often or more costly items to get the desired affect than you did when you first started?		
Do you find that when you shop/purchase the same as you use to, it has less of the desired affects than before?		
Have you found that during periods of no shopping/purchasing that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affects (low or erratic mood), which are releived by further shopping/purchasing?		
Have you experience a strong desire or sense of compulsion to shop/purchase items?		
Do you spend a great deal of time shopping/purchasing items, or recovering from the affects of shopping/purchasing items?		
Have you shopping/purchased items instead of going to work or spending time doing things which you are usually involved in such as time with family or recreation.		
Have you reduced the amount of time you used to spend on these activities due to using, seeking or recovering from the affects of shopping/purchasing items?		
Does shopping/purchasing items make or cause you to become physically or mental/emotionally unwell, despite your continued shopping/purchasing?		
Do you find that when you start shopping/purchasing items you end up shopping/purchasing more than you planned to?		
Do you often shop/purchase for a longer period of time than you intended to?		
Have you tried unsuccessfully to stop or cut down your shopping/purchasing items?		

Appendix F: Addiction specific adaptations of the Yale-Brown Obsessive Compulsive Scale:

This appendix includes: Modell , Glaser, Mountz, Schaltz, and Cyr's (1992) Yale-Brown Obsessive Compulsive Scale - heavy drinking (Y-BOCS-hd); Pallanti, DeCaria, Grant, Urpe, and Hollander's (2005) Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling (PG-YBOCS); and Mohahan, Black, & Gabel's (1996) Yale-Brown Obsessive Compulsive Scale-Shopping Version (Y-BOCS-SV).

**Yale-Brown Obsessive Compulsive Scale Modified to Reflect Obsessions and ID#: Compulsions Related to Heavy Drinking . (Y-BOCS-hd: self-administered)**

Please answer the following marking an x in the box next to the number/statement that is most correct for you. All of these questions refer to alcoholic beverages.

Please complete even if you do not drink at all. Please note that questions 1-5 pertain only to ideas, thoughts, impulses or images related to drinking; whereas questions 6-10 refer to actually drinking (not just thinking about it).

<b>1.</b>		<b>How much of your time is occupied by ideas, thoughts, impulses or images related to drinking? How frequently do these thoughts occur?</b>
0		I do not think about drinking at all.
1		I think about drinking fewer than 8 times a day.
2		I think about drinking more than 8 times a day, but most hours of the day are free of these thoughts.
3		I think about drinking more than 8 times a day, and during most hours of the day.
4		I am almost constantly thinking about drinking.

<b>2.</b>		<b>How much do the ideas, thoughts, impulses or images related to drinking interfere with your social or work functioning?</b>
0		They do not interfere at all with my social or occupational activities.
1		They interfere slightly with my social or occupational activities, but my overall performance is not impaired.
2		They definitely interfere with my social or occupational performance, but things are still manageable.
3		They cause substantial impairment in my social or occupational performance.
4		They are incapacitating.

<b>3.</b>		<b>How much distress do these ideas, thoughts, impulses or images related to drinking cause you?</b>
0		None at all.
1		The distress is mild, infrequent, and not too disturbing.
2		The distress is moderate, frequent, and disturbing, but still manageable.
3		The distress is severe, very frequent, and very disturbing.
4		The distress is extreme, near constant, and disabling.

<b>4.</b>		How much of an effort do you make to resist these ideas, thoughts, impulses or images related to drinking? How often do you try to disregard or turn your attention away from these thoughts as they enter your mind when you've gone without a drink for 1-2 days?
0		I always make an effort to always resist, or the thoughts are so minimal, I don't need to actively resist.
1		I try to resist most of the time.
2		I try to resist some of the time.
3		I yield to almost all such thoughts without attempting to control them, but I do so with some reluctance.
4		I completely and willingly yield to all such thoughts.

<b>5.</b>		<b>How much control do you have over these ideas, thoughts, impulses or images related to drinking once they have entered your mind? How successful are you in stopping or diverting such thinking?</b>
0		I have complete control over these thoughts.
1		I have much control over these thoughts, and I can usually stop or divert them with some effort and concentration.
2		I have moderate control over these thoughts, and I can sometimes stop or divert such thoughts.
3		I have little control over these thoughts, and I am rarely successful in stopping such thoughts.
4		I have no control over these thoughts, they are experienced as completely involuntary.

<b>6.</b>		<b>Approximately how many drinks do you have in an average week. One drink is defined as 1 ounce of hard liquor, 12 ounces of beer, or 5 ounces of wine.</b>
0		I do not drink at all.
1		1 - 4.
2		5 - 10.
3		11-20.
4		More than 20.

<b>7.</b>		<b>How much does your drinking of alcoholic beverages interfere with your social or work functioning?</b>
0		It does not interfere at all with my social or occupational activities.
1		It interferes slightly with my social or occupational activities, but my overall performance is not impaired.
2		It definitely interferes with my social or occupational performance, but things are still manageable.
3		It causes substantial impairment in my social or occupational performance.
4		It is incapacitating.

<b>8.</b>		<b>How would you feel if prevented from drinking alcohol when you desired a drink?</b>
0		This would not bother me at all.
1		I would get only slightly anxious or irritated if my drinking were interrupted.
2		My anxiety or irritation would mount but remain manageable if my drinking were interrupted.
3		I would experience a prominent and very disturbing increase in my anxiety or irritation if my drinking were interrupted.
4		I would experience incapacitating anxiety or irritation from any intervention aimed at interrupting my drinking.

<b>9.</b>		<b>How much of an effort do you make to resist drinking alcoholic beverages?</b>
0		I always make an effort to always resist, or my drinking is so minimal I don't need to actively resist.
1		I try to resist most of the time.
2		I try to resist some of the time.
3		I yield to almost all desires to drink without attempting to control them, but I do so with some reluctance.
4		I completely and willingly yield to all desires to drink.

<b>10.</b>		<b>How much control do you have over your drinking once you have had a drink?</b>
0		I have complete control over my drinking.
1		I experience a pressure to continue drinking, but I usually have control over it.
2		I experience a strong pressure to continue drinking, and I can control it only with difficulty.
3		I experience a very strong drive to continue drinking, and I have little control over it.
4		My drive to drink is experienced as completely involuntary and overpowering; I am rarely able to stop after one drink.

**Pathological gambling-modification of Yale-Brown Obsessive-Compulsive Scale**  
(PG-YBOCS: self-administered)

ID#:

Please answer the following marking an x in the box next to the number/statement that is most correct for you. All of these questions refer to gambling.

<b>1.</b>	<b>Time occupied by urges/thoughts about gambling.</b> How much of your time is occupied by urges/thoughts (u/t) related to gambling and/or gambling-related activities? How frequently does this occur?
0	None.
1	Mild (less than 1 hr/day), or occasional u/t ( $\leq 8$ x/day).
2	Moderate (1-3 hrs/day), or frequent u/t ( $\geq 8$ x/day, but most hrs/day are free of u/t)
3	Severe ( $> 3$ & up to 8 hrs/day) or very frequent u/t ( $> 8$ x/day & occur most hrs of day).
4	Extreme ( $> 8$ hrs/day), or near constant u/t (too numerous to count and an hour rarely passes w/o several such u/t occurring).

<b>2.</b>	<b>Interference due to urges/thoughts about gambling.</b> How much do your urges/thoughts (u/t) interfere with your social or work (or role) functioning? Is there anything that you don't do because of this? (If not currently working determine how much performance would be affected if employed).
0	None.
1	Mild, slight interference with social or occupational activity but overall performance not impaired.
2	Moderate, definite interference with social or occupational performance, but manageable.
3	Severe, causes substantial impairment in social or occupational performance.
4	Extreme, incapacitating.

<b>3.</b>	<b>Distress associated with urges/thoughts about gambling.</b> How much distress do your urges/thoughts about gambling cause you? (Rate "disturbing" feeling or anxiety that seems to be triggered by these thoughts, not generalized anxiety or anxiety associated w/other symptoms).
0	None.
1	Mild, infrequent, and not too disturbing.
2	Moderate, frequent, & disturbing, but still manageable.
3	Severe, very frequent, and very disturbing.
4	Extreme, near constant, and disabling distress.

<b>4.</b>	<b>Resistance against urges/thoughts of gambling.</b> How much of an effort do you make to resist these urges/thoughts? How often do you try to disregard them: (Only rate effort made to resist, not success or failure in actually controlling these thoughts. How much one resists the urges/thoughts may/may not correlate w/ability to control them
0	Makes effort to always resist, symptoms so minimal doesn't need to actively resist.
1	Tries to resist most of the time.
2	Makes some effort to resist.
3	Yields to all such urges/ thoughts without attempting to control them, but does so with some reluctance.
4	Completely and willingly yields to all such urges/ thoughts.

<b>5.</b>	<b>Degree or control over urges/thoughts about gambling.</b> How much control do you have over urges/thoughts about gambling? How successful are you in stopping or diverting these urges/thoughts?
0	Complete control.
1	Much control, usually able to stop/divert urges/thoughts with some effort & consideration.
2	Moderate control, sometimes able to stop/divert these urges/thoughts.
3	Little control, rarely successful in stopping these urges/thoughts, can only divert attention with difficulty.
4	No control, experienced as completely involuntary, rarely able to even momentarily divert urges/thoughts.

<b>6.</b>	<b>Time spent in activities related to gambling.</b> How much time do you spend in activities related to gambling? (directly related to gambling itself or activities such as negotiating financial transactions or searching for financial resources related to gambling).
0	None
1	Mild (spends less than 1 hr/day in these activities, or occasional involvement in these activities ( $\leq 8$ times/day).
2	Moderate (1-3 hrs/day) or $> 8$ times/day, but most hours are free of such activities.
3	Severe (spends $> 3$ and up to 8 hrs/day), or very frequent involvement ( $> 8$ times/day and activities performed most hours of the day).
4	Extreme (spends $> 8$ hrs/day in these activities), or near constant involvement (too numerous to count and an hour rarely passes without engaging in several such activities).

7.	<b>Interference due to activities related to gambling.</b> How much do the above activities interfere with you social/work (or role) functioning? Is there anything that you don't do because of them? If currently not working determine how much performance would be affected you were employed.
0	None.
1	Mild, slight interference with social or occupational activities, but overall performance not impaired.
2	Moderate, definite interference with social/occupational performance, but still manageable.
3	Severe, causes substantial impairment in social/occupational performance.
4	Extreme, incapacitating

8.	<b>Distress associated with behavior related to gambling.</b> How would you feel if prevented from performing these activities? (Pause) How anxious would you become?
0	None.
1	Mild, only slightly anxious if behavior prevented, or only slight anxiety during the behavior.
2	Moderate, reports that anxiety would mount but remains manageable if behavior is prevented, or that anxiety increases but remains manageable during such behaviors.
3	Severe, prominent and very disturbing increase in anxiety if behavior is interrupted, or prominent and very disturbing increase in anxiety during the behavior.
4	Extreme, incapacitating anxiety from any intervention aimed at modifying activity, or incapacitating anxiety develops during behavior related to gambling.

9.	<b>Resistance against gambling.</b> How much of an effort do you make to resist these activities? How much the patient resists behaviors may/may not correlate w/ability to control them.
0	Makes an effort to always resist, or symptoms so minimal doesn't need to actively resist
1	Tries to resist most of the time
2	Makes some effort to resist.
3	Yields to almost all of these behaviors without attempting to control them, but does so with some reluctance.
4	Yields to almost all of these behaviors without attempting to control them, but does so with some reluctance.

10.	<b>Degree of control over gambling behaviour.</b> How strong is the drive to gamble? How much control do you have over the behaviors associated with gambling-related activities?
0	Complete control.
1	Much control, experiences pressure to gamble, but usually able to exercise voluntary control over it.
2	Moderate control, strong pressure to gamble, must be carried to completion, can only delay with difficulty.
3	Little control, very strong drive to gamble, must be carried to completion, can only delay with difficulty,
4	No control, drive to gamble experienced as completely involuntary & overpowering, rarely able to even momentarily delay gambling activity

**Yale-Brown Obsessive-Compulsive Scale modified for compulsive buying.** ID#: (Y-BOCS-cs: self-administered)

Please answer the following marking an x in the box next to the number/statement that is most correct for you. All of these questions refer to buying.

<b>1.</b>		<b>Time occupied by thoughts about shopping.</b> How much of your time is occupied by thoughts about shopping?
0		None.
1		Mild, <1 h/day or occasional intrusion.
2		Moderate, 1-3 h/day, or frequent intrusion.
3		Severe, > and up to 8 h/day or very frequent intrusion.
4		Extreme, >8 h/day or near constant intrusion.

<b>2.</b>		<b>Interference due to thoughts about shopping.</b> How much do your thoughts about shopping interference with your social, work, or role functioning? Is there anything you don't do because of them?
0		None.
1		Mild, slight interference with social or occupational activities but overall performance not impaired.
2		Moderate, definite interference with social or occupational performance, but still manageable.
3		Severe, causes substantial impairment in social or occupational performance.
4		Extreme, incapacitating.

<b>3.</b>		<b>Distress associated with thoughts about shopping.</b> How much distress do your thoughts about shopping cause you?
0		None.
1		Mild, not too disturbing.
2		Moderate, disturbing but still manageable.
3		Severe, very disturbing.
4		Extreme, near constant and disabling distress.

<b>4.</b>		<b>Resistance against thoughts about shopping.</b> How much of an effort do you make to resist thoughts about shopping? How often do you try to disregard or turn your attention away from these thoughts as they enter your mind?
0		Always makes an effort to resist, or symptoms so minimal that active resistance not needed.
1		Tries to resist most of the time.
2		Makes some effort to resist.
3		Yields to all thoughts without attempting to control them, but does so with some resistance.
4		Completely and willingly yields to all thoughts about shopping.

5.		<b>Degree of control over thoughts about shopping.</b> How much control do you have over your thoughts about shopping? How successful are you in stopping or diverting your thoughts about shopping? Can you dismiss them?
0		Complete control.
1		Much control, Usually able to stop or divert thoughts with some effort and concentration.
2		Moderate control, sometimes able to stop or divert thinking.
3		Little control, rarely successful in stopping or dismissing thinking, can only divert attention with difficulty.
4		No control, experience is completely involuntary, rarely able even momentarily to alter thoughts about shopping.

6.		<b>Time spent shopping.</b> How much time do you spend shopping? How much time do you spend shopping? How much time do you spend compulsively shopping?
0		None
1		Mild, spends <1 h/day shopping.
2		Moderate, spends 1-3 h/day shopping.
3		Severe, spends >3 and =/< h/day shopping.
4		Extreme, spends >8 h/day shopping or near constant shopping episodes.

7.		<b>Interference due to shopping behaviour.</b> How much does your shopping behaviour interfere with your social, work, or role functioning? Is there anything you don't do because of the shopping?
0		None.
1		Mild, slight interference with social or occupational activities, but overall performance not impaired.
2		Moderate, definite interference with social or occupational performance, but still manageable.
3		Severe, causes substantial impairment in social or occupational performance.
4		Extreme, incapacitating.

8.		<b>Distress associated with compulsive shopping behaviour.</b> How would you feel if prevented from shopping? How anxious would you become?
0		None.
1		Mild, only slightly anxious if shopping prevented, or only slightly anxious.
2		Moderate, reports that anxiety would mount but remain manageable.
3		Severe, prominent, and very disturbing increase in anxiety if shopping interrupted.
4		Extreme, incapacitating anxiety from any intervention aimed at modifying activity, or incapacitating anxiety develops during performance of shopping.

<b>9.</b>		<b>Resistance against compulsive shopping.</b> How strong is the drive to shop? How much control do you have over the compulsion?
0		Always makes an effort to resist, or symptoms so minimal that active resistance not needed.
1		Tries to resist most of the time.
2		Makes some effort to resist.
3		Yields to almost all compulsions without attempting to control them, but does so with some reluctance.
4		Completely and unwillingly yields to almost all compulsions.

<b>10.</b>		<b>Degree of control over compulsive shopping.</b> How strong is the drive to shop? How much control do you have over the compulsion?
0		Complete control.
1		Much control, experiences pressure to perform the behaviour but usually able to exercise voluntary control over it.
2		Moderate control, strong pressure to perform behaviour, can control it only with difficulty.
3		Little control, very strong drive to perform behaviour, must be carried to completion, can only delay with difficulty.
4		No control, drive to perform behaviour experienced as completely involuntary and overpowering, rarely able even momentarily to delay activity.

Monahan, P., Black, D., Gabel, J. (1996). Reliability and validity of a scale to measure change in persons with compulsive buying. *Psychiatry Research*, 64, p59-67

## Appendix G: Barratt Impulsiveness Scale–IIr

This appendix contains Barratt's (1994) Barratt Impulsiveness Scale–IIr (BIS-IIr)

**Barratt Scale**

**ID #:**

We all act and think differently in day to day situations. Please read each statement and place an x in the box that best describes the way you act and think. Do not spend too much time on any one statement. *Answer quickly and honestly.*

	Rarely/ Never	Occasionally	Often	Almost always/ always
1. I plan tasks carefully				
2. I do things without thinking				
3. I am happy-go-lucky				
4. My thoughts race				
5. I plan trips well ahead of time				
6. I am self-controlled				
7. I concentrate easily				
8. I save regularly				
9. I find it hard to sit still for long periods of time				
10. I am a careful thinker				
11. I say things without thinking				
12. I like to think about complex problems				
13. I change jobs				
14. I act on impulse				
15. I get easily bored when solving though problems				
16. I have regular medical/dental check ups				
17. I act on the spur of the moment				
18. I am a steady thinker				
19. I buy things on impulse				
20. I finish what I start				
21. I walk and move fast				
22. I solve problems by trial and error				
23. I spend or charge more than I earn				
24. I talk fast				
25. I have outside thoughts when thinking				
26. I am more interested in the present than the future				
27. I am restless in class/groups				
28. I plan for the future				

## Appendix H: Participant research information

This appendix contains research information sheets for the for the Alcohol Dependent, Pathological Gambling, and Compulsive Shopping participants, respectively.

## **Key aspects of addiction Information Sheet: Alcohol Dependence Study Group**

This study attempts to explore key aspects of addiction, in order to allow researchers and clinicians to better understand addiction, and identify treatment options that best address these key aspects of addiction.

The study is confidential, and no material that can identify me will be used in any reports on this study.

Interviews will take between 25 and 40 minutes, involving 5 different questionnaires, which the researcher can read out and complete on your behalf, or which you can complete yourself.

As a 'koha' (gift) for participating in the research process you will receive a \$10 Pak 'n' Save or Warehouse voucher in appreciation of your time.

Taking part in this research is voluntary (your choice) and you may withdraw from the study at any time and that this will in no way affect your present, or any future treatment from the service you are attending.

Further information is available from: Staff at this organisation, or the researcher - Andre McLachlan on 027 676 8922 or (07) 847 2351 or [dahub@xtra.co.nz](mailto:dahub@xtra.co.nz)

If I have any concerns about this project, you may contact the convenor of the Research and Ethics Committee - Dr Robert Isler, phone: 838 4466 ext. 8401, e-mail [r.isler@waikato.ac.nz](mailto:r.isler@waikato.ac.nz)

Thank you for taking time to consider participating in this research, your time and responses are valuable to understanding alcohol dependence.

## **Key aspects of addiction Information Sheet: Pathological Gambling Study Group**

This study attempts to explore aspects of addiction, in order to allow researchers and clinicians to better understand addiction, and treatment options

The study is confidential, and no material that can identify you will be used in any reports on this study.

Interviews will take around 20 minutes, involving 5 different short questionnaires, which the researcher can read out and complete on your behalf, or which you can complete yourself. Along with the questionnaires is a consent form. If you are completing these questionnaires via email, your returning completed questionnaires is deemed that you provide consent to participate in the study

Each questionnaire is numbered, and it is recommended that they are completed in the order in which they are numbered. If completing questionnaires via email, place the cursor in the box which corresponds with your intended answer and place an x. Each questionnaire has instructions at the top, so read them carefully. Only the demographics questionnaire (questionnaire 5) requires you to type in comments. Please feel free to ask/email me questions if you are having difficulties.

Interviews will take place at a location of your choice, at a time negotiated with the researcher, or via email.

As a 'koha' (gift) for participating in the research process you will receive a \$10 Pak 'n' Save, Countdown or Warehouse voucher in appreciation of your time. If completing the questionnaire via email, please email your preferred option and an address to send the voucher to.

Taking part in this research is voluntary (your choice) and you may withdraw from the study at any time and that this will in no way affect your present, or any future treatment.

Further information is available from the researcher - Andre McLachlan on 027 676 8922 or (07) 847 2351 or dahub@xtra.co.nz

If you have any concerns about this project, you may contact the convenor of the Research and Ethics Committee - Dr Robert Isler, phone: 838 4466 ext. 8401, e-mail r.isler@waikato.ac.nz

Thank you for taking time to consider participating in this research, your time and responses are valuable to understanding pathological gambling.

## **Key aspects of addiction Information Sheet: Compulsive Buying Study Group**

This study attempts to explore aspects of addiction, in order to allow researchers and clinicians to better understand addiction, and treatment options

The study is confidential, and no material that can identify you will be used in any reports on this study.

Interviews will take around 40 minutes, involving 6 different short questionnaires, which the researcher can read out and complete on your behalf, or which you can complete yourself. Along with the questionnaires is a consent form. If you are completing these questionnaires via email, your returning completed questionnaires is deemed that you provide consent to participate in the study

Each questionnaire is numbered, and it is recommended that they are completed in the order in which they are numbered. If completing questionnaires via email, place the cursor in the box which corresponds with your intended answer and place an x. Each questionnaire has instructions at the top, so read them carefully. Only the demographics questionnaire (questionnaire 6) requires you to type in comments. Please feel free to email me questions if you are having difficulties.

Interviews will take place at the psychology department at Waikato University, at a time negotiated with the researcher (University campus map available from researcher), or via email.

As a 'koha' (gift) for participating in the research process you will receive a \$10 Pak 'n' Save or Warehouse voucher in appreciation of your time. If completing the questionnaire via email, please email your preferred option and an address to send the voucher to.

Taking part in this research is voluntary (your choice) and you may withdraw from the study at any time and that this will in no way affect your present, or any future treatment.

Further information is available from the researcher - Andre McLachlan on 027 676 8922 or (07) 847 2351 or [dahub@xtra.co.nz](mailto:dahub@xtra.co.nz)

If you have any concerns about this project, you may contact the convenor of the Research and Ethics Committee - Dr Robert Isler, phone: 838 4466 ext. 8401, e-mail [r.isler@waikato.ac.nz](mailto:r.isler@waikato.ac.nz)

Thank you for taking time to consider participating in this research, your time and responses are valuable to understanding compulsive shopping.

Appendix I: Waikato University research consent form

This appendix contains the Waikato University research consent Form

University of Waikato  
Psychology Department  
**CONSENT FORM**

PARTICIPANT'S COPY

Research Project: Common cognitive and behavioural process involved in addictive and compulsive behaviour.

Name of Researcher: Andre David McLachlan

Name of Supervisor (if applicable): Jo Thakker and Nicola Starkey

I have received an information sheet about this research project or the researcher has explained the study to me. I have had the chance to ask any questions and discuss my participation with other people. Any questions have been answered to my satisfaction.

I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact the convenor of the Research and Ethics Committee (Dr Robert Isler, phone: 838 4466 ext. 8401, e-mail r.isler@waikato.ac.nz)

Participant's Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

University of Waikato  
Psychology Department  
**CONSENT FORM**

RESEARCHER'S COPY

Research Project: Common cognitive and behavioural process involved in addictive and compulsive behaviour.

Name of Researcher: Andre David McLachlan

Name of Supervisor (if applicable): Jo Thakker and Nicola Starkey

I have received an information sheet about this research project or the researcher has explained the study to me. I have had the chance to ask any questions and discuss my participation with other people. Any questions have been answered to my satisfaction.

I agree to participate in this research project and I understand that I may withdraw at any time. If I have any concerns about this project, I may contact the convenor of the Research and Ethics Committee.

Participant's Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_