# The Classification of Substance and Behavioural Addictions: A Preliminary Investigation

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The term addiction has been used to refer to impaired control over substance use for several centuries however recently there has been a shift toward using this term in the context of non-substance use disorders, such as pathological gambling. A preliminary investigation was conducted in an attempt to clarify the most appropriate classification of 'behavioural addictions'. Participants with alcohol dependence (AD, *n* = 24), pathological gambling (PG, *n* = 20) and compulsive buying disorder (CBD, *n* = 14) completed an Addictive Disorder Questionnaire (ADQ); the Symptom Checklist 90 Revised (SCL-90R); Barratt Impulsivity Scale II; and substance specific adaptations of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS). Although the AD group reported more severe addiction symptoms and had higher levels of depression and anxiety, there were broad similarities across the three disorders in relation to cravings, dyscontrol, impulsivity and obsessions. Despite the small sample size and the different recruitment strategies used across the groups, the findings from this preliminary study provide support for broadening addiction diagnostic definitions to include non-substance related disorders which in turn may contribute to the development of more efficacious treatments.

The term addiction has been used to refer to impaired control over substance use for several centuries (Potenza, 2006) however, more recently there has been a shift toward using this term in the context of non-substance use related disorders, such as pathological gambling (PG). This stems from the observation that core components of addictive behaviour can be observed in a variety of behaviours which are not related to substance use such as PG, compulsive sex, shopping, and computer use (Griffiths, 2000; Potenza, 2009). These core components include preoccupation with the behaviour, craving or appetitive urge to engage in the behaviour, diminished control over the compulsion to engage in the behaviour, repeated unsuccessful attempts to cut down or stop the behaviour, tolerance, withdrawal symptoms and continued engagement in the behaviour despite ongoing legal, social and health consequences (Grant, Potenza, Weinstein & Gorelick, 2010; Griffiths, 2000; Potenza, 2009; Wareham & Potenza, 2010). In fact, it has been suggested that these disorders could be best described as 'behavioural addictions' (Holden, 2001; Petry, 2006). However, whether these 'behavioural addictions' should fall under diagnostic criteria for addictions, compulsive disorders or impulse control disorders is still being debated (Potenza, 2009).

The proposed changes to diagnostic criteria in the upcoming Diagnostic and Statistical Manual of Mental Disorders 5th Edition include the renaming of the 'Substance-Related Disorders' category to 'Substance Use and Addictive Disorders' to incorporate substance use disorders (SUDS) and non-substance addictions (specifically Gambling Disorder; APA, 2011; Petry, 2010). PG has been identified as a psychiatric disorder in its own right since 1980, and is included within the current DSM (DSM-IV TR; APA, 2000) as an Impulse Control Disorder. The recommendation to re-classify this disorder has been made as a result of the increasing body of literature which reveals a high degree of similarity between SUDS and PG in relation to diagnostic criteria, co-morbidities, biological bases and treatment.

With regard to diagnosis, five of the DSM- IV TR (APA, 2000) diagnostic criteria for PG are based on SUDS criteria (i.e., interference in life functioning, tolerance, withdrawal, repeated unsuccessful attempts to quit & preoccupation with the drug / gambling: Petry, 2006; Potenza, 2006). There are high rates of co-morbidity between the two disorders, for example, lifetime prevalence rates of PG in SUDS populations are estimated at 14% (Shaffer, Hall & Van der Bilt, 1999), with point prevalence rates between 10-13% (Cunningham-Williams, Cottler, Compton, Spitznagel, & Ben-Abdallah, 2000; Langenbucher, Bavly, Labouvie, Sanjuan, & Martin, 2001) compared to general population rates of 0.4-2% (Petry, Stinson, & Grant, 2005). In PG, 70% present with alcohol use disorders and 30% with disorders involving another drug (Petry et al., 2005). In addition, co-occurring mood and anxiety disorders are a common characteristic of SUDS in community and inpatient populations (Adamson, Todd, Sellman, Huriwai, & Porter, 2006; Burns & Teeson, 2002; Goodwin, Fergusson, & Horwood, 2004; Merikangas, Mehta, &

Molnar et al., 1998) and PGs (Crockford & el-Guebaly, 1998; el-Guebaly et al., 2006; Kessler et al., 2008).

Epidemiological studies suggest that 26-37% of those 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 (Jane-Llopis & Matytsina, 2006; Merikangas et al., 1998; Robins & Regier, 1991). Similarly, in PGs, epidemiological studies report a lifetime prevalence of over 50% for mood disorders and 40% for anxiety disorders (Kessler et al., 2008). Both are highly prevalent in those seeking treatment for PG (el-Guebaly et al., 2006; Kim, Grant, Eckert, Faris & Hartman, 2006) with up to 75% meeting criteria for a major depressive disorder and high rates of anxiety disorders (Crockford & el-Guebaly, 1998).

In addition to similarities in diagnostic criteria and co-morbidities, research indicates similarities in the neurocognitive aspects of SUDS and PG, particularly in relation to impaired impulse control (Verdejo-García, Lawrence & Clark, 2008). Several studies suggest deficits in executive function in PGs (e.g., Rugle & Melamed, 1993) and SUDS (Lawrence, Luty, Bogdan, Sahakian, & Clark, 2009) and similar neurotransmitter systems are implicated in both disorders (see Potenza 2006 for review). Genetic components also appear to play a key role in both disorders, with increased risk in those with a first degree relative with the same disorder (McGue, 1999; Volberg & Steadman, 1989) and possibly a shared genetic vulnerability (Slutske et al., 2000). However, as noted by Aasved (2004), the influence of early learning experiences in the development of addiction, must also be considered in these familial studies. In terms of treatment, many of the current PG treatments have been adapted from those used in SUDS (e.g., Relapse Prevention, Motivational Enhancement Therapy, and Gamblers Anonymous: Petry, 2006; Potenza, 2006; Wareham & Potenza, 2010), although further research on the efficacy of treatment is needed.

Overall, there are clear similarities between SUDS and PG and extensive evidence to support the inclusion of PG as an addictive disorder. However, as yet it is unclear if other 'behavioural addictions' are to be included in the DSM-V, and if they are, how they will be classified. Other proposed changes to the DSM-V include the creation of a 'Disruptive, Impulse Control and Conduct Disorders' category (incorporating oppositional defiant disorder, pyromania, kleptomania, conduct disorder and intermittent explosive disorder) and an 'Obsessive-Compulsive and Related Disorders' category (incorporating obsessive compulsive disorder, body dysmorphic disorder, hoarding, hair pulling and skin picking), both of which could incorporate 'behavioural addictions' (APA, 2011).

Based on the groundwork made by PG research, there is growing support for academic and clinical acknowledgment of other 'behavioural addictions', including: internet use (Yellowlees & Marks, 2007); online multiplayer role-play games (Charlton & Danforth, 2007); compulsive sexual behavior (Schneider, Sealy, Montgomery & Irons, 2005); over eating and eating disorders (Jordanby, Pineda, & Gold, 2005) and a publicly perceived 'novel' addiction - compulsive buying disorder (CBD).

Problematic shopping symptomology has been evident for over 90 years, and was first termed 'oniomania' by German psychiatrist Emil Kraepelin (Black, 2001). In the late 1990's the first epidemiological studies were conducted to determine the prevalence of CBD, even though some researchers still question whether this disorder should be categorised as a mental illness, or if it would be better viewed from a moral or legal perspective (Hollander & Allen, 2006). CBD is not specifically included in the current DSM-IV TR, but those who present with symptoms would most likely be diagnosed under the category "Disorder of Impulse control not otherwise specified" (Black, 2001). Similar to SUDS and PG, CBD is characterized by salience (preoccupations and cravings related to shopping), dyscontrol (urges or compulsions to shop and purchase), and associated adverse social and legal consequences (Black, 2001, 2007; Faber & O'Guinn, 1992). The repeated episodes of unnecessary spending are often triggered by negative mood, which is improved by buying (Black, 2007; Clark & Calleja, 2008). Epidemiological studies report a point prevalence of CBD of 5.8% (Koran, Chuong, Bullock, & Smith, 2006), with similar rates in males and females, however clinical studies suggest that 80-95% of those seeking treatment were female (Schlosser, Black, Repertinger, & Freet, 1994), possibly due to the greater willingness of women to seek help.

As with SUDS and PG, psychiatric comorbidity is common in compulsive shopping populations, including mood (21-100%); anxiety (41-80%); substance use (21-46%); eating; (8-35%) personality (60%); and impulse control disorders (21-40%: see Black, 2007; Christenson, Faber, & de Zwaan et al., 1994; Dell'Osso, Allen, Altamura, Buoli, & Hollander, 2008; Monahan, Black, & Gabel, 1996). Given the symptoms of CBD, it is surprising that there does not appear to be a strong link with obsessive compulsive spectrum disorders. Frost, Sketee and Williams (2002) suggest that the link between CBD and obsessive –compulsive disorder may be mediated by hoarding behavior because both groups become preoccupied with hunting for particular goods (Lejoyeux & Weinstein, 2010). Furthermore, studies suggest that over 60% of compulsive hoarders also met criteria for compulsive buying (Frost, Tolin, Steketee, Fitch & Selbo-Bruns, 2009).

As yet, little information is available in relation to the neurochemical basis of CBD. Studies evaluating the efficacy of antidepressants (serotonin re-uptake inhibitors) in treating CBD have produced mixed results (Black, 2007; Grant & Potenza, 2004), suggesting that serotonin abnormalities may not be a core feature of this disorder. However, there is evidence that genetics may play a role in CBD, with reports of high rates of major depression, SUDS and anxiety disorders in first degree relatives (McElroy, Keck, Pope, Smith, & Strakowski, 1994). Genetics studies have failed to find an association between two serotonin transporter polymorphisms and CBD (Devor, Magee, Dill-Devor, Gabel, & Black., 1999), but an association was found with the dopamine (D1) receptor gene

(Comings, 1998). Currently there is no standard treatment for CBD, but the most successful appear to be group cognitive behaviour therapy treatments (Mitchell et al., 2006: Mueller et al., 2008) however further research is needed to determine the most efficacious treatment for this disorder.

Returning to the classification of CBD there are three options: to classify it as 1) an addictive disorder; 2) an obsessive compulsive disorder or 3) an impulse control disorder. From the brief summary of CBD, it is clear that it has features in common with disorders in each of these categories. With regard to viewing CBD as an addiction, most clinical samples with symptoms of CBD would probably meet these criteria. In particular, they are preoccupied with buying items, they have irresistible urges and impulses to buy which are ameliorated by purchasing, and they continue to spend despite problems caused by the behaviour (Black, 2001; 2007; Dell'Osso et al., 2008). Similarities with obsessive compulsive disorders (OCD) relate to persistent and intrusive thoughts about shopping and buying. There are however some important differences: the behaviours associated with OCD are often unpleasant and conducted to relieve anxiety, not for pleasure; although buying in CBD is conducted to relieve depressed mood, the act itself is also pleasurable and rewarding. Finally, impulse control disorders are characterised by the failure to resist an impulse to perform an act that may harm themselves or others. Furthermore for many impulse control disorders, committing the act leads to pleasure and a decrease in arousal (APA, 2000). These descriptors show many similarities to the symptoms of CBD.

This study was conducted to identify, explore and understand the common cognitive and behavioural phenomena that occur within SUDS and non-substance addictions (PG & CBD), in order to provide some preliminary data regarding the appropriate classification of these disorders. The way these disorders are classified has widespread implications. For those with the disorder, it will affect how they are 'labelled' and perceived by others; for researchers it will clarify the most appropriate literature to draw on to develop new strategies for the treatment and prevention of these disorders. Furthermore, the recognition of 'behavioural addictions' offers researchers the opportunity to study addiction without the confounding effects of drug ingestion, which has the potential to improve our understanding of the core aspects of addiction (Petry, 2007, 2010; Phillips, 2006).

The study set out to provide preliminary data to: 1) describe the common characteristics of alcohol dependence, pathological gambling and compulsive buying disorder; 2) compare the level of anxiety and mood disorders across the three groups and; 3) evaluate the relationship between mood and anxiety, and the severity of the disorder.

## Method

The study received approval from the Department of Psychology Ethics Committee, University of Waikato.

### *Participants*

A total of 64 participants were recruited. 24 participants were recruited in the AD(Alcohol Dependent) group; 20 in the PG(Pathological Gambling) group and 20 in the CBD(Compulsive Buying Disorder) group. As the AD and PG group were recruited via service providers and access to services usually requires a confirmed diagnosis, participant self-report were used to confirm their diagnosis and thus eligibility to participate in the study. The CBD 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. Each potential participant was asked to complete the Compulsive Buying Screen (CBS; Faber & O'Guinn, 1992) to ensure they met the criteria for CBD (total score < -1.34). Of the 20 volunteers for the CBD group, 14 participants met criteria and only their data was used in subsequent analyses.

Participants in the AD group were between 19-60 years of age (mean = 34.13, *SD* = 11.06), 71% (*n* = 17) were male. A third of the participants were employed (*n* = 8), 62.5% (*n* = 15) were unemployed and 1 was a student. The majority of the AD participants (62.5%, *n* = 15) identified as New Zealand European / Pakeha; 21% (*n* = 5) as Māori, and 1 each as Pacific Island, NZ German, English, and American.

The PG group was comprised of 20 participants aged 25-59 years (mean = 38.3, *SD* = 10.35), of whom over half were male (70%, *n* = 14). Three quarters of the sample were employed (75%, *n* = 15), with 25% (*n* = 5) unemployed. Over half of the PG group self-identified as New Zealand European/Pakeha (55%, n = 11), 8 participants (40%) identified as Māori and 1 as Samoan/Chinese.

The CBD group (*n* = 14) was made up entirely of females, aged between 19-54 years (mean= 33.6, *SD*= 11.60). Ten (71.4%) were employed and 4 (28.6%) were unemployed. Ten of the participants (71.4%) were of New Zealand European / Pakeha descent, 2 (14.3%) were of Māori descent, and 1 each of European/Māori and Pacific Island descent.

### *Measures*

A study specific questionnaire was developed which asked participants to report standard demographic information (i.e., age, gender, ethnicity, employment status) and any diagnosed mental illnesses and/or addictions.

*The Compulsive Buying Scale* (CBS; Faber & O'Guinn, 1992) was used to identify compulsive buyers. The CBS is a clinically valid and reliable (Cronbach's alpha = .70; Clark & Calleja, 2008) instrument which has been extensively used to identify the rate and prevalence of CBD (e.g., Faber & Christenson, 1996; Koran et al., 2003; Mueller et al., 2010; Schlosser et al., 1994). The scale consists of seven statements representing specific behaviours and feelings related to compulsive buying. Items are rated on a 5 point Likert rating scale (1 = strongly agree / very often to 5 = strongly disagree /never). CBS total scores are calculated by entering the scores into a regression equation (CBS total = -9.69 + (Qla x .33) + (Q2a x .34) + (Q2b x .50) + (Q2c x .47) + (Q2d x .33) + (Q2e x .38) + (Q2f x .31). Lower scores on the scale represent higher levels of compulsive buying. Faber and O'Guinn (1992) suggested a cut off score (-1.34), two standard deviations below the general population mean.

In order to compare symptoms across

the disorders, the authors developed an *Addictive Disorders Questionnaire* (ADQ), based on the diagnostic criteria for substance dependence from the DSM-IV (APA, 2000) and ICD-10 (World Health Organization, 2007). Based on recommendations which sought to improve the accuracy of substance diagnostic criteria (Budney, 2006; Budney, Radonovich, Higgins, & Wong, 1998; Hughes, 2006; Nelson, Rehm, Ustun, Grant & Cahtterji, 1999; Swift, Hall & Teesson, 2001), questions were developed that were specific to the substance (i.e., alcohol) or activity (i.e., gambling or shopping) and descriptors were added to the criteria for withdrawal to encompass both the physiological and emotional aspects of withdrawal (Budney, 2006; Schmitz, 2005). The questionnaire consisted of 11 items which required a yes/no response. The questionnaire was scored by summing the positively endorsed items. A score of > 3 was deemed to be indicative of dependence, based on the diagnostic criteria utilised in the DSM-IV TR (APA, 2000).

Obsessions and compulsions were assessed using the *Yale-Brown Obsessive-Compulsive Scale* (Y-BOCS; Goodman, Price, Rasmussen et al., 1989), which has been adapted for use with AD, (Y-BOCS-HD; Modell, Glaser, Mountz, Schaltz, & Cyr, 1992) PG (BOCS-PG; Pallanti, DeCaria, Grant, Urpe, & Hollander, 2005) and CBD populations (Y-BOCS-SV; Monahan, Black, & Gabel, 1996). The Y-BOCS is a widely used measure of obsessions, compulsions, and severity in Obsessive Compulsive Disorder (OCD). The measure is unique in that it focuses on the person's experience of the symptoms rather than on the content of persons' symptoms. All three versions of the Y-BOCS are reported to have good internal consistency and validity (e.g., Connor, Feeny & Young, 2005; Koran, Chuong, Bullock & Smith, 2003; Pallanti, DeCaria, Grant, Urpe & Hollander, 2005). Each version of the questionnaire consists of ten items which are rated from 0 (no symptoms) to 4 (extreme symptoms). The Y-BOCS 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 sub-scales and total score reflects greater symptom severity and poorer functioning (Federoff, Sobell, Agrawal, & Gavin, 1999; Modell et al, 1992).

Impulsivity was assessed using the *Barratt Impulsiveness Scale* (BIS–II: Barratt & Stanford, 2000) which has been used extensively in these populations: AD (Dom, Wilde, Hulstijn, Brink & Sabbe, 2006); PG (Fuentes, Tavares, Artes, & Gorenstein, 2006; Nower & Blaszczynski, 2006); and CBD (Clark & Calleja, 2008; Mueller, Mueller et al., 2007; Mueller et al., 2008). The BIS-II is a 28 item Likert scale rated from Rarely/ Never (0), to Almost always/always (4). Higher scores indicate a higher level of impulsiveness and the total score was the measure of interest.

The anxiety and depression subscales of the *Symptom Checklist-90-Revised* (SCL-90-R: Derogatis, 1994) were used to screen participants for co-morbid mood disorders. The SCL-90-R has excellent reliability and validity, has been used in a New Zealand context (Barker-Collo, 2003) and with various clinical populations, including those with AD (Kiefer et al., 2005; Lucht, Jahn, Barnow, & Freyberger, 2002), PG (Petry, 2002) and CBD (Mueller, Mueller et al., 2007; Mueller et al., 2008; Rodriguez-Villarino, Lez-Lorenzo, Fernandez-Gonzalez, Lameras-Fernandez & Foltz, 2008). Each item describes a problem which the respondent rates for how much that problem has distressed or bothered them in the past week. Questions are rated on a 5 point scale from not at all (0) to extremely distressing (4). Scale scores are computed by summing the values of each contributing item completed, divided by the total number of items completed. The depression scale consists of 13 items, while the anxiety scale consists of 10 items. Raw scores were converted to T scores using normative data from the manual where necessary.

### Procedure

Participants with AD and PG were recruited via posters and presentations at residential alcohol and drug treatment centres and out-patient gambling treatment services in three New Zealand cities (Auckland, Hamilton & Nelson). Compulsive Buyers were recruited via publicity in the local press, advertising in 41 budget advisory services (across NZ), and advertising on internet online shopping and auction sites. Participants expressing an interest in taking part in the study were posted or emailed a detailed information sheet which outlined the research procedure, the rights of the participant and the goals of the research.

Participants who agreed to take part were given the option of completing the questionnaires in a face-to-face meeting with the researcher (at a mutually convenient location), receiving and returning the questionnaires by post, or completing them online and submitting their responses electronically. Those meeting the researcher in person were asked to sign a consent form. For all other participants, the information sheet explained that consent was deemed to have been given if the questionnaires were completed and returned. The questionnaires took approximately 25 minutes to complete.

The majority of the AD participants and around half of the PG participants completed the questionnaire with the researcher. The other PG participants returned the questionnaires by post and the majority of the CBD group completed the questionnaires electronically. Once the questionnaires were completed, participants were offered the option of being debriefed by the researcher. Participants were also offered a 'koha' (gift) of a $10 supermarket or 'The Warehouse' voucher as a thank-you for participating in the research. Vouchers were posted to those who completed questionnaires by post or email, and given directly to those who completed the questionnaires with the researcher.

With regard to cultural competency, the researcher collecting the data (AM) is of Māori and Scottish decent, and 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 Māori participants, and when formally meeting staff at treatment agencies.

Table 1. The number (percentage) of participants in the AD, PG and CBD groups endorsing each statement of the ADQ.

| | Group | | | |
|---|---|---|---|---|
| ADQ Item | AD | PG | CBD | Statistic |
| 1: Do you find you need to use a lot more/participate in more….. to get the desired effect than you did when you first started? | 22 (92) | 17 (85) | 8 (57) | $X^2$ (2) = 7.17, $p$ = .03* |
| 2: Do you find that when you use/participate in the same amount of ……., it has less of the desired effects than before? | 22 (92) | 16 (80) | 7 (50) | $X^2$ (2) = 8.93, $p$ = .01* |
| 3: Have you found that during periods of no use that you have adverse physical (shakes, poor sleep, stomach cramps) or emotional affect (low or erratic mood), which are relieved by …….? | 22 (92) | 10 (50) | 10 (71) | $X^2$ (2) = 9.49, $p$ = .01* |
| 4: Have you experienced a strong desire or sense of compulsion to …….? | 24 (100) | 18 (90) | 13 (93) | $X^2$ (2) = 2.37, $p$ = .31 |
| 5: Do you spend a great deal of time using, intoxicated, or recovering from the effects of ……? | 24 (100) | 15 (75) | 11 (79) | $X^2$ (2) = 6.64, $p$ = .04* |
| 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. | 22 (92) | 11 (55) | 10 (71) | $X^2$ (2) = 7.72, $p$ = .02* |
| 7: Have you reduced the amount of time you spend on these activities due to using, seeking or recovering from the effects of ……? | 21 (88) | 14 (70) | 8 (57) | $X^2$ (2) = 4.52, $p$ = .10 |
| 8: Does your using/participating in ….. make or cause you to become physically or mental/ emotionally unwell despite your continued use? | 22 (92) | 12 (60) | 3 (21) | $X^2$ (2) = 19.08, $p$ = .001* |
| 9: Do you find that when you start using/participating in ….. you end up using/participating more than you planned to? | 24 (100) | 19 (95) | 13 (93) | $X^2$ (2) = 1.58, $p$ = .46 |
| 10: Do you often use/participate in more …….for a longer period of time than you intended to? | 24 (100) | 17 (85) | 14 (100) | $X^2$ (2) = 6.10, $p$ =.053 |
| 11: Have you tried unsuccessfully to stop or cut down your ……..? | 19 (80) | 17 (85) | 7 (50) | $X^2$ (2) = 5.80, $p$ = .06 |
| Average total number of items endorsed (mean ± *SD*) | 10.25±1.22 | 8.30±2.30 | 7.43 ± 1.79 | $F$(2,55)= 12.69, $p$ <.001* |

* = $p$<.05; AD = alcohol dependence; PG = pathological gambling; CBD = compulsive buying disorder

*Data analysis*

Raw data was entered into SPSS version 11.0 for Windows. Measures were scored according to published instructions and missing data were handled in accordance with the published scoring directions for each measure.

## Results

The first aim of the study related to the identification of shared characteristics of AD, PG and CBD. The ADQ is based on AD diagnostic criteria in the DSM-IV and the ICD-10 and thus provides a means of comparing symptoms and their prevalence across the three groups. As the ADQ was developed specifically for this study, initial analyses were undertaken to examine the reliability and validity of the scale. The internal reliability of the ADQ was good (Cronbach's alpha = .71), and ADQ scores showed a significant positive correlation with the YBOCS, an established measures of symptom severity ($r$ = .61, $n$ = 58, $p$ <.001). Given these findings, scores on the ADQ were deemed suitable for use in subsequent analyses.

The first analysis utilised the standard DSM-IV AD diagnostic criteria of endorsement of 3 or more items. Analyses indicated that all participants met this cut-off (range of endorsed items for total sample 3 (min) to 11 (max). Furthermore, all items were endorsed by participants from each group. Table1 summarises the number of participants in each group who endorsed each item of the ADQ. Chi-square analyses were used to identify differences in endorsement rate across the groups. Participants in each of the three groups were similar in their endorsement of items relating to craving (item 4) and dyscontrol (items 9 & 10). In terms of differences, the AD group showed a significantly higher rate of endorsement across all items, with lower rates shown by the PG and CBD groups. Items relating to tolerance (items 1 & 2) and the physical/ emotional consequences (item 8) of their disorder were endorsed significantly more frequently by the AD and PG groups compared to the CBD group. The AD group 'lost' more time (items 5 & 6) as a result of their disorder when compared to the PG and CBD groups. A significantly greater proportion of AD and CBD participants reported the activity as having physical/ mood improvement effects compared to the PG participants (item 3). Finally, a significantly higher proportion of the AD and PG groups had previously tried to quit compared to those in the CBD group.

To examine differences across the three disorders, a series of one-way analysis of variance (ANOVAs) were conducted to compare scores on the YBOCS and BIS (see Table 2). Where the overall ANOVA was significant, post-hoc tests were conducted using a Bonferroni correction. Analyses revealed that there were significant differences between the groups in relation to the YBOCS total score and the YBOCS compulsion subscale. This was explained by the AD participants obtaining significantly higher scores compared to the PG and CBD groups ($p$ < .05).

To compare the levels of anxiety and depression in AD, PG and CBD, the raw SCL-90R scores were transformed to T scores based on gender specific general population norms. As well as calculating the mean T scores for each group, the number of participants within the average (50-84th percentile), above average (84-98th percentile) and high (>98th percentile) range were calculated. These scores are summarized in Table 3. Overall, the T scores for depression and anxiety were highest for the AD group, followed by the PGs and then those with CBD. One-way ANOVAs were conducted to compare the depression and anxiety T scores across the three groups. Analyses revealed significant differences across the groups in relation to depression, $F$(2,55) = 4.32, $p$ = .02, η2 = .14, and anxiety, $F$(2,55) = 3.83, $p$ = .03, η2 = .12. Post-hoc tests revealed that scores in the AD group were significantly higher compared to the CBD group for depression ($p$ = .02) and anxiety ($p$ = .03). Focusing on the severity levels of anxiety and depression, the AD and PG group had a greater proportion of participants experiencing more severe levels of anxiety and depression (Table 3).

To examine the relationship between mood and the severity of the disorder, a series of Pearson's correlations were conducted between symptoms endorsed on the ADQ, the YBOCS totals scores and the SCL-90R depression and anxiety scores (see Table 4). For the sample overall, there were significant positive correlations between the ADQ, the YBOCS and the SCL-90R depression and anxiety scores, suggesting that as addiction severity increases, symptoms of depression and anxiety increase. Correlations were also conducted separately for each group because the AD group obtained

Table 2. The scores obtained by Alcohol Dependent (AD) Pathological Gambling (PG) and Compulsive Buying Disorder (CBD) participants in relation to impulsivity, obsessions and compulsions.

| Scale | AD ($n$=24) Mean ($SD$) | PG ($n$=20) Mean ($SD$) | CBD ($n$= 14) Mean ($SD$) | ANOVA |
|---|---|---|---|---|
| BIS Total | 73.9 (12.7) | 70.3 (10.8) | 76.1 (7.9) | $F$ (2,55) = 1.2, p = .30, $\eta^2$ = .05 |
| YBOCS Total | 22.5 (7.7)† | 17.0 (9.8) | 16.3 (6.2) | $F$ (2,55) = 3.6, p = .03, $\eta^2$ = .11* |
| YBOCS- Obsession | 9.9 (4.1) | 8.8 (4.8) | 8.1 (3.2) | $F$ (2,55) = 0.90, p = .41, $\eta^2$ = .03 |
| YBOCS- Compulsion | 12.6 (4.2) † | 8.3 (5.6) | 8.1 (3.4) | $F$ (2,55) = 6.6, p = .003, $\eta^2$ = .19* |

* = $p$<.05; † = $p$<.05, †† = p<.01 compared to PG and CBD; η2 = eta squared, effect size; AD = alcohol dependence; PG = pathological gambling; CBD = compulsive buying disorder; BIS = Barrett Impulsiveness Scale; Y-BOCS = Yale Brown Obsessive Compulsive Scale

Table 3. Mean levels of depression and anxiety and the number of participants in each severity category across the three groups. Data are presented as mean (*SD*) or *n* (%).

| | AD (*n* = 24) | PG (*n* = 20) | CBD (*n* = 14) |
|---|---|---|---|
| SCL-90R Depression *T* score | 71.3 (9.7) † | 69.4 (10.4) | 61.2 (11.5) |
| 50-84th percentile, *n* (%) | 3 (12.5) | 3 (15.0) | 5 (35.7) |
| 84 - 98 percentile, *n* (%) | 6 (25.0) | 5 (25.0) | 6 (42.9) |
| > 98 percentile, *n* (%) | 15 (62.5) | 12 (60.0) | 3 (21.4) |
| SCL-90R Anxiety *T* score | 70.9 (8.0) † | 65.3 (14.3) | 60.4 (12.3) |
| 50-84th percentile *n* (%) | 2 (8.3) | 7 (35.0) | 6 (42.9) |
| 84 - 98 percentile *n* (%) | 10 (41.7) | 6 (30.0) | 6 (42.9) |
| > 98 percentile, *n* (%) | 12 (50.0) | 7 (35.0) | 2 (14.3) |

† $p<.05$ compared to CBD group from Bonferroni corrected post-hoc test. AD = alcohol dependence; PG = pathological gambling; CBD = compulsive buying disorder; SCL-90R = Symptom Checklist 90 Revised

significantly higher scores on the ADQ, YBOCS, and SCL90R depression and anxiety scales compared to the PG or CBD groups. For the AD group, YBOCS scores showed a significant positive correlation with depression and anxiety scores however, for the PG group only the ADQ showed a significant positive correlation with anxiety. No statistically significant correlations between these scales were observed for the CBD group.

Together these findings suggest some similarities across the three disorders, particularly in relation to craving, dyscontrol, obsessions and levels of impulsivity. Differences between the groups were also apparent. Overall, the AD group had the greatest addiction severity (highest ADQ & YBOCS scores) and the highest levels of depression and anxiety. Fewer members of the CBD group had problems with tolerance or distress relating to their disorder compared to those with AD or PG, while fewer participants with PG reported physical or mood improvement effects relating to the behaviour. For the group overall, poor mood was related to increased addiction severity, however this was confounded by the high number of AD participants obtaining high scores on the ADQ and mood scales.

## Discussion

The aims of this study were to conduct a preliminary investigation to describe the common characteristics of AD, PG and CBD; examine the levels of anxiety and depression disorders across the three groups and; evaluate the relationship between mood and anxiety, and the severity of the disorder.

With regard to the first study aim, the patterns of endorsement of diagnostic criteria in the ADQ indicate that the three common categories of addiction phenomenology (symptoms) of physiology, dyscontrol and salience were endorsed across the three groups. Despite some individual items being responded to differently across groups (e.g., the items related to tolerance were endorsed by fewer CBD participants) other items showed similar levels of endorsement among the groups. These results support earlier findings by Budney et al., (1998) and Stephens, Babor, Kadden & Miller, (2002) who found broad similarities in the types and number of DSM-IV symptoms endorsed across different drug addictions (i.e., cannabis versus cocaine; American Psychiatric Association, 2000). Thus, these preliminary findings provide support for the presence of AD addiction criteria (phenomena) across two behavioural addictions - PG and CBD. 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 provides some support for 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, 2007).

With regard to other aspects of addiction, there were no significant differences in impulsivity across the three addiction groups. However, all groups met proposed cut-off scores for high levels of impulsivity (> 60; Ettelt, Ruhrmann, & Barnow et al., 2006; Preuss, Rujescu, & Giegling et al., 2003). The AD sample in the current study obtained higher impulsivity scores compared to those reported by others (Bayle, Caci, Millet, Richa, Olie, 2003; Dom et al., 2006). In contrast the PG and

Table 4. Pearson's Correlations between disorder severity and mood

| | AD (*n* = 24) | | PG (*n* = 20) | | CBD (*n* = 14) | | Overall (*n* = 58) | |
|---|---|---|---|---|---|---|---|---|
| | ADQ | YBOCS | ADQ | YBOCS | ADQ | YBOCS | ADQ | YBOCS |
| SCL-90R depression | .22 | .49* | .43 | .38 | .36 | .03 | .35** | .37** |
| SCL-90R anxiety | .09 | .54** | .45* | .42 | .38 | .16 | .37** | .46** |

* = $p<.05$, ** = $p<.01$. ADQ = Addictive Disorder Questionnaire; Y-BOCS = Yale Brown Obsessive Compulsive Scale; SCL-90R = Symptom Checklist 90 Revised

CBD group scores were somewhat lower than expected (Fuentes et al., 2006; Mueller, Mitchell et al., 2007). Previous studies suggested that impulsivity was related to more severe addiction (Glantz, 1999; Glantz & Pickens, 1992), however, the current findings found similar level of impulsivity across the three groups, even though the AD group showed a significantly higher addiction severity. One possible explanation is that impulsivity may be related to specific aspects of addiction, such as compulsions, rather than addiction severity per se.

With regard to other aspects of addiction, the AD group obtained higher compulsion scores compared to the PG and CBD groups. However overall, the YBOCs scores for the AD (Modell et al., 1992; Ilhan, Demirbas & Dogan, 2006) and PG groups were similar to previous findings (Grant et al., 2007) but the CBD group obtained much lower scores (Mitchell et al., 2006; Mueller et al., 2007). Taken together, these finding suggest that the characteristics of the AD and PG groups were similar to those in other studies however the low YBOCS scores for the CBD group suggest that this group had less severe symptomatology. This is probably a result of differences in sample recruitment, which is a clear limitation of the current study. The majority of the AD group were residents in an alcohol and drug residential treatment programme, whereas the PG group participants were either in support groups or outpatient treatment. In contrast, the compulsive shoppers were predominantly from the general public, and not engaged in any treatment service, as there is no treatment agency for CBD. Nonetheless there were clear similarities in addiction phenomenology across the three groups.

Focusing on mood and anxiety disorders, the AD group obtained significantly higher scores for depression and anxiety compared to those with CBD. Furthermore, the majority of AD and PG participants obtained scores on the depression scale which placed them above the 98$^{th}$ percentile. A similar pattern was observed for the anxiety scores. The high prevalence and severity of depression and anxiety in the PG and AD groups suggest that these mood disorders are related to the severity of the addiction. For example it is possible that both depression and anxiety are related to failed attempts to restrict addiction behaviour, which has been cited in the literature as leading to 'secondary emotions' such as profound guilt and dysphoria (Black, 2001; McElroy, Keck, Pope et al. 1994). In keeping with this, findings also indicated that depression and anxiety worsened as addiction severity increased, however this was most apparent in the AD group, with the more severe addiction. The high proportion of AD participants with scores over the 98th percentile on the SCL-90R suggests that further research to investigate the current use and suitableness of screening measures for identifying comorbid psychiatric issues within addiction services would be warranted. 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.

There were clear limitations associated with current study. As previously mentioned, the number of participants in each group was relatively small and the three groups (AD, PG & CBD) were recruited from an inpatients setting, an outpatient / support group setting and through advertisement in the general public respectively. Thus, as well as having different 'addictions' of varying degrees of severity, the three groups would undoubtedly also differ in their level of motivation for change. In addition to this, addiction severity was assessed using a questionnaire developed by the authors for this study. Consideration was given to adapting one of the existing addiction severity measures (with known psychometric properties) however extensive changes would have been required, which may have changed the validity and reliability of the scale. Therefore, the authors felt that a questionnaire specifically designed for this study, based on current diagnostic criteria, would be most suitable.

In spite of these limitations, findings from the current study provide preliminary evidence for similarities across these three disorders, and it is therefore hard to justify CBD as an impulse control disorder (impulsivity scores were similar across the three groups) or an obsessive compulsive disorder (the AD group obtained the same YBOCS score). It is also evident that CBD has more in common with PG than AD, which may highlight the role of substance specific addiction phenomenology, although this may be related to the lower severity of the PG and CBD groups. The appropriate classification of CBD is important when considering treatment approaches, as treatments for impulse control disorders emphasise exposure and response prevention (Grant, Potenza, Weinstein & Gorelick, 2010), whereas behavioral addictions such as PG respond well to established SUDS treatment approaches such as motivational enhancement, cognitive behavioural therapies, and 12-step self-help approaches (Grant, Potenza, Weinstein & Gorelick, 2010; see Pallesen, Mitsem, Kvale, Johnsen & Molde, 2005 for review).

The development of common addiction phenomenology raises several positive clinical applications. With increased acceptance that addiction is more than physiological phenomena (i.e., withdrawal and tolerance) attention could 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 conceptualisation of addiction could provide the impetus for the exploration of providing non-substance or activity specific addiction training (i.e., theory, assessment, early intervention and treatment) which may also address other putative 'behavioural addictions', such as compulsive sexual behaviour (Schneider et al., 2005) and eating disorders (Davis, & Calridge, 1998; Gold, Frost-Pineda, & Jacobs, 2003; Joranby et al., 2005). This is in keeping with the growing interest in transdiagnostic approaches to psychological interventions. While the current paper highlights the common clinical features across addictions, a transdiagnostic approach to treating

these disorders would focus on the identification of the shared maintaining mechanisms across these addictions and co-morbid mood disorders (Egan, Wade & Shafran, 2011). It has been suggested that both alcohol dependence and depression may stem from unsuccessful attempts to control unwanted feelings and emotions (Petersen & Zettle, 2009). In support of this, a clinical trial of Acceptance and Commitment Therapy (ACT) addressing experiential avoidance, compared to treatment as usual (individual counselling), in those with comorbid disorders produced a greater therapeutic impact (Petersen & Zettle, 2009). This suggests that a transdiagnostic treatment approach may be useful in SUDS, however, a recent paper exploring treatments for comorbid mood, anxiety and substance use problems noted that "little is known about the relative benefits of transdiagnostic or integrated treatments as compared to single-disorder interventions" (McHugh & Greenfield, 2010. p2). Thus, there is a clear need for further research in this area.

In conclusion, the acknowledgement of CBD as an addiction would provide support for increasing research into this disorder. Little is known about CBD in NZ, a first step to address this may be to examine its prevalence via screening those attending budget advisory services. The Compulsive Buying Screen (CBS) is a relatively simple and easy measure to administer. The importance of addressing online compulsive buying 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 buyers 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 22nd century.

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