Validation of the Addiction Recovery Questionnaire

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Abstract

Outcome measures are captured for all services that are publicly funded, usually defined by expert committees and driven by political motivations, rather than putting service user views at the core. Since 2012, there has been a change in the way that substance misuse services have been asked to operate, moving from harm reduction and maintenance initiatives, to recovery focussed objectives. The Addiction Recovery Questionnaire [ARQ] was developed by service users and their concerned others, in order to support people who are accessing substance misuse services to quantify and measure their recovery. The ARQ is a 12-item questionnaire, with a score range of 0 – 36, where higher scores indicate greater recovery. The overall aim of this dissertation is to explore the utility of the ARQ as a measure of recovery in substance misuse treatment. A sample of 305 participants completed the ARQ and were asked to self-identify to one of four groups: in treatment, in recovery, social substance user or a lifetime abstainer. The social substance user was classified as well-functioning, as they did not identify that their substance user was problematic to their lifestyle. ARQ total score and sub-scores for each of the self-identified groups were compared using Regression analysis. Latent Class Analysis [LCA] and goodness of fit statistics were calculated for each model and compared. There was a significant difference in ARQ scores between the well-functioning and treatment groups. The goodness of fit model indicated that from the LCA, a two-class model was the best fit to the data. In conclusion, the ARQ distinguishes those in treatment from the other groups (those in recovery, lifetime abstainers and well-functioning). The ARQ should be deployed into substance misuse services as a measure of recovery for service users and as an outcome measure for providers and commissioners.

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1.Introduction

1.1 Addiction and Dependence

Addiction is most often associated with alcohol, nicotine or drugs (prescription or illicit), but it can also relate to a number of other functions such as gambling, work, internet/technology, sex or shopping (Semaille, 2009), which are classified as behavioural addictions. The focus of this dissertation is on addiction to alcohol and drugs.

The terms addiction and dependence are often used interchangeably, however there are differences in their definition. Addiction is an umbrella term used loosely to include dependence, substance use, and related problems but it is not a recognised disorder. The International Classification of Diseases, currently version ICD11 (World Health Organisation, 2020) defines alcohol dependence as: '*a disorder of regulation of alcohol use arising from repeated or continuous use of alcohol. The characteristic feature is a strong internal drive to use alcohol, which is manifested by impaired ability to control use, increasing priority given to use over other activities and persistence of use despite harm or negative consequences. These experiences are often accompanied by a subjective sensation of urge or craving to use alcohol. Physiological features of dependence may also be present, including tolerance to the effects of alcohol, withdrawal symptoms following cessation or reduction in use of alcohol, or repeated use of alcohol or pharmacologically similar substances to prevent or alleviate withdrawal symptoms*'. Essentially the same definition is applied to other psychoactive drugs. It should be noted that dependence may or may not include the presence of withdrawal symptoms and that it is the response to withdrawal symptoms, not simply their presence, that defines dependence. The abstinence syndrome may be manifest as physiological overactivity, for example alcohol or heroin withdrawal, or as an underactivity, a depletion of neurotransmitter, for example cocaine or ecstasy.

Misuse or regular use of other substances, such as steroids, laxatives, antidepressants, may also be associated with a dependence similar to that described for psychoactive substances, albeit of lower intensity, and may also be associated with physiological changes such as tolerance and withdrawal symptoms on cessation or reduction of use. In the case of prescribed medications, such as antidepressants, there may also be an element of

dependence, and an abstinence syndrome. A different example of dependence is where an individual must take a medication to maintain their health, such as diabetics who are dependent on insulin – this is unlikely to be called an addiction.

Substance dependence is a treatable condition, where the goal is to allow the patient to be able to function normally without the use of the drug. Not everybody who has an addiction or misuses a drug will seek help. The majority of people who misuse substances move out of problem use spontaneously – so-called *natural recovery*. Being dependent can be an uncomfortable and stressful state which may lead to help seeking. Addiction related problems, including the concerns of others, are also likely to trigger help seeking. Typically, treatment will involve establishing control over substance use and for dependent users this usually means abstinence, which can be achieved by a slow reduction of the substance or a medically assisted detoxification. The more important part of treatment is helping the individual to bring about lifestyle changes to prevent a relapse into problematic substance use and to deal with the legacy problems of the addiction. So, addiction treatment agencies need to assess dependence, substance use, and quality of life in order to form a treatment plan. The *Addiction Recovery Questionnaire* is designed to tap into the lifestyle of a person with an addiction.

1.2 Scale of substance misuse

1.2.1 Prevalence

It is estimated that 10% of adults aged 16-59 in the UK have used illicit drugs in the last year (European Monitoring Centre for Drugs and Drug Addiction, 2019), equating to approximately 3.7m people (Office for National Statistics, 2020). In a survey among school aged children (aged 15), 38% of children reported having taken an illicit drug at some point in their life (UK Focal Point on Drugs, 2017). Prevalence of drug use among young people can be difficult to accurately measure due to concerns about reliability of self-reported use. This is due to the potential repercussions of being discovered as a drug user or over-reporting to gain peer acknowledgement (Percy et al., 2005).

In England in 2018, 82% of adults reported drinking alcohol in the past 12 months, with 49% of adults drinking at least once a week (NHS Digital, 2019a). In addition, 44% of school aged children (11-15 years old) reported drinking alcohol at least once (with 14% being 11-year-olds compared to 70% being 15-year-olds) (NHS Digital, 2019b).

1.2.2 Problem users

It is well known that there is an association between illicit drug use (particularly opioids) and risk of harm, to both individuals and society as a whole (Public Health England, 2019b). Therefore, it is important to estimate the size of the population of people who are problem drug users (and dependent drinkers). Problem use is not defined by a fixed amount of any particular substance and will vary from person to person, based on their social norms and impacts upon their daily life (Seddon, 2011). The World Health Organisation (World Health Organisation, 1994) uses the terms 'harmful Use' as use that causes actual physical or mental ill-health, whereas 'hazardous use' refers to use that has the potential to cause harm, be that ill-health or social in nature. Due to the stigma associated with problem use it is often estimated using indirect modelling techniques. It is estimated that in England in 2014, there were 300,783 problem drug users (UK Focal Point on Drugs, 2017). In England in 2019, there was also an estimated 586,780 alcohol dependent drinkers who may need specialist treatment (Public Health England, 2019b)

1.2.3 Entering Treatment

There were 268,251 adults in contact with drug and alcohol services between April 2018 and March 2019, with 132,210 new adults entering treatment (Public Health England, 2019a). There was a 4% increase in new entrants to treatment between 2018 to 2019, the first increase in the number of people coming to treatment since 2013 to 2014. This is possibly due to an increase in the use of illicit drugs within the UK (Home Office, 2019).

The number of people in contact with substance misuse treatment services for opiates was 139,845, with this group making up the largest proportion of individuals in treatment (52%). Those in treatment for alcohol misuse only was 75,555 (28%), non-opiate and alcohol was 28,598 (11%) and those for non-opiate only was 24,253 (9%) (Public Health England, 2019a).

Using the data from above, it can be seen that only a small proportion of those estimated to be a problem user (drug and/or alcohol) are accessing treatment services. For those with a drug problem 192,696 were accessing treatment against an estimated number of 300,783 problem users. This equates to 64% of people. For those with an alcohol related problem it is 18% accessing treatment (75,555 (alcohol) + 28,598 (alcohol and non-opiate) out of 586,780).

In terms of demographics, there were more males in treatment than females with 69% of the treatment population being male and 31% female. The median age of people in treatment varied by substance group. People in treatment for opiates had a median age of 41, for non-opiates 30 and alcohol only 46. (Public Health England, 2019a). This is consistent with usage trends, i.e. younger people are more likely to misuse non-opiate drugs such as cannabis, cocaine, MDMA and amphetamines.

1.2.4 Health and financial cost

People who misuse drugs or alcohol are more likely to face poorer overall health and are more likely to die at a younger age than those in the general population. In 2015 there were 3,070 drug related deaths within the UK, with the median age of those dying being 42 with the majority (62%) of deaths occurring in the 30-49 age group (UK Focal Point on Drugs, 2017). There were 2,656 deaths across the UK featuring an opioid, representing 87% of the UK total.

The health risks that problem drug users face include drug toxicity, contracting blood-borne viruses (Hepatitis C, Hepatitis B, HIV) through injecting drug use, and other harms related to drug injection, such as skin and soft tissue infections. People who misuse alcohol may face issues such as alcoholic liver disease, alcohol related cancers and unintentional injuries.

It is estimated that the cost of drug misuse within the UK is £10.7bn, including the cost of working hours lost, providing health care and through crime to fund addictions. Alcohol related harm costs an additional £3.5bn to the health service each year (Home Office, 2017). Just under half of the total cost to society, £6bn, is attributed to crimes classified as drug-acquisitive, such as robbery, burglary and shoplifting (Home Office, 2013).

1.3 Current treatment policy and services

Within the UK, the Home Office is the government department responsible for implementing and monitoring drug and alcohol policies and strategies. The most recent strategy for alcohol was released in 2012 (Home Office, 2012) and for drugs was in 2017 (Home Office, 2017). The alcohol strategy was written before the implementation of the Health and Social Care Act 2013, and so it spoke of the upcoming integration of public health into local authorities, where each local authority is given a ring-fenced allocation for public health expenditure. A proportion of this is spent on drug and alcohol treatment services, commissioned to meet the needs of the local population. The drug strategy has four themes, preventing people starting to use drugs, reducing crime, supporting recovery and leading action at a global scale. The strategy focuses on the wider health and social inequalities faced by those with a drug problem, recognising that treatment is just part of recovery. It acknowledges that recovery is not just overcoming dependence, but also wider lifestyle changes such as having employment and decent housing.

1.3.1 Community-based substance misuse services

Most people who receive treatment for problems with drug or alcohol in the UK, receive that treatment in a community outpatient setting. These are usually provided by community-based specialist services, but sometimes GPs provide treatment medications in a shared care approach with the specialist services. The community-based services are usually publicly funded and free at the point of access, commissioned by local authorities through their public health grants. What services are provided will be different in each local area, but will usually comprise physical health review, medical intervention, behavioural support (group or one to one sessions) and harm reduction initiatives (such as needle exchanges, supervised consumption and general advice). Specialist drug treatment services are also provided by NHS mental health trusts, although places are often difficult to secure due to a shortage of suitable facilities and staff (Kessler, 2004). This often results in patients being passed between NHS and community care.

Mutual aid groups such as alcoholics anonymous (AA) and narcotics anonymous (NA) are associated with recovery and have their central focus around the 12 step programme (Ferri,

Amato and Davoli, 2006), which can lead to the assumption that abstinence is the only facet of recovery. While abstinence may feature prominently in some definitions of recovery, there are certainly more elements to it. It has previously been described as 'a voluntarily maintained lifestyle characterised by sobriety, personal health and citizenship' (Betty Ford Institute, 2007). Previous research has also identified that those in recovery had more people in recovery and fewer active drug users in their social networks and were much more likely to be involved in formal recovery support groups. They also reported higher quality of life and lower depression and anxiety levels, when compared to those who were earlier in their treatment journey (Best et al., 2015).

1.3.2 Residential and inpatient units

Residential rehabilitation services are primarily run by voluntary and private sector organisations, with cost often making access prohibitive for many people. They usually offer structured programmes around psychosocial interventions, group therapy, education and life skills. It is recommended that residential services are for the most complex of cases, (National Institute for Health and Care Excellence, 2007). Hence, there are often lengthy processes for people wanting to access those services through publicly funded channels.

Inpatient units provide assessment, stabilisation and/or assisted withdrawal for those drug or alcohol users whose needs require supervision in a controlled medical environment. These units can be standalone, attached to residential rehabilitation services or on a general ward within a hospital. The proportion of the people who receive treatment in inpatient or residential settings is low compared to those who receive it on a community basis, however private providers are not required to report their patients through the national reporting system, so this is known to be underreported.

Another non-clinical based residential setting in the UK is a recovery house. This is where people live on a short-term basis, with peer support and/or integrated recovery support interventions. It is usually a requirement that people are abstinent before entering such a service. There are also recovery houses where attendance is during the day only and not on a residential basis.

1.3.3 Prisons

Treatment services in prisons are commissioned by the Ministry of Justice and are designed to be equivalent to community-based treatment, offering the same range of medical and behavioural support.

1.4 Commissioning Issues

As previously discussed, treatment services need to focus on treating the dependence and then addressing the lifestyle changes that are required. Treatment services traditionally focussed on the physical dependence and supporting an individual to stop using drugs or alcohol through medication to reduce the desire or produce unpleasant side effects if the substance was taken, or through substitute therapies such as methadone or buprenorphine. However, since 2012 there has been a change in the way that treatment services are being asked to operate, moving from harm reduction initiatives and keeping people in treatment to recovery focussed objectives (Home Office, 2017). This has led to a shift in commissioning treatment services based on outcomes for recovery, without any clear definition of what recovery means. For services that are commissioned using public funds, a black and white outcome measure is far easier to "contract manage" and hence outcomes such as abstinence, not re-presenting for treatment within a certain timeframe and reduction in benefits associated with obtaining employment are used as proxy measures (Best, De Alwis and Burdett, 2017).

However, a definition is difficult to produce and can cause problems when it comes to commissioning, as the terms in the definition become the sole focus that services are assessed against. There are differing views on what recovery is, it can be seen as a strange mixture of abstinence and medication-based models, with differing views between family members, people in recovery, practitioners and commissioners. The risk of such a wide range of viewpoints is that it leaves the definition of recovery at the mercy of multiple interpretation, including those with a particular political agenda.

1.5 Outcomes

Outcome measures are captured for all services that are publicly funded, and for the drug and alcohol treatment services in England this is through the National Drug Treatment Monitoring System [NDTMS], administered by Public Health England. Service providers are required to complete the treatment outcome profile [TOP] at various stages when a person is in treatment, namely at the start of their treatment journey, at 26 weekly intervals and at treatment exit (Public Health England, 2020). The main information captured at each TOP review is based upon the service users recall of the previous four weeks on the following themes: substance use, injecting use, health and social functioning. The latter sections ask for a rating of physical health, psychological health and quality of life on a 20-point Likert scale, alongside asking for the number of days in work, volunteering or education and also if they have a housing problem. Up until April 2020, questions were also included about involvement in crime, directly involving drugs such as selling drugs, or other ancillary crimes such as shoplifting, theft and burglary. However, this information is no longer required, as it was deemed that the information collected was unreliable due it being self-reported by the service user. While this was the stance of central government, it was not fully supported by local service providers, who deemed that these outcomes were beneficial measures in supporting problem substance user, particularly those at latter stages of treatment and/or those with stable treatment plans in place.

From 2010 - 2013, there was a pilot scheme introducing payment by results for drug and alcohol services in eight areas across England. The pilot scheme used a 100% payment by results system (which is unusual, it usually 10% of the contract value), with outcomes derived from those captured in TOPs, which are self-reported by the service user. There was concern that the 100% payment method selected was unsuitable as it was likely to lead to the selection of service users with good outcome prognoses and/or gaming of the system to ensure payments were received, at the expense of service user outcomes (Erens, Roland and Knapp, 2011). A review of the payment by results pilot scheme found no overall benefit to funders, commissioners, service users of paying by results for services. While there were some positive outcomes such as increased abstinence while in treatment and reduced injecting, there was decreased treatment initiation and treatment completion, when compared to non-pilot sites (Jones et al., 2018).

Above all else, the outcome measures in both TOP and payment by results pilot scheme are defined by expert committees and driven by the political motivations of the government, rather than putting service user views at the core. The training documentation for the TOP implementation states that the outcomes were derived by expert panel and refined with keyworkers, but there was no service user involvement (National Treatment Agency, 2009). Measuring recovery is a difficult thing to do. This was highlighted in a recent study where 76 outcome measures were discussed in focus groups with service users, many were critical of the terms used, as they did not resonate with them or it was clear that it had been developed by someone who had not experienced addiction and therefore recovery themselves (Neale et al., 2015). Furthermore, the study highlighted the importance of engaging service users when developing outcome measures, however there was not a great deal of consensus between all service users on the correct measures that should be used. This was in part due to recovery being an individualised process. While the authors concluded that it may be unrealistic to develop an outcome measure/questionnaire for recovery, it is more likely to be acceptable if such a tool has been developed with service users and is relevant for use from entry into treatment through various stages of recovery.

1.6 Formulation of the Addiction Recovery Questionnaire

The Addiction Recovery Questionnaire (ARQ) was developed to be used to support people who are accessing substance misuse services to quantify and measure their recovery. It is a 12-item questionnaire, with each item scored from 0 to 3, giving a total theoretical score range of 0 – 36, where lower scores represent lower levels of assumed recovery. The questionnaire can be seen in appendix 5.1.

The foundations of the ARQ can be found in the paper by Thurgood in 2014 (Thurgood et al., 2014), where the initial focus was on what constitutes a good outcome from treatment for a person with an addiction problem. Six focus groups were undertaken with a total of 24 service users and 12 of their family and friends to ascertain what a good outcome was for them. In undertaking the research, it transpired that “good outcome” was not a term widely recognised or understood by members of the focus groups, so the term “being better” was

used. The focus groups were audio recorded and transcribed, after which key themes and outcome elements were derived. In total, seven sub themes and 20 outcome elements were checked for wording and understanding with some service user members of the focus groups. These can be seen in Table 1 below.

Table 1: Outcome elements and sub-themes from service user focus groups

Sub-theme	**Outcome Element**
1. Abstinence	1. Stopping taking drugs or alcohol
	2. Use of medication to replace addiction
2. Health	3. Mental Health
	4. Physical Health
	5 Sense of wellbeing
	6. Personal care and appearance
3. Activities	7. Activities of daily living
	8. Alternative activities
	9. Personal development
4. Relationships	10. Improved relationships with family
	11. New friendships supportive of change
	12. Losing harmful relationships
5. Social circumstances	13. Having money
	14. Accommodation
	15. Criminal activity
6. Self-awareness	16. Confidence
	17. Self-esteem
	18. Trust
	19. Optimism
7. Wellbeing of friends and family	20. Wellbeing of friends and family

Of all the outcomes, it was noted that abstinence was considered a good outcome and that it was an important part of recovery. The service users, and especially family and friends, believed that opiate substitution and moderation of drinking carried a higher risk of relapse than total abstinence.

Further work was undertaken to refine the good outcomes into a questionnaire by (Iveson-Brown and Raistrick, 2016). They asked five stakeholder groups (service users, friends and family, addiction specialists, generic health professionals and commissioners) to rate the importance of each of the outcome elements. Factor analysis was then undertaken that resulted in a reduction of the number of outcome elements. This was further revised again to make a more manageable scale and remove any redundancy within the questions.

The resulting questionnaire had 12 questions (items) on three subscales: “everyday”, “involvement” and “future”. The everyday subscale comprises of five items and relates to normality within a service users life, it includes items on having “enough money”, “suitable accommodation” and undertaking “activities of daily living”, such as personal hygiene, cleaning, cooking, alongside having “trust” from those close to the individual and involvement in “criminal activity”. A higher score on this subscale requires a lifestyle that is satisfying and unlikely to be associated with substance misuse. The involvement subscale is comprised of four items, a reverse scored “mixing with users” item, alongside “new friends” who aren’t associated with substance misuse, “being abstinent” and another reverse scored item about taking prescription medications with a psychoactive effect “substitute prescriptions”. A higher score on this subscale indicates a move away from drinking and drug taking cultures. The final subscale, future, has three items, “optimism” about feeling positive about the future, “self-esteem” about feeling good about themselves and finally “confidence” to deal with situations where the usual behaviour was to misuse substances. A higher score on this subscale will indicate changed thinking and changed responses to situations. It is possible to score highly on the first two subscales, while still scoring lower on this final subscale, indicating that the individual may not have moved into recovery psychologically.

The ARQ can be used by both practitioners and those at various stages of their recovery journey to measure progress. The 12 questions can be used to support goal setting and treatment planning and review in psychosocial support settings, identifying areas where further progress could be made and giving feedback to service users on their progress. The development of the ARQ has highlighted the importance of looking at outcomes that are beneficial to the service user rather than just the substance misuse service (or commissioner). Rather than the service pushing what they perceive to be required onto the service user, the service user is encouraged to pull on the resources they need. In utilising an outcome measure such as recovery, the focus is much more service user orientated and the focus is on empowering them. As such, the next section will outline the aims of this dissertation.

1.7 Aim of project

The overall aim of the dissertation is to explore the utility of the ARQ as a measure of recovery in substance misuse treatment.

The objectives are to:

1. Describe the population who responded to the ARQ.

2. Determine if there are differences between participants' self-reported classification of being in treatment, recovery or neither and their actual drug and/or alcohol usage.

3. Examine the overall and sub scale ARQ scores for each of the groups of participants and compare the scores between the three groups (in treatment, recovery or neither).

4. Use statistical modelling to determine if there are distinct groups that can be identified from the responses to the ARQ.

2. Methods

This project is the validation of the previously published ARQ (Iveson-Brown and Raistrick, 2016). The data used to enable the validation of this questionnaire, were collected prior to the commencement of this project and was made available by Duncan Raistrick and Gillian Tober from the former Leeds Addiction Unit.

2.1 Design

In order to be a useful tool for service users, health professionals and commissioners, the ARQ needs to be able to distinguish between treatment and recovery service user populations. As such, participants were recruited who could be categorised as falling into one of three groups; those currently in treatment for a drug or alcohol problem, those in recovery and those in the general population, termed the well-functioning group. This term is used to mean they did not have a self-declared addiction problem, but they may be a casual or recreational user of drugs and/or alcohol or may have never used drugs or alcohol before. This group was included to determine if the ARQ can distinguish between those who use substances and have an addiction problem and those who use substances but are not considered to have an addiction problem. It will also allow a comparison for those in the recovery group to be made with those in the well-functioning group.

2.1.1 Population

Participants were recruited from a variety of sources in West Yorkshire, United Kingdom from August 2017 to February 2018. Participants (n=305) were recruited using different methods for each of the three groups, as detailed below.

The well-functioning population group were recruited via email and opportunistic face to face approaches. The email (see appendix 5.2) method was designed to recruit participants via the snowball effect and was initially sent to 10 people in total; two people, known to the investigators, from each of five different occupations (business, health care, service industry, academic, media). Each was emailed with a brief explanation of the study and asked to complete the ARQ via a web-link (the online ARQ includes the information sheet). Each participant was then asked to email 10 of their own contacts with a request to

complete the ARQ via the web-link. For the opportunistic sample, students were approached on a face to face basis in alcohol free, recreational areas of the University of Leeds, during the daytime. They were asked for ten minutes of their time and the study was explained to them. The researcher then gave the consenting students access to the online ARQ questionnaire to complete then and there.

The treatment group was recruited through drug and alcohol treatment services, led by a research nurse and two medical students. Service users were approached by their care team when attending a clinic appointment and asked if they would be willing to participate in the study. They were told this involved completing two brief questionnaires anonymously and given an information sheet. If willing, they were referred to a researcher, who introduced themselves and sought permission to discuss the study. Potential participants were informed that the purpose of the study was to test the usability and usefulness of a questionnaire about recovery and that the study should take no more than 10 minutes and would not influence their treatment in any way. They were also given an opportunity to ask the researcher any questions about the study.

The recovery group was recruited from Learning to Live Again which was a recovery group set up by Leeds Addiction Unit, and also from the Leeds Recovery Hub which included people attending AA, NA and Self-Management and Recovery Training (SMART) groups as well as volunteer workers with lived experience.

2.1.2 Ethical Approval

All participants who took part in the study were asked to complete written informed consent forms. The original research team secured the necessary ethical approvals prior to the commencement of the study, from Bradford Leeds Research Ethics Committee (See appendix 5.3)

2.1.3 Sample Size

The intended sample size for the study was 300, with 100 participants from each of the three groups. This was not based on any formal sample size calculation just what was deemed feasible to recruit.

2.1.4 Data collection

Each participant was asked to complete a data collection sheet, which consisted of short questions to ascertain their current situation in relation to using substances, what (if any) substances or alcohol are used, their age, their gender and the 12 ARQ questions. The data collection sheet was available in paper format (see appendix 5.4) and converted to an online web form for electronic capture.

Participants were asked to self-select one of four groups that reflected their current situation:

i) I have always been a social drinker or drug taker

ii) I have never taken alcohol or drugs

iii) I currently have an alcohol or drug problem

iv) I used to have an alcohol or drug problem but have got over it – if so, how long since you got over it? …… years ……months

2.2 Statistical Analysis

Statistical analysis was undertaken in SPSS version 26 and Stata version 16.

Before any analysis could be undertaken the data were cleaned and standardised. This included grouping some variables together to make categories that were of sufficient size to

enable analysis to be undertaken. The 12 drug or alcohol categories were reduced to 5, as shown in Table 2 below.

Table 2: Original and grouped drug and alcohol categories

Original Category	Grouped Category
Alcohol	Alcohol
Heroin	Opiates
Methadone	
Pain killers	
Ecstasy (MDMA)	Stimulants
Cocaine	
Amphetamine	
Mephedrone	
Cannabis	Depressants
Tranquillisers	
Hallucinogens (mushrooms, LCD)	Perception Altering
Ketamine	

Simple descriptive statistics were then undertaken on the data set. The variables are detailed below (Table 3.) For the continuous variables, the range, means and standard deviations are reported. For the categorical variables counts and percentages are reported.

Table 3: Variables

Continuous Variables	Categorical Variables
Age	Sex
ARQ Score	Self-declared category
ARQ Sub-score	Time in recovery (if applicable)
Time to complete survey	Current substance use
	Drug Type

The self-declared substance user category is required to allow the analysis and validation of the questionnaire to be undertaken. As such it was important that participants were in the correct category. A check was undertaken to compare self-declared status with other variables such as current use or drug type.

The next stage of the analysis was to report the ARQ total score and sub-scores for each of the self-declared categories. Regression analysis models were developed to compare the means between the groups. Assumptions and outliers were checked prior to analysis.

The assumptions checked prior to analysis were additivity and linearity, normality, homogeneity of variance and independence. The first of these, additivity and linearity, means that the outcome of interest is linked to predictors in a linear way. The second, normality, is concerned with the shape of the distribution of the variables. This assumption can be checked graphically (using histograms, box plots and Q-Q plots) or statistically looking at skewness and kurtosis values. There are further tests that can ascertain normality such as the Kolmogorov-Smirnov and Shapiro-Wilk tests, which compare the sample data to that of a normally distributed set of scores with the same mean and standard deviation. These tests can be useful, but caution needs to be used when sample size is very large or very small. The third assumption is homogeneity of variance, which relates to the spread of variance around the mean. When comparing groups, the spread of values about the mean needs to be broadly similar. This assumption can again be tested graphically (residuals against predicated value scatterplot) and interpreting the shape of plot. Or it can be calculated using Levene's test, where an ANOVA is used to determine if the variances between groups are equal. The final assumption is of independence, that is that each of the samples is independent from one and another. Within this dissertation normality assumptions were checked graphically using Q-Q plots and homogeneity of variance was checked using Levene's test.

The final stage of the analysis was to undertake a Latent Class Analysis [LCA]. This was performed to validate the different participant groupings, so as to determine if the ARQ is able to distinguish different groups (classes) based upon their ARQ total and sub-scores. LCA uses the data provided to work backwards to see if there are natural groupings for the data. This is then compared with the self-declared category to ascertain if the ARQ is accurate at distinguishing between the categories. Goodness of fit statistics were calculated for each model and compared. Lower Akaike's information criterion [AIC] and Bayesian information criterion [BIC] statistics indicate the model with the best fit.

3. Results

3.1 Demographics

In total there were 305 participants in this study: 129 in the well-functioning group (42.3% of the total), 91 in the recovery group (29.8%) and 85 in the treatment group (27.8%). Across all participants there were 174 males (57.0% of total), 119 females (39.0%) and 12 (3.9%) where sex was not recorded. The mean age of participants was 41.5 (±12.2) with a range of 18 – 71 years old.

Table 4: Participant demographics by self-identified group

	Treatment (n=85)	**Recovery (n=91)**	**Well-functioning (n=129)**
Gender			
Males (n, %)	57 (69.5%)	57 (64.8%)	60 (48.8%)
Females (n, %)	25 (30.5%)	31 (35.2%)	63 (51.2%)
Missing (n)	3	3	6
Age			
Mean (SD)	41.3 (9.7)	46.2 (9.9)	38.4 (14.1)
Range	20 – 65	24 – 70	18 – 71
Current substance use (n, %)	77 (90.6%)	36 (39.6%)	113 (87.6%)

From Table 4 above, it can be seen that there are more males than females in both the treatment and recovery groups, with broadly similar numbers of males and females in the well-functioning group. The recovery group had the oldest average age at 46.2 and the general population group had the youngest average age at 38.4. There was a larger standard deviation in the general population group (14.1), meaning a greater spread of ages about the mean. The age range was broadly similar in each group. As to be expected, the group with the greatest number of people currently using substances was the treatment group (90.6%) and the lowest was the recovery group (39.6%).

Within the well-functioning group, 13 participants self-identified as “lifetime abstainers”. The demographic breakdown can be seen below in Table 5, alongside the demographics of the remainder of the well-functioning group with these participants removed. It is of note, that 4 participants within this group indicated current substance use (which was further validated by indicating alcohol or substance type to later responses in the data collection). It

is unknown if the participants did not understand the term lifetime abstainer, if they incorrectly selected that response, if their future intention was abstinence or if they did use a substance (such as alcohol or pain killers) but did not consider this to be substance use as they are not licit substances. As such, the lifetime abstainers' group will be reported as part of the well-functioning group, unless it is deemed appropriate to separate the two groups for specific analyses.

Table 5: Lifetime abstainers demographics

	Lifetime abstainers (n=13)	**Remainder of well-functioning group (n=116)**
Gender		
Males (n, %)	3 (23.1%)	57 (49.1%)
Females (n, %)	9 (69.2%)	54 (46.6%)
Age		
Mean (SD)	35.0 (12.7)	38.8 (14.3)
Range	18-50	19-71
Current substance use (n, %)	4 (30.1%)	109 (94.0%)

3.2 Substance Use

As previously discussed, data were collected for each participant on their current substance use by asking them to place a tick against any of 12 substances listed on the data collection

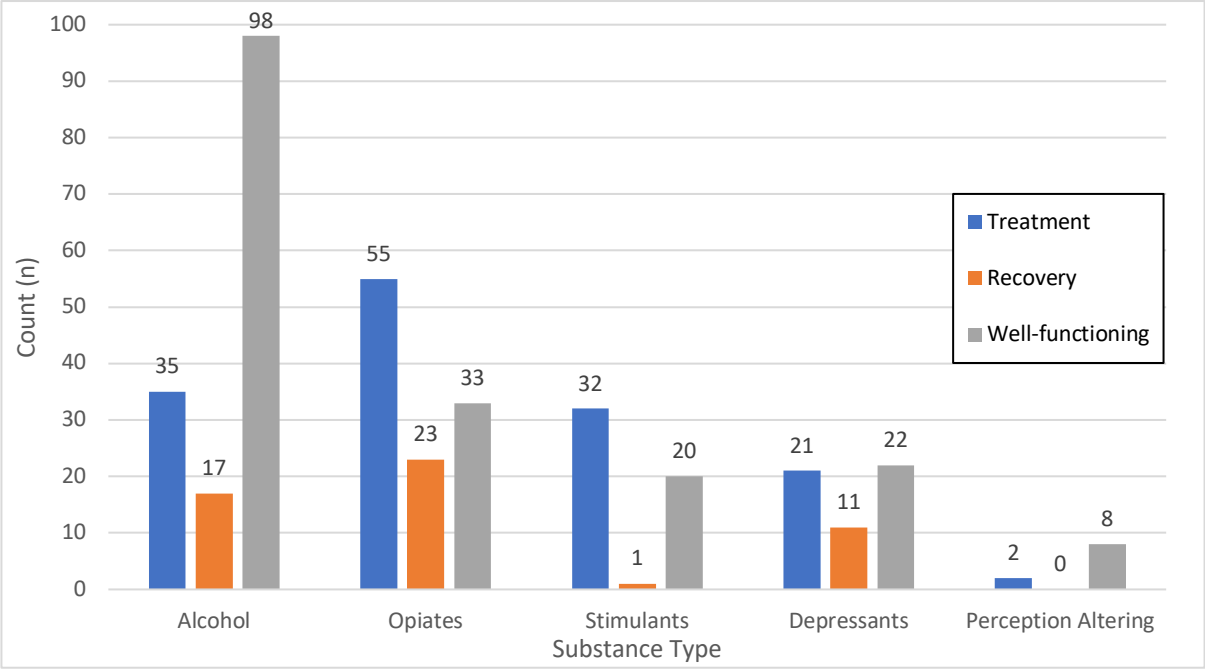

Figure 1: Substance use by category for each population group

sheet, that were then grouped into 5 categories. The breakdown of substance type used by each group can be seen in Figure 1 above.

Group totals are greater than the number of participants in each group, as some participants use more than one substance type. For those that used more than one individual type of substance within a category (e.g. heroin and pain killers, both within the opiate category) this has only been counted as one within the category. The most widely used substance was alcohol, used in total by 150 participants and by 98 of the well-functioning group (76% of the group). The next most used substance was opiates, this combined heroin, painkillers and methadone and was used in total by 111 participants. 55 of the treatment group were using opiates, 64.7% of the group. Stimulants (ecstasy (MDMA), cocaine, amphetamine and mephedrone) and depressants (cannabis and tranquillisers) were the next most used substance type with total participant use of 54 and 53 respectively. The least used substance type was perception altering (hallucinogens (mushrooms, LCD) and ketamine) with a total use of 10 participants, the majority (80%) by the well-functioning group.

Across all five of the substance type categories, the recovery group had the lowest usage when compared to the treatment and well-functioning groups. The well-functioning group had the greatest usage in the alcohol, depressant and perception altering substance types, while the treatment group had the greatest use of opiate and stimulant substance type.

3.3 ARQ Scores

The ARQ has an overall score, out of a theoretical maximum of 36, and three sub-scales "everyday" scored out of 15, "involvement" scored out of 12 and "future" score out of 9.

The tables below show the overall ARQ and sub scores. Table 6 shows the breakdown by three groups. It can be seen that the treatment group scores lower across all four ARQ scores compared to the recovery and well-functioning groups.

Table 6: Summary statistics for the ARQ total score and subscales for each of the three groups

Outcome	Treatment (n=85)	Recovery (n=91)	Well-functioning (n=129)
Total score	17.2 (6.2, 4 – 29)	26.9 (4.5, 16 – 36)	26.4 (6.1, 7 – 36)
Subscales			
Everyday	8.5 (3.3, 2 – 15)	12.0 (2.2, 6 – 15)	12.4 (3.0, 4 – 15)
Involvement	5.5 (2.6, 0 – 12)	8.9 (2.0, 3 – 12)	8.0 (2.2, 1 – 12)
Future	3.2 (2.2, 0 – 9)	6.0 (1.9, 2 – 9)	6.0 (2.2, 1 – 9)

Values are mean (SD, range)

Table 7 shows the breakdown by four groups (including the lifetime abstainers). Again, the treatment group score lower across all four ARQ scores compared to the other groups. The lifetime abstainers group score most highly across all of the ARQ elements.

Table 7: Summary statistics for the ARQ total score and subscales for each of the four groups

Outcome	Treatment (n=85)	Recovery (n=91)	Lifetime abstainers (n=13)	Well-functioning (n=116)
Total score	17.2 (6.2, 4 – 29)	26.9 (4.5, 16 – 36)	29.9 (4.5, 23 – 36)	26.0 (6.1, 7 – 35)
Subscales				
Everyday	8.5 (3.3, 2 – 15)	12.0 (2.2, 6 – 15)	12.5 (2.6, 7 – 15)	12.4 (3.0, 4 – 15)
Involvement	5.5 (2.6, 0 – 12)	8.9 (2.0, 3 – 12)	10.4 (1.1, 8 – 12)	7.7 (2.2, 1 – 12)
Future	3.2 (2.2, 0 – 9)	6.0 (1.9, 2 – 9)	7.1 (1.7, 5 – 9)	5.9 (2.1, 1 – 9)

Values are mean (SD, range)

Time in recovery was also considered for the recovery group to see if that had an effect on the ARQ scores. As part of the data collection, those who self-identified as being in recovery were asked to state how long this has been for, in years and months. The responses were allocated to one of four groups, as follows: <1 month, 1-11 months, 12-59 months, >60 months. Figure 2 below shows the difference in ARQ means across the different recovery duration groups. Across the ARQ total and 3 sub scores, longer time in recovery equated to a higher score.

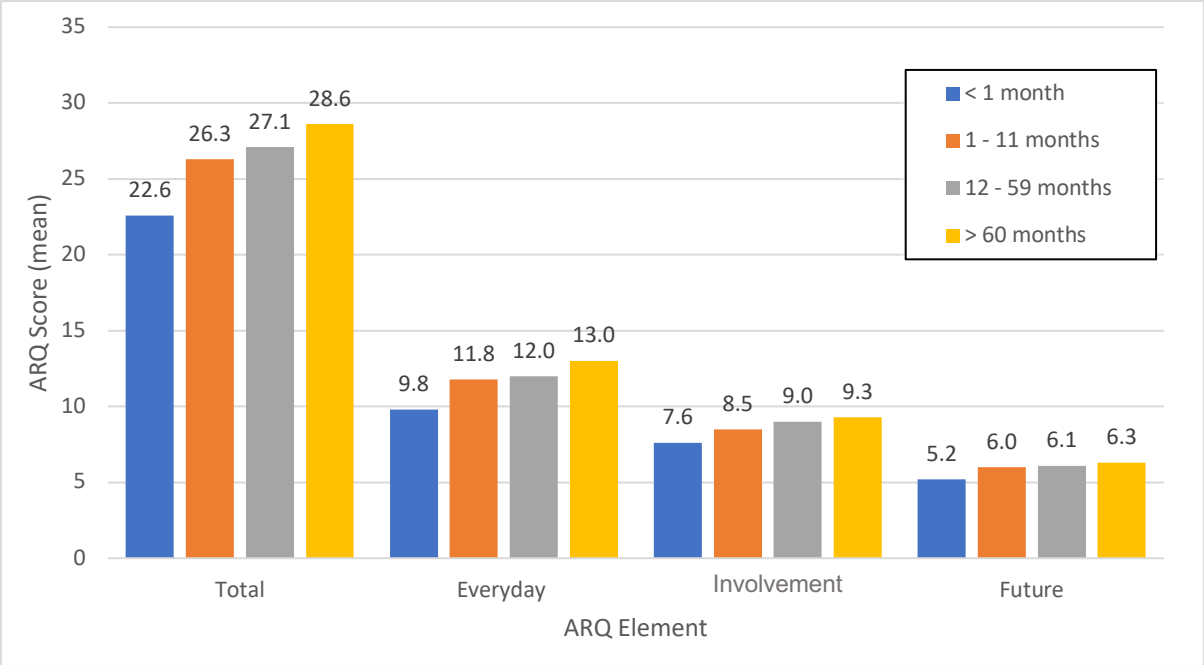

Figure 2: Graph of mean ARQ score for each ARQ element, by time in recovery groupings.

3.4 Regression

Regression analysis has been undertaken on the ARQ totals and sub scores, using both the three-population group and four-population group models. The tables on the following pages detail each of the regression models. Within the three-population model (Table 8) the well-functioning group are used as the constant and within the four-population model (Table 9) the remainder of well-functioning are used as the constant. In the four-population model standard error and p values are based on 1000 bootstrap samples.

Table 8: Results for ARQ scores across three population groups

Comparison	**Coefficient (95% CI)**	**p-value**
ARQ Total Score		
Well-functioning vs. treatment	-9.2 (-10.7, -7.6)	<0.01
Well-functioning vs. recovery	0.5 (-1.0, 2.0)	0.53
ARQ subscale everyday		
Well-functioning vs. treatment	-3.9 (-4.7, -3.1)	<0.01
Well-functioning vs. recovery	-0.3 (-1.1, 0.4)	0.39
ARQ subscale involvement		
Well-functioning vs. treatment	-2.5 (-3.1, -1.9)	<0.01
Well-functioning vs. recovery	0.9 (0.3, 1.5)	<0.01
ARQ subscale future		
Well-functioning vs. treatment	-2.8 (-3.4, -2.2)	<0.01
Well-functioning vs. recovery	-0.4 (-0.6, 0.5)	0.89

Across all the three group models, there is a significant difference between the well-functioning and treatment group, with the treatment group having a lower mean score on each of the ARQ elements. This indicates that individuals who are in treatment group have further to go on their journey towards recovery, than those in the well-functioning group. Between the well-functioning and recovery group there was little or no evidence of a difference in mean ARQ scores across the total, everyday and future elements subscales. There is a significant difference in the involvement subscale, with the recovery group having a higher average score. As this subscale looks to measure an individual's move away from drinking and drug taking cultures, by asking about abstinence, socialising with people who misuse substances and making new friends who do not misuse substances, it would follow that someone who is in recovery would score highly on this subscale.

Table 9: Results for ARQ scores across three population groups

Comparison	**Coefficient (95% CI)**	**p-value**
ARQ Total Score		
Well-functioning vs. treatment	-8.8 (-10.4, -6.9)	<0.01
Well-functioning vs. recovery	0.9 (-0.5, 2.5)	0.23
Well-functioning vs. lifetime abstainer	3.9 (1.2, 6.5)	<0.01
ARQ subscale everyday		
Well-functioning vs. treatment	-3.9 (-4.8, -3.0)	<0.01
Well-functioning vs. recovery	-0.3 (-1.0, 0.4)	0.38
Well-functioning vs. lifetime abstainer	0.1 (-1.5, 1.5)	0.91
ARQ subscale involvement		
Well-functioning vs. treatment	-2.2 (-2.9, -1.5)	<0.01
Well-functioning vs. recovery	1.1 (0.6, 1.7)	<0.01
Well-functioning vs. lifetime abstainer	2.7 (1.9, 3.4)	<0.01
ARQ subscale future		
Well-functioning vs. treatment	-2.7 (-3.3, -2.1)	<0.01
Well-functioning vs. recovery	0.1 (-0.5, 0.6)	0.79
Well-functioning vs. lifetime abstainer	1.2 (0.2, 2.2)	0.02

Across the all the four group models, there is a significant difference between the well-functioning and treatment group, with the treatment group having a lower mean score on each of the ARQ elements. As with the three-group model, this indicates a lower recovery score and further for individuals to go on their journey to recovery. Between the well-functioning and the recovery group there was little or no evidence of a difference, except for the involvement sub-scale, again for the same reason as within the three-group model.

There were significantly higher scores across the ARQ total, and two of three sub scores (involvement and future) in the abstainer compared to the well-functioning group. It is to be expected that they will score 3/3 on some of the questions (as they are about abstinence and situations where they would usually use substances).

3.5 Latent Class Analysis (LCA)

There were limited predictors that could be utilised to model the classes, so the ARQ total score was used to ascertain if the participant self-defined groups were broadly in alignment with those identified by the LCA.

Table 10: LCA output, showing the 2, 3 and 4 class models.

LCA model	Class 1	Class 2	Class 3	Class 4
Two class	*0.26 (14.1)*	*0.74 (27.4)*		
Three class	*0.26 (14.1)*	*0.32 (27.4)*	*0.42 (27.4)*	
Four class	*0.11 (10.4)*	*0.18 (17.1)*	*0.33 (30.4)*	*0.38 (25.5)*

Values are probability (mean total ARQ)

Table 10 above shows 2, 3 and 4 class models with the probability of the total sample size falling into each of the classes and the predicted mean total ARQ score. Each model is separate to each other, so the data in each column does not follow from one model to the next.

The two-class model shows that 26% of the total sample is likely to fall in a class with a mean ARQ total of 14.1 and the remaining 74% into a class with a mean ARQ of 27.4. The three-class model displays a similar model, with the latter class split into two smaller classes, however the mean ARQ remains at 27.4. The final four-class model has small class (11%) with a mean ARQ of 10.4, and then other classes of 18% with a mean ARQ of 17.1, 33% with 30.4 and 38% with 25.5 respectively.

3.6 Goodness of fit

The following tables asses how well each of the models fit the data and then try to attribute the self-identified groups that most closely match each of the different classes.

Table 11: Goodness of fit statistics

Model	**Df**	**AIC**	**BIC**
Two class	*4*	*1997.99*	*2012.88*
Three class	*6*	*2001.99*	*2024.32*
Four class	*8*	*1999.96*	*2029.73*

Table 12: Comparison of LCA models with self-identified groups

LCA model	**Class 1**	**Class 2**	**Class 3**	**Class 4**
Two class	*0.26 (14.1)*	*0.74 (27.4)*		
Three class	*0.26 (14.1)*	*0.32 (27.4)*	*0.42 (27.4)*	
Four class	*0.11 (10.4)*	*0.18 (17.1)*	*0.33 (30.4)*	*0.38 (25.5)*
Based on probabilities	**Treatment**	**Other**		
Two class groupings	0.28 (17.2)	0.72 (26.6)		
	Treatment	**Recovery**	**Well-functioning**	
Three class groupings	0.28 (17.2)	0.30 (26.9)	0.42 (26.4)	
	Life-time abstainers	**Treatment**	**Recovery**	**Well-functioning**
Four class groupings	0.04 (29.9)	0.28 (17.2)	0.30 (26.9)	0.38 (26.0)
Based on ARQ means	**Treatment**	**Other**		
Two class groupings	0.28 (17.2)	0.72 (26.6)		
	Treatment	**Recovery**	**Well-functioning**	
Three class groupings	0.28 (17.2)	0.30 (26.9)	0.42 (26.4)	
	Treatment	**Well-functioning**	**Life-time abstainers**	**Recovery**
Four class groupings	0.28 (17.2)	0.38 (26.0)	0.04 (29.9)	0.30 (26.9)

The two-class model has the lowest AIC and BIC, so therefore would appear to be have the best fit (Table 11). Table 12 attributes the self-identified groupings to each of the classes, based upon the most similar probabilities (middle section of table) and the most similar means (lower section of table). Based upon the probabilities and the means, it would seem that the model distinguishes those in treatment from the other groups (those in recovery, lifetime abstainers and well-functioning). When looking at the four-class model, the self-identified group that is attributed to different classes varies dependent on if probabilities or

ARQ means are used. For the two- and three- class models, the self-identified groups remain the same regardless of which method is used.

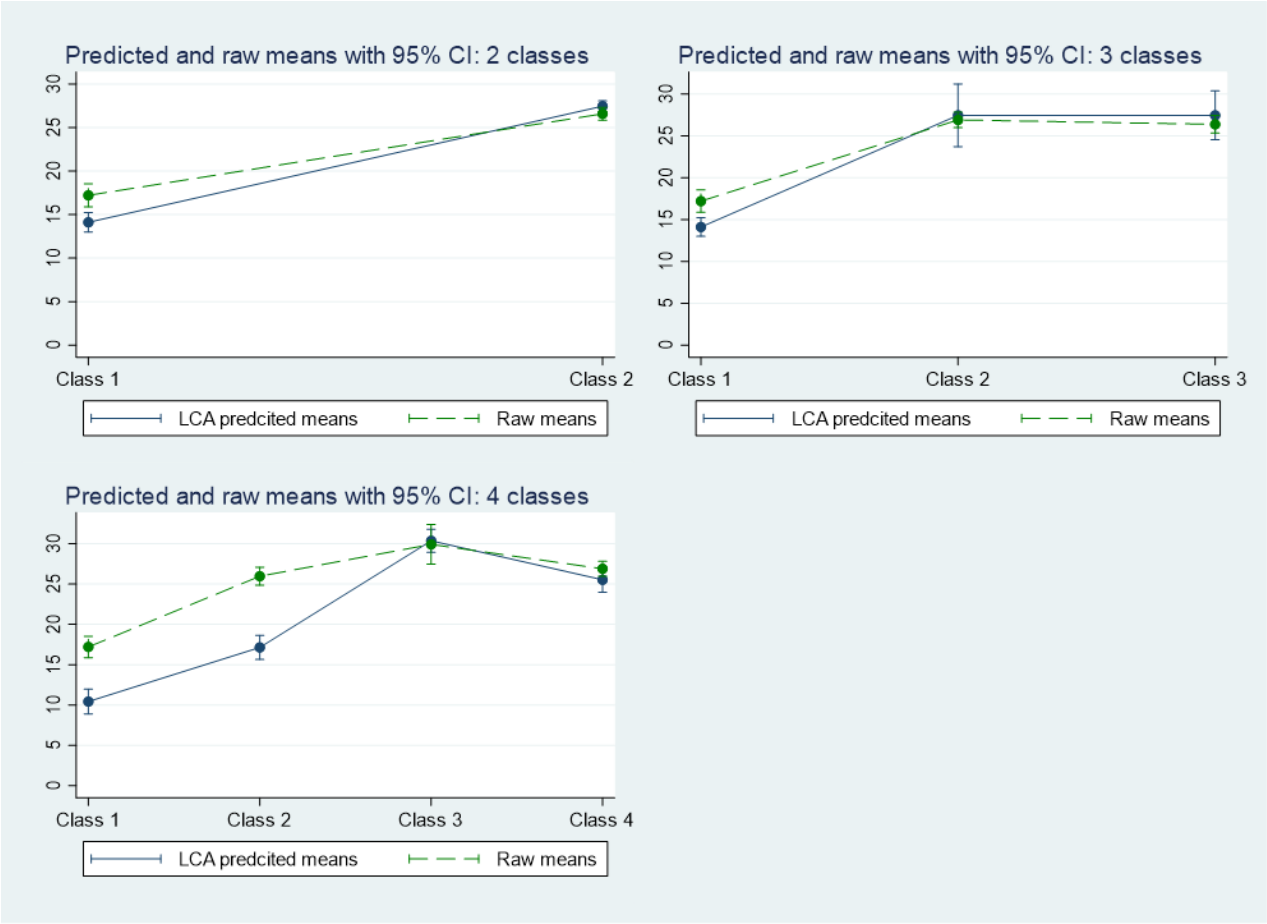

Figure 3: Predicted and raw mean comparison for two, three and four-class models.

Figure 3, above, graphically represents the data from Table 12: Comparison of LCA models with self-identified groupsTable 12. It shows the LCA predicted means against the raw means, using mean ARQ score to match the classes to the self-identified groups. It shows that the two-class model most closely fits the data (upper left). While the three-class model also fits closely to the data (upper right), the neither the ARQ nor the model cannot differentiate between class 2 and class 3, which are assumed to be the well-functioning and recovery groups.

4. Discussion

4.1 Interpretation of results

The demographic make-up of the participants is similar to that reported in treatment services and the general population. The 69.5% male proportion in the treatment group is the same as 69% male proportion reported as accessing treatment in England (Public Health England, 2019a). The male to female ratio in the well-functioning group (49% and 51%) is also the same as the wider population (Office for National Statistics, 2020). The average age of those in treatment of 41.3 is similar to the median age of 39 for those accessing treatment services in England and of those in recovery 46.2 is similar to the median age of 50 of those accessing AA (the largest of mutual aid recovery groups worldwide) (A.A. World Services, 2014).

The well-functioning group indicated that 98 out of 129 participants (76%) used alcohol. This is in line with consumption across England, where 82% of adults drunk alcohol at some point in the last 12 months and 49% drank at least once in the last week (NHS Digital, 2019a). Depressant (cannabis and tranquilisers) use was highest in the well-functioning group, with 17% stating they used them. This is possibly because the cohort using these drugs are usually younger, 16.4% 16-24 year olds have used cannabis in the last year, compared to 6.6% of 16-59 year olds (Home Office, 2019) and so are less likely to be accessing treatment services or do not see their use of these substances as problematic. This is to be expected, as only a small proportion (9%) of people accessing treatment services in England are doing so for non-opiate or alcohol support.

Time in recovery had an impact on the ARQ total and sub-scales, with a longer time in recovery equating to a higher score across all sub-scales. This is a good indication that the ARQ is good at quantifying recovery, as it would be expected that a longer duration in recovery would result in a higher score. The ARQ sub-scale with the greatest difference in score was everyday, with average score going up from 9.8 for those with < 1 month's recovery to 13 for those with >60 month's recovery. The everyday subscale is concerned with normality in one's life, and so people scoring highly on that sub-scale are likely to be

living a satisfying life and that is unlikely to be attainable with substance misuse (Thurgood et al., 2014).

Results from the regression analysis show that across both the three- and four-population groups, the ARQ can effectively distinguish between well-functioning and treatment populations across the total and sub-scales. It doesn't determine a difference between the well-functioning and recovery groups, apart from on the involvement sub-scale. Finally, the ARQ can determine a difference between the well-functioning and lifetime abstainer groups on the total and, involvement and future sub-scales. However, as the abstainer group is so small and with doubts about the correctness of all participants within this group, it is deemed that further research is needed into this conclusion.

The LCA was run with various different models of 2, 3 and 4 classes. While it was expected that the four-class model may be able to differentiate between treatment, recovery, well-functioning and lifetime abstainer, it was unable to do this. The first two classes that were identified were likely to be parts of the treatment group, the first class with the lowest ARQ scores and the second with the higher ARQ scores. The other two classes identified were likely to be split into a mixture of the highest scores from the well-functioning, abstaining and recovery groups making class three and then the remainder of each of these groups making up class four. Using the goodness to fit statistics, AIC and BIC were lowest for the two-class model, representing that this model fit most closely with the self-identified groups. Within this model, class one, there was a probability of 26% having a mean ARQ total of 14.1 and class two, there was a probability of 74% having a mean ARQ total of 27.4. For the self-identified groups, the treatment group (n=85) make up 27.8% of the total sample with a mean ARQ total of 17.2. The remaining participants (n=220) of well-functioning, lifetime abstainers and recovery groups make up 72.2% of the total sample and have a mean ARQ total of 26.6

When considering the regression results and the LCA, it can be said that the ARQ can distinguish between those in treatment (and therefore those currently misusing substances) and those who are in the other groups (recovery, well-functioning and lifetime abstainers). It is expected that those who are in recovery are indistinguishable from those who are well-

functioning, as that is the very nature of what being in recovery means. Recovery isn't something that is achieved, it is an ongoing process of bettering one's life and not misusing substances (Laudet, 2007). It is a concept, and sometimes service users feel they are set higher standards than those in general population (Neale et al., 2015). As such the ARQ was developed to have a maximum score (36) that was within the reach of all both those in recovery and those in the general population.

4.2 Methodological limitations

The data was all self-reported by service users, with each individual self-identifying which group they felt they fell in to. This was not validated by any other method, such as practitioner endorsement or biological sample (urine or blood testing). The sampling method, particularly for the well-functioning group may not give a wide enough cross-section of society, as it was focussed on students on a university campus and professionals through the researcher's personal contacts. It may be that all of this group were from a similar socio-economic background, with similar views to alcohol and substance consumption.

Type of substance used was measured on a categorical (yes/no) rather than continuous (quantity of substance) basis, making it difficult to draw comparisons between the different groups. For example, someone who was in the treatment group for an alcohol misuse problem and someone in the well-functioning group who only had one alcohol drink per week could not be differentiated against on their response to this question alone. For this reason, the type of substance used data was not used to help determine the class formation within the latent class analysis.

While the total number of participants was a modest size at 305, the sizes of each group varied. It would have been beneficial to have a larger sample of lifetime abstainers, more in line with the other group sizes. Future studies should actively seek to recruit lifetime abstainers alongside the other groups in order to attain equal group sizes. An overall larger sample size would also be beneficial, where possible, to increase the confidence in the mean scores.

4.3 Future research

Further studies are required where the ARQ is used as an integral part of substance misuse treatment process. Qualitative methods, such as structured interviews and focus groups, could be used to understand service user and practitioner views of the ARQ as a recovery planning tool. A randomised controlled trial could allocate service users to receive treatment either with or without the ARQ as a planning tool, with recovery, adherence to treatment and drop-out rates compared between groups. A longitudinal study could also be undertaken, to chart service user progress through substance misuse treatment services and compared against other routinely collected data such as TOPs. This would allow for the ARQ's role in measuring outcomes to be compared against the current national outcome measuring system.

Further studies are also required to assess if there are differences in ARQ scores based upon other demographic characteristics such as ethnicity and depravation either within a locality or across several different geographical areas. Consideration should also be given to the application of ARQ within criminal justice settings and younger peoples services. This would allow for the ARQ to be deployed across various settings and services, providing a standardised measure for recovery. This would be beneficial for commissioners, service providers and practitioners as it would allow comparisons to be made across the different types of services.

A larger sample within the lifetime abstainers group would allow for a repeated LCA and goodness of fit statistics to be undertaken, to determine if the ARQ can differentiate between three groups (in treatment, lifetime abstainers and others). However, the value of this for ARQ's intended application is limited. It would however be advisable to run the same analysis again on another sample, to determine if the model and outcomes discussed in this dissertation are consistent with future findings.

4.4 Recommendations for practice and policy

As discussed previously, the outcome measures used in many substance misuse treatment services focus on abstinence and not re-presenting for treatment within a specified timeframe, and are considered proxy measures for recovery (Best et al., 2017). The ARQ should be deployed as a complementary way to measure outcomes within treatment services by lobbying the Home Office and Public Health England for a more suitable recovery outcome measure. The current drug strategy (Home Office, 2017) is recovery orientated, but has little involvement from service users in defining successful outcomes for services. The next drug strategy will be due in 2022, so now is time to advocate for a review of service outcome and success measures.

Many treatment services are still very medical orientated, where the main focus of treatment is on medical intervention through the use of community detox or long-term medication (National Institute on Drug Abuse, 2020). A shift in attitude from service staff from treatment to recovery is required, particularly for opioid and alcohol misuse. Embedding a tool such as the ARQ into a treatment service will help with this shift in thinking and will give practitioners the impetuous to focus on recovery. It will also help to build links with on-going recovery support organisations such as AA/NA and other mutual aid groups.

4.5 Conclusion

The ARQ has been shown to be an effective tool for measuring recovery. It has been formulated on the basis on extensive service user, concerned other and professional involvement, in the form of focus groups to capture what are the most important and suitable themes when measuring recovery. It has been refined from a 20-item questionnaire to a 12-item questionnaire, making it an easy to use tool. This dissertation has found that it can distinguish between those in treatment/misusing substances and others, i.e. those who are at the latter stages of their recovery or those in a well-functioning state.

As such, the ARQ should be deployed into substance misuse treatment services and also by agencies who support individual's post-treatment, such as mutual aid and support groups.

The ARQ could be used in treatment services to help service users chart progress and also to help steer interventions from support workers (such as focussing on housing needs, social interactions, coping mechanisms). It could also be used by post-treatment agencies to continue to chart progress, as traditional treatment services usually only support people for up to 12 months, and this is the point at which recovery may only just be starting to begin. By having a continuous tool that can be used across treatment and post-treatment services, service users will have continuity and a familiar measure. The ARQ could just be used on a local level to support current outcome monitoring arrangements or adopted nationally and embedded into all publicly funded treatment services.

5. Appendices

5.1 Addiction Recovery Questionnaire

Addiction Recovery Questionnaire - ARQ

Here are some things that people have found important in their recovery. Please answer each question below.

Over the last month have you…

	Not at All	Rarely	Often	All the Time
…had enough money to live reasonably well?	☐	☐	☐	☐
…found that you are trusted by important people in your life?	☐	☐	☐	☐
…been living in suitable accommodation?	☐	☐	☐	☐
…been keeping up with everyday chores and activities?	☐	☐	☐	☐
…been involved in criminal activities?	☐	☐	☐	☐
…been mixing with people who are problem drinkers or drug users?	☐	☐	☐	☐
…been friends with people who do not drink or take drugs?	☐	☐	☐	☐
…been drinking or taking drugs?	☐	☐	☐	☐
…taken medications for your addiction or your mental health?	☐	☐	☐	☐
…had a positive feeling about the future?	☐	☐	☐	☐
…felt generally good about yourself?	☐	☐	☐	☐
…had confidence to say no to drink or drugs that you do not want?	☐	☐	☐	☐

RESULT www.result4addiction.net

5.2 Recruitment email

Dear <name>

Can you help up us with our research – it will take 5mins of your time?

We are developing a questionnaire to measure recovery from addiction and substance misuse - we need to get some responses to the questionnaire from the general population.

The attached Information Sheet describes the purpose of the project – you will be asked only about your substance use, your gender, and age and so you are **NOT identifiable**. There are just 12 questions.
If you are happy to help with this project the link to the survey is:

http://www.surveygizmo.eu/s3/90059486/ARQ-Validation-postal
(if this link fails from your email then enter it into your browser)

Please forward this email to a cross section of 5-10 people you know.
We are very grateful for your participation.
Thank you

5.3 Ethical approval

Health Research Authority

Yorkshire & The Humber - Bradford Leeds Research Ethics Committee

Jarrow Business Centre
Rolling Mill Road
Jarrow
NE32 3DT

Telephone: 0207 104 8081

Please note: This is the favourable **opinion of the** REC **only and does not allow** you **to start your study at NHS** sites **in England until you** receive **HRA Approval**

27 July 2017

Dr Duncan Raistrick
Leeds Addiction Unit
[redacted]

Dear Dr Raistrick,

Study title:	**An Investigation of the scale structure and psychometric properties of the Addiction Recovery Questionnaire (ARQ)**
REC reference:	**17/YH/0198**
IRAS project ID:	**228102**

Thank you for your letter of 21st July, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the

first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Covering letter on headed paper [Covering Letter]	v1	11 July 2017
Interview schedules or topic guides for participants [Data Collection]	v2	06 July 2017
IRAS Application Form [IRAS_Form_26052017]		26 May 2017
IRAS Checklist XML [Checklist_20072017]		20 July 2017
Letters of invitation to participant [Email recruitment]	v1	11 July 2017
Participant information sheet (PIS) [Information Sheet]	v2	23 June 2017
Participant information sheet (PIS) [Information Sheet (controls)]	v2	23 June 2017
Research protocol or project proposal [ARQ protocol]	v1	26 May 2017
Summary CV for Chief Investigator (CI) [CV D Raistrick]	v1	18 May 2017
Summary CV for supervisor (student research) [CV Gillian Tober]	v1	18 May 2017
Validated questionnaire [Data collection sheet]	v1	18 May 2017

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/qualityassurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

17/YH/0198	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

pp

Dr Janet Holt Chair

Email:nrescommittee.yorkandhumber-bradfordleeds@nhs.net

Enclosures: "After ethical review – guidance for researchers" *[SL-AR2]*

Copy to: *Ms Sinead Audsley, Research Governance Manager*

Dr Duncan Raistrick, Leeds and York Partnership NHS Foundation Trust

5.4 Data collection sheet

Addiction Recovery Project
(data collection sheet)

Please tick to confirm that you have read the information sheet ☐

Which of these choices best describes your situation now (tick one) ?

- ☐ i) I have always been a social drinker or drug taker
- ☐ ii) I have never taken alcohol or drugs
- ☐ iii) I currently have an alcohol or drug problem
- ☐ iv) I used to have an alcohol or drug problem but have got over it – if so, how long since you got over it? …… years ……months

Do you currently take any of the following? – (tick all that apply) ?

☐ none (abstinent)		
☐ alcohol	☐ pain killers	☐ mephadrone (mcat, meow meow)
☐ ecstasy (MDMA)	☐ cocaine	☐ hallucinogens (LSD, mushrooms)
☐ heroin	☐ cannabis (weed, hash)	☐ ketamine
☐ methadone/buprenorphine	☐ amphetamine (speed)	☐ tranquillisers

Your age? ……years

Your sex? M / F / Prefer Not to Say

In the past 4 weeks have you…				
	Not at All	Sometimes	Often	All the Time
…had enough money to live reasonably well?	☐	☐	☐	☐
…found that you are trusted by important people in your life?	☐	☐	☐	☐
…lived in suitable accommodation?	☐	☐	☐	☐
…kept up with everyday chores and activities?	☐	☐	☐	☐
…been involved in illegal activities?	☐	☐	☐	☐
…been socialising with people who are problem drinkers or drug users?	☐	☐	☐	☐
…spent time with friends who do not drink or take drugs?	☐	☐	☐	☐
…taken alcohol or intoxicating drugs?	☐	☐	☐	☐
…taken medication for your addiction or mental health?	☐	☐	☐	☐
…had a positive feeling about the future?	☐	☐	☐	☐
…felt generally good about yourself?	☐	☐	☐	☐
…had the confidence to resist pressure to take drink or drugs that you do not want?	☐	☐	☐	☐
	RESULT www.result4addiction.net			

Thank you

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