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FACULTY OF SOCIAL AND HUMAN SCIENCES

School of Psychology

Student Mental Health: A Prospective Cohort Study of the Impact of Increased Tuition Fees

by

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Thesis for the degree of Doctor of Clinical Psychology (D.Clin.Psych)

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Word Count: 16,353 overall, 6,404 for Literature Review and 9,949 for Empirical Paper**.**

May 2013

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

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STUDENT MENTAL HEALTH: A PROSPECTIVE COHORT STUDY OF THE IMPACT OF INCREASED TUITION FEES

Thomas Richardson

Research has demonstrated that debt is associated with poor mental health in students. In 2012 annual tuition fees in England and Wales increased from £3.5k a year to up to £9k a year. This thesis aimed to assess the impact of this increase on student mental health. A systematic review of the literature on the relationship between debt and physical and mental health found a total of 65 papers. These included panel surveys, nationally representative epidemiological surveys and psychological autopsy studies as well as research with specific populations such as university students and debt management clients. Most research has examined relationships with mental health in particular depression, with studies of physical health often relying on self-rated health. There are also relationships with suicide completion and drug and alcohol abuse, though cross-sectional designs make causality hard to establish. A meta-analysis of pooled odds ratios showed a significant relationship between debt and mental disorder, depression, suicide completion or attempt, problem drinking, drug dependence, neurotic disorder and psychotic disorders. A prospective cohort design compared the mental health of 681 first year undergraduate students who started university before fees increased to those who started after it. Participants completed measures of global mental health, depression, anxiety, stress, alcohol dependence, eating disorder symptoms and psychotic symptoms. At time 1, those paying £3-5k had higher scores on depression and global mental health than those paying £8-9k. However at time 2, there was a significant time*fees interaction for depression, global mental health, anxiety and stress; specifically, those paying £0-2.9k or £3-5k improved over time, whilst those paying £8-9k stayed the same. Multiple regression analyses demonstrated a number of other financial variables predicted symptoms of poor mental health. This suggests the fees increase may lead to poorer recovery from mental health problems in students.

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Academic Thesis: Declaration Of Authorship

I, Thomas Richardson declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Student Mental Health: A Prospective Cohort Study of the Impact of Increased Tuition Fees

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;

2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;

3. Where I have consulted the published work of others, this is always clearly attributed;

4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;

5. I have acknowledged all main sources of help;

6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;

7. Parts of this dissertation have been submitted for publication, but have not currently been published [see references below]

Signed: …… ……

Date: ……03/05/2013……

Richardson, T., Elliott, P.A. & Roberts, R. The Relationship between Personal Unsecured Debt and Mental and Physical Health: A Systematic Review and Meta-Analysis. (Under review by *Clinical Psychology Review*).

Acknowledgements

Thank you to Peter Elliott and Ronald Roberts for their encouragement, support and advice. Thank you to all those who took part in the research, and to the student unions and university communications teams who helped advertise the survey. Thank you also to all the authors who provided me with additional data to assist with my meta-analysis. Thank you to Ciar for her encouragement and support throughout.

Thank you to those who gave permission for the measures to be used in this dissertation:

- Teresita Narciso, Management of Substance Abuse Team, World Health Organisation, Geneva, Switzerland.
- Richards Evans, CORE System Trust, UK.
- Dr Kroenke, Regenstrief Institute, Indianapolis, USA.
- National Institute of Mental Health, USA.
- Dr. David Garner, River Street Clinic, Sylvania, Ohio, USA.
- Dr. Sheldon Cohen, Department of Psychology, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA.
- Dr. Candace Currie, Child and Adolescent Health Research Unit, Medical School, University of St Andrews, UK.
- Dr. Mohammad Siahbush, Department of Health Promotion, University of Nebraska Medical Centre, Omaha, USA.
- Dr. Rachel Loewy, Department of Psychiatry, University of California and San Francisco, USA.

Definitions and Abbreviations Used

Abbreviations

- GAD-7: 7 Item Generalized Anxiety Disorder Questionnaire
- CES-D: Centre for Epidemiological Studies Depression Scale
- EAT: Eating Attitudes Test- 26 Item Version
- PSS: Perceived Stress Scale
- FAS: Family Affluence Scale
- IFS: Index of Financial Stress
- PQB : Prodromal Questionnaire- Brief Version
- AUDIT: Alcohol Use Disorder Identification Test
- CORE-GP: Clinical Outcomes Routine Evaluation- General Population Version

- Sig.: Statistical Significance

Definitions

In the context of this dissertation the term 'Mental Health Problems' is used to refer to what may otherwise be known as psychiatric disorders or mental illnesses such as depression and eating disorders.

'Financial Stress' here refers to what might also be called financial strain or poverty. Financial stress in this dissertation refers to problems with finances such as not being able to pay bills or afford to eat properly, essentially 'not being able to make ends meet'. This is different from what is referred to here as 'Stress about debt', which indicates subjective stress or worry about an individual's financial situation.

Literature Review

The Relationship between Debt and Mental and Physical Health: A Systematic Review and Meta-Analysis

Introduction

A large body of literature has established that health problems, in particular mental health problems, are more prevalent in certain parts of society. Specifically, those of low socio-economic status (SES) appear to have an increased risk of poor mental health (Amone-P'Olak et al., 2009), depression (Lorant et al., 2003), poor physical health and even death (Bosma, Schrijvers, & Mackenbach, 1999; Mackenbach et al., 2008). In the United Kingdom (UK), areas of higher socio-economic deprivation have higher levels of deliberate self-harm (Hawton, Harriss, Hodder, Simkin, & Gunnell, 2001) and psychiatric hospital admissions (Koppel & McGuffin, 1999). A study of ten European countries demonstrated that socio-economic deprivation increases the risk of suicide (Lorant, Kunst, Huisman, Costa, & Mackenbach, 2005). A study of 65 countries by the World Health Organisation found that rates of depression varied by levels of income equality (Cifuentes et al., 2008), though a more recent analysis suggests that individual level economic variables such as material assets are more important than nation-level variables (Rai, Zitko, Jones, Lynch, & Araya, 2013). As a result there is "widespread albeit often implicit recognition of the importance of socio-economic factors for diverse health outcomes" (Braveman et al., 2005, p.2879), with many studies either looking at the effects of SES on health directly, or controlling for it as a potential confounding variable (Braveman et al., 2005).

However in recent years a number of studies have examined what specific aspects of low socio-economic status are related to adverse health outcomes. Unemployment specifically has been found to be related to mental illness and suicide (Almasi et al., 2009; Amoran, Lawoyin, & Oni, 2005; Andersen, Thielen, Nygaard, & Diderichsen, 2009; Corcoran & Arensman, 2011; Heimo Viinamäki, 2000; Qin, Agerbo, & Mortensen, 2003). Income levels are also related to psychological distress (Dzator, 2013), depression (Andersen et al., 2009; Wang, Schmitz, & Dewa, 2010) and suicide (Qin et al., 2003). A systematic review suggested that wealth is related to quality of health, and the authors suggest this

should be used as an indicator of SES (Pollack et al., 2007). Financial difficulties such as being unable to pay the bills also appear to be related to mental health (Butterworth, Rodgers, & Windsor, 2009; Husain, Creed, & Tomenson, 2000; Elina Laaksonen et al., 2007; Laaksonen et al., 2009; Lallukka et al., 2013; Starkey, Keane, Terry, Marx, & Ricci, 2013), physical health (Lallukka et al., 2013) and health behaviours such as smoking (Kendzor et al., 2010). Butterworth, Olesen, and Leach (2012) conclude that financial hardship might explain the relationship between SES and depression. Studies have also shown that traditional indicators of SES such as parental occupation, education and occupation class are often weakly related to mental health (Andersen et al., 2009; Laaksonen, Rahkonen, Martikainen, & Lahelma, 2005; Lahelma, Laaksonen, Martikainen, Rahkonen, & Sarlio-Lähteenkorva, 2006). It has also been suggested that measures of SES are often not related to each other, for example correlations between education and income are moderate and differ by ethnicity (Braveman et al., 2005). These variables may also change over time and be different in different populations (Shavers, 2007). For example, income may be an inaccurate indicator of SES in students or those who are retired.

One potentially important socio-economic variable which is often overlooked in the literature is that of debt. Debt levels are greater in poorer families (Wagmiller, 2003), and traditional measures of SES such as income and education levels are related to level of debt (Bridges & Disney, 2010), suggesting that debt may explain some of the relationships between SES and health. In addition, levels of debt have increased dramatically in recent years. There is currently around £156 billion in unsecured debt in the UK, and this is predicted to increase (Credit Action, 2013). Currently the average UK family owes more than £11k in unsecured debt (AVIVA, 2013). There has been a previous review into personal debt and mental health (Fitch, Hamilton, Bassett, & Davey, 2011), however this did not examine relationships with physical health, despite the literature showing a strong relationship between physical and mental health (Scott et al., 2009), and did not examine relationships with substance use. This systematic review therefore aims to review all studies which examine the relationship between debt and physical and mental health, suicide and substance use.

Method

Databases and Search Terms

Three databases were searched: Psychinfo, Medline and Embase. The following search terms were used to search all fields: 'Indebtedness' or 'Debt' and 'Health' or 'Mental Disorder' or 'Mental Illness' or 'Depression' or 'Anxiety' or 'Stress' or 'Distress' or 'Alcohol' or 'Drug' or 'Suicide' or 'Eating Disorder' or 'Psychosis' or 'Schizophrenia'.

Inclusion and Exclusion Criteria

The following inclusion criteria were used. Papers had to examine the relationship between personal debt and physical health, mental health, drug or alcohol problems or suicide. References had to be full papers written in English in a peer reviewed journal. Only research studies were included: reviews, meta-analyses or letters/commentaries on the area were excluded. Papers were not excluded on the basis of year of publication, study design, measures used, participant characteristics or sample size.

Papers had to look specifically at the impact of personal unsecured debt for example credit card debt, student loans, and being behind in payments to utility companies. Studies which looked only at the impact of wider economic variables such as financial stress, income, secured loans or mortgages were excluded. Papers also needed to have a comparison in the analysis for example comparing the prevalence of a health problem in those with debt compared to those without debt. Studies which for example simply reported the percentage of those with debt who had a health problem were excluded. Alternatively if there was no comparison, papers could be included if there was a correlation analysed, for example showing a relationship between level of debt and severity of a health problem.

Studies on suicide and debt were only included if they showed a relationship between debt and suicidal completion or suicidal ideation. Studies which, for example conducted cluster analyses to demonstrate that debt related suicides were related to a specific method of suicide were excluded. For papers which examined the relationship between debt and stress, studies which used measures of financial stress only were excluded: measures had to be of more global stress. Studies on health behaviours, for example relationships with unprotected sex or lack of exercise were only included if they related these specifically to health outcomes.

Search procedure

References were initially screened at title to see whether they met the inclusion criteria. If accepted at title the abstract was screened, and if this was accepted the full paper was screened. Reasons for rejection were noted during the search. Main reasons for rejection noted were: not relevant/multiple reasons, not debt specific, Review/Meta-analysis/Letter, not in English, not full paper/not peer reviewed, duplicate (found in previous search), or other. Only one main reason for rejection was noted, if there were multiple reasons then the paper was classed as not relevant/multiple reasons. Included papers were then hand-searched for any additional references. A cited-by search was also conducted to identify references which had cited the included papers.

Meta-Analysis Method

All included papers were screened for relevant data which could be subjected to a meta-analysis in the form of number of participants in different categories to be used for pooled unadjusted Odds Ratios (OR), or means, Standard Deviations and sample sizes which could be used for meta-analysis of the standardised mean difference. All variables where sufficient data was reported for analysis by two or more studies were included. If insufficient detail was given in the paper but the data was otherwise appropriate, authors were contacted for additional details. For example if the paper had reported the OR for debt in those with and without depression, the author was contacted for details on the sample sizes upon which this was based. Studies had to report differences in the prevalence or severity of health conditions based on debt versus no debt. Where there was more than one group data was pooled, for example if the prevalence in debt in those with severe depression and mild to moderate depression were given, this was combined into a single depression category. If more than one set of data which could not be pooled was given by a single study, then this was included in the meta-analysis as if it were two studies, and total sample size was adjusted accordingly. There was insufficient continuous data for analysis, all categorical data was pooled into unadjusted odds ratios, using a Haenszel random effects model weighted by sample size with 95% confidence interval and statistical significance set at $p<.05$. Results were computed via Review Manager 5 (Cochrane Collaboration, 2008).

Results

Results of the Search

A flow diagram of the systematic search is shown in figure 1. The search terms on the three databases produced a total of 3314 papers, from which 219 abstracts were screened. Seventy-three full papers were then screened of which 52 were accepted. Four additional papers were identified via hand search and nine from a cited-by search leading to 65 papers included in total.

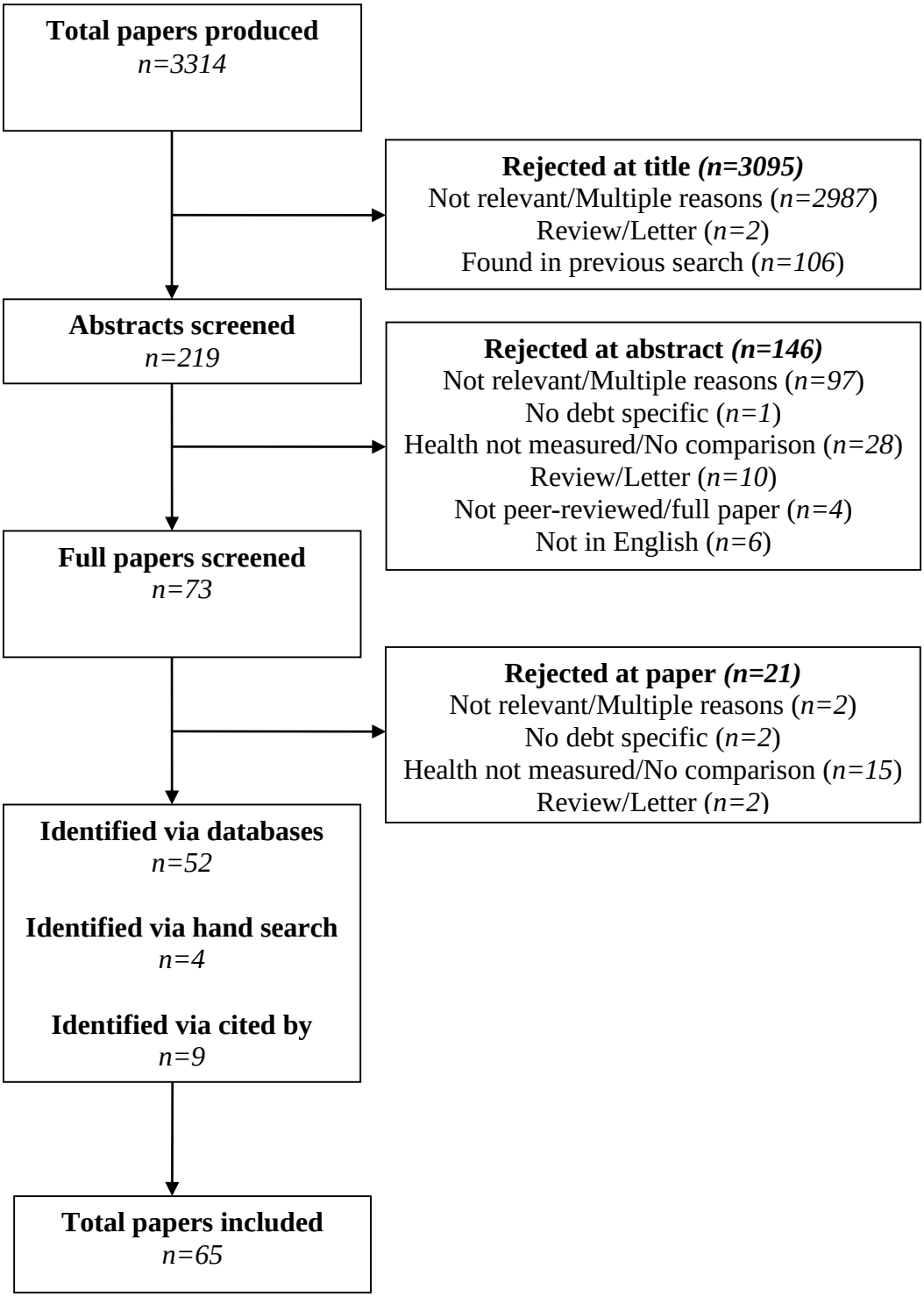

Figure 1: Flow Diagram of Systematic Search

Characteristics of studies

Tables 1 to 9 display the characteristics of studies in terms of country, design, sample, measures used, main findings and confounds controlled for. Please note that main findings shown are only those which remain after adjustment for confounds, if applicable. In addition, the measures used reported are only for those relevant to debt and health. The

studies were classed into a number of different categories. In terms of methodology, there were six panel surveys, 11 nationally representative epidemiological surveys and four psychological autopsy studies. Thirty-seven studies examined specifically populations, with the remaining eight studies not fitting into any specific category. The specific populations examined included students (*n*=13), health service users (*n*=6), debt management clients (*n*=4), parents (*n*=3), ethnic minorities (*n*=4), farmers (*n*=2) and older adults (*n*=4).

The studies were predominantly conducted in the UK (*n*=21) or United States (US) (*n*=21), with one being conducted in both the UK and Finland. Four studies were conducted in Australia, four in China (Hong Kong), four in India and three in Germany. One study per country was conducted in New Zealand, the Netherlands, Finland, Thailand, Uganda, Austria and Japan. In terms of design, 43 were cross-sectional and 13 were longitudinal. The length of follow-up in the longitudinal studies ranged from 6 months to 23 years with a median of 6 years. There were also four cross-sectional cohort studies, and one case-series intervention trial. Sample sizes ranged from 43 to 66,664 with a median of 1941 participants. Twenty-nine of the studies were secondary analyses of existing data.

Measures Used

Thirty-four of the studies examined only mental health, whilst nine physical health only, and eight both physical and mental health. Eight examined suicide, and one both mental health and suicide. One study examined death as its dependent variable. Thirteen studies examined tobacco, alcohol or drug use in addition to physical or mental health, whilst three studies solely examined substance use. Four studies examined Body Mass Index (BMI) in addition to other health variables, whilst one study examined only weight. Forty-five studies used standardised measures of health, whilst 19 did not and relied on author-constructed questions or self-rated health. Studies examining physical health were more likely not to use standardised measures (8/9 studies) than studies examining mental health (4/34 studies).

The most commonly used measure of mental health was the Clinical Interview Schedule Revised (CIS-R, 13 studies), followed the General Health Questionnaire (GHQ, 9 studies), the Centre for Epidemiological Studies Depression Scale (CES-D, five studies), and the

Beck Depression Inventory (BDI, three studies. The Short Form Health Survey (SF-36 or SF-12) was used in five studies to measure both physical and mental health.

General Findings

A total of 43 of the studies used multiple regression to control for potential confounding variables such as demographics. Overall 78.5% (*n*=51) of the studies reported that being in debt was related to worse health. Seven studies found no effect, whilst two found that debt was related to better health. Three studies found an effect for worry about debt rather than debt per se, whilst two found that financial strain rather than debt was related to health.

Studies with Students

Thirteen studies looked at the relationship between debt and health in university students, primarily in the UK and US. The details are summarised in table 1. Many of the studies in the US consisted of secondary analyses of existing data sets from large national surveys, and hence had large sample sizes, for example Adams and Moore (2007) had more than forty thousand participants. However these larger studies tended to rely on author constructed questions on health. The US studies also tended to focus on other health risk behaviours, such as unprotected sex and drink-driving, and also focused on credit card debt specifically. Studies in the UK had smaller sample sizes, but all used a standardised measure of mental or physical health. Across the thirteen studies, there was one which was longitudinal (Cooke, Barkham, Audin, Bradley, & Davy, 2004), which followed British students across the three years of their degree. There was also a cohort study, which compared UK students to students in Finland where tuition fees are lower (Jessop, Herberts, & Solomon, 2005). Demographics such as age and gender were controlled for by most studies, though six studies did not control for any variables. No study controlled for socio-economic status or other economic variables.

In terms of findings, those with higher debt or financial concern were more likely to smoke (Berg et al., 2010; Jessop et al., 2005; Roberts et al., 2000; Roberts, Golding, Towell, & Weinreb, 1999; Stuhldreher, Stuhldreher, & Forrest, 2007), drink excessively (Nelson, Lust, Story, & Ehlinger, 2008; Stuhldreher et al., 2007), though Jessop et al. (2005) and Ross, Cleland, and Macleod (2006) found no effect. They were also more likely to use drugs (Adams & Moore, 2007; Nelson et al., 2008; Roberts et al., 2000; Stuhldreher et al., 2007), though Adams and Moore (2007) found those in debt were less

likely to have used cannabis. It is important to note the differences in how debt groups were defined, for example Norvilitis, Szablicki, and Wilson (2003) looked at debt-to-income ratio, whilst Roberts et al. (1999) compared those who had considered dropping out for financial reasons. Adams and Moore (2007) compared groups based on level of credit card debt and Stuhldreher et al. (2007) examined those with past gambling related debt. Debt was found to be related to higher scores on the SF-36, a measure of both physical and mental health by four studies (Carney, McNeish, & McColl, 2005; Jessop et al., 2005; Roberts et al., 2000; Roberts et al., 1999), and higher scores on the GHQ, a measure of global mental health (Roberts et al., 2000; Roberts et al., 1999). However Ross et al. (2006) found that those with higher GHQ scores had lower debts.

Stuhldreher et al. (2007) found that those with past gambling-related debt were more likely to score positive for depression on the BDI, and report higher stress levels. Norvilitis et al. (2003) reported that debt-to-income ratio and attitudes to debt did not predict stress but financial well-being did. Nelson et al. (2008) also reported greater body dissatisfaction in those with debt, and Adams and Moore (2007) reported higher BMI. Cooke et al. (2004) used the Clinical Outcomes Routine Evaluation General Population version (CORE-GP), a measure of global mental health to demonstrate that higher scores were related to greater debt worry and financial concern. Finally, Roberts et al (1999; 2000) conducted path analyses demonstrating that greater debt led to worse mental health via considering abandoning university and working longer hours. Lange and Byrd (1998) similarly found that debt levels led to anxiety and depression via increased financial stress and strain, and cognitions such as locus of control around finances.

Table 1

Characteristics of studies with University Students

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Adams & Moore (2007)	US	Cross-sectional	40,209 students	ACQ on finances and health	High risk credit behaviour linked to: - Higher BMI - Used amphetamines past 30 days - Felt impaired by depression in past year - Not using cannabis	- Age, year in university, international
Berg et al. (2010)	US	Cross-sectional	9931 students	ACQ on finances and health	Those in debt more likely to have: - Smoked and drunk alcohol past 30 days - High risk drinking past two weeks - More days of poor MH Effects for smoking and MH greater for greater debt	- Age, gender, type of university
Carney et al. (2005)	UK	Cross-sectional	756 students	- ACQ on finances - SF-36	- Indebtedness related to poorer physical and mental health.	- None
Cooke et al. (2004)	UK	Longitudinal (3 years)	2146 students	- CORE-GP - ACQ on debt	- No correlation between debt and CORE-GP - Higher CORE-GP scores for those with high debt worry - Correlation between financial concern and CORE-GP - Those with high financial concern had greater increase in symptoms over time	- None
Jessop et al. (2005)	- UK - Finland	- Cross-sectional - Cohort study	- 89 British students - 98 Finnish students	- Questions on finances from Roberts et al (2000) - SF-36	British students (more debt than Finnish students) had: - Higher scores on all but one SF-36 subscale	- Gender, age, hours worked, smoking and alcohol use

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
					- More likely to smoke (55% vs 12%), and smoked more - No difference on number drinks per week Financial concern mediated relationship between amount of debt and SF-36 score	
Lange & Byrd (1998)	New Zealand	- Cross-sectional - Path Analysis	237 students	- ACQ on demographics and Finances - Economic Locus of - Self-esteem Inventory - Hopkins Symptoms Checklist	Path analysis, two paths found: - Current debt leads to daily financial stress, then manageability, internal Locus of Control, then anxiety and depression - Current debt related to estimated future chronic financial strain, to comprehensibility, which effects Locus of Control and self-esteem, leading to anxiety and depression	- None
Nelson et al. (2008)	US	Cross-sectional	3206 students	- ACQ on finances and health	Those with credit card debt more likely to: - Report body dissatisfaction - Binge drink - Have used tobacco and cannabis past month - Have used other drugs past year	- Gender, age, ethnicity, hours worked
Norvilitis et al. (2003)	US	Cross-sectional	227 students	- ACQ on demographics and - Student Financial Well Being Scale - Measure of student attitudes towards debt - Stress subscale of depression anxiety scale	- Financial well-being correlated with stress - Stress not related to debt-to-income ratio or attitudes towards debt	- None

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Norvilitis et al. (2006)	US	Cross-sectional	448 students	- *As per Norvilitis 2003 paper*	- Higher levels of debt related to more stress	- None
Roberts et al. (1999)	England	Cross-sectional	360 students	- ACQ on demographics, smoking, drug and alcohol use - SF-36 - GHQ-12 - Measure of 14 physical symptoms	- Difficulty paying bills predicted higher GHQ - Those who considered dropping out for financial reasons: - Worse physical health on SF-36, more likely to smoke, higher GHQ SEM found two paths: - As amount of debt increases, likelihood of consider abandoning studies increases, which then worsens MH - As both debt and consider abandon studies increase, longer hours worked, which then worsens MH	- Age and Gender - Smoking (for physical health analyses)
Roberts et al. (2000)	UK	Cross-Sectional	482 students	- *As per Roberts 1999 paper*	- Difficulty paying bills predicted higher GHQ - Those who considered dropping out for financial reasons: - Higher score on GHQ and all SF-36 Subscales - Smoked more, more drug use SEM found same path *as Roberts 1999*	- Age and Gender - Smoking (for physical health analyses)
Ross et al. (2006)	Scotland	Cross-sectional	334 medical students	- ACQ on demographics, smoking and alcohol use -GHQ-12	- No relationship between money worry and binge drinking had *lower* - Those above cut-off on GHQ had lower Debts	- Year of study

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Stuhldreher et al. (2007)	US	Cross-sectional	1079 students students	- Questions from previous study on health, alcohol and drug use - BDI - ACQ on gambling behaviour	Those with past gambling-related debt more likely to: - Binge drink, currently smoke, have used cocaine and cannabis in past - Score above cut-off for depression of BDI - Report their general stress was too high	- None

Abbreviations: ACQ=Author Constructed Questions, SF=Short Form Health Survey, CORE-GP=Clinical Outcomes Routine Evaluation General Population version, MH=Mental Health, GHQ=General Health Questionnaire, SEM=Structural Equation Modelling, BDI=Beck Depression Inventory.

Panel Surveys

A total of five panel surveys were included, which are summarised in table 2. All of these analysed existing data from wider studies, typically from an economic perspective on predictors of debt. They all had sample sizes of several thousand, and all controlled for potential confiding demographic variables. The collection of data at multiple time points was also a major strength. However, they suffered from using crude measures of health, with only two using standardised measures (Brown, Taylor, & Price, 2005; Keese & Schmitz, 2012).

Bridges and Disney (2010) found that debt, including past debt, increased the risk of depression, and Brown et al. (2005) found a relationship with higher GHQ scores. Gathergood (2012) similarly found that those with heavy debt repayments had higher GHQ scores. Brown et al. (2005) found a dose-response effect with more debts increasing risk further, whilst Bridges and Disney (2010) found no such effect. Caputo (2012) found those in debt were more likely to have physical health problems, whilst Webley and Nyhus (2001) reported more smoking, alcohol use, and greater risk of obesity. Subjective views of debts were found to be important, with stress about debt being more important than objective measures of debt (Bridges & Disney, 2010), and the belief that finances will get worse predicting poor mental health (Brown et al., 2005).

Table 2

Characteristics of Panel Surveys

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Bridges & Disney (2010)	UK	- Panel survey - 4-6 years - 2 time points	-5021 general pop. - Bias to deprived areas and parents	- Self reported - ACQ on finances	- Incidence of depression sig. higher in those with current debt - Difference 2-4 times greater depending on time point - Past debt also increased risk of depression - Having a loan related to depression - No effect of greater number of debts - Being in arrears only predicts depression if debt above £2000 - Subjective distress (how bothered by debt) more strongly related than objective measures of debt	- Age, gender, marital status, number of children, education, employment, physical health
Brown et al. (2005)	UK	- Panel survey - 5 years - 2 time points	- 4186 household heads	- ACQ on debt - GHQ-12	- GHQ score sig. higher for those in debt - Amount of debt correlated with GHQ - Believing finances getting worse or will get worse predict higher GHQ score	- Gender, age, income
Caputo (2012)	US	- Panel Survey - 23 years - 14 time Points	- 5034 general pop. - Age 14-22 at start	- ACQ on income and assets	- Limitations due to health problems sig. predict short-term, intermittent and chronic debt - Relationship strongest for chronic debt, lowest for short-term debt	- Age, gender, ethnicity, socio-economic status, income, marital status
Gathergood (2012)	UK	- Panel Survey - 18 years	- 66,664 general pop.	- ACQ finances - GHQ-12	- Debt being a 'heavy burden' sig. predicted higher GHQ scores	- Age, gender, marital status, employment, mortgage problems.

Study	Country	Design	Sample	Measures Used	Main findings	Confounds Controlled
Keese & Schmitz (2012)	Germany	- Panel survey - 10 years - 6 time points	- 32,132 general pop.	- ACQ on finances and health satisfaction - MH score based on SF-12 - BMI	- Debt-to-income sig predicted health satisfaction and MH score - No effect on obesity - Indebtedness related to health satisfaction only in those with variable employment - Results similar when ran for household heads only	- Demographics, employment, health insurance, income, recent death or separation
Webley & Nyhus (2001)	Netherl-ands	- Panel survey - 3 years - 3 time points	- 4147 general pop.	- ACQ on health, finances, demographics, smoking, alcohol - BMI	- Those with debt more likely to smoke, smoke more and drink more - Obesity predicted debt status	- None - Income, age, number children partner present, attitude to debt, money management, impulsive spending

Abbreviations: ACQ=Author Constructed Questions, pop.=population, MH=Mental Health, GHQ=General Health Questionnaire, BMI=Body Mass Index, sig.=Statistically Significant.

Psychological Autopsy Studies

Four studies, all conducted in Hong Kong, used psychological autopsy of suicide completers to examine the prevalence of debt compared to age matched community controls. These are shown in Table 3. These typically examined a number of different predictors of suicide, with multiple regression models including factors such as marital status and psychiatric diagnoses as well as debt. All but one therefore controlled for potential confounds, by examining whether the effect of debt was independent of other variables. These all looked at the presence of unmanageable debt, which was defined as more than four years to repay given monthly income and expenses (Wong, Chan, Conwell, Conner, & Yip, 2010). Wong et al. (2010) simply reported descriptive statistics with a higher proportion on unmanageable debt in suicide completers. The remaining studies reported adjusted Odds Ratios for debt and suicide completion of between 7.9 and 9.5 (Chan et al., 2009; Chen et al., 2006; Wong et al., 2008). Chan et al. (2009) further estimated that 23% of suicide was attributable to debt.

Table 3

Characteristics of Psychological Autopsy Studies

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Chan et al. (2009)	China (Hong Kong)	- Psychological autopsy - Case controlled	- 150 suicide completers - 150 community controls	- Interviews with relatives of completers - SCID - Information from coroner's report	- Greater prevalence of unmanageable debt in completers aOR of 9.5 - Population attributable risk of unmanageable debt= 23%	- Psychiatric diagnosis, substance use disorder, pathological gambling, past suicide attempts, unemployment
Chen et al. (2006)	China (Hong Kong)	- Psychological autopsy - Case controlled	- 150 suicide completers - 150 community controls	- Interviews with relatives of completers	- Greater prevalence of unmanageable debt in completers aOR of 7.9 - Effect remained after excluding pathological gamblers and compulsive buyers - No interaction between effect of diagnosis and debt	- Psychiatric diagnosis, mood disorders, past attempts, employment, marital status, social support
Wong et al. (2010)	China (Hong Kong)	- Psychological autopsy - Case controlled	- 150 suicide completers - 150 community controls	- Interviews with relatives of completers	- All pathological gamblers had unmanageable debts - Higher proportion of unmanageable debt in completers (without gambling) than control (22.6% vs. 5.7%)	- None
Wong et al. (2008)	China (Hong Kong)	- Psychological autopsy - Case controlled	- 85 suicide completers - 85 community controls	- Interviews with relatives of completers - SCID	- Greater prevalence unmanageable debt in completers, aOR of 9.4	- Demographics, employment, income, social support, psychiatric diagnosis,

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
				- Information from coroners and police reports		impulsivity, social problem solving, expressed emotion

Abbreviations: SCID= Structured Clinical Interview Axis 1 Disorders, OR=Odds Ratio, aOR=Adjusted Odds Ratio.

Nationally Representative Surveys

Ten papers were epidemiological studies with nationally representative samples of the general population. These are shown in table 4. Seven were conducted in the UK, six of which were secondary analysis of data from the British National Psychiatric Morbidity Survey. All but one study Jenkins, Fitch, Hurlston, & Walker, 2009) controlled for confounds, and all but one (Lyons & Yilmazer, 2005) used standardised measures. However all but one (Polprasert, Sawangdee, Porrapakham, Guo, & Sirirassamee, 2006) were cross-sectional, making causality hard to establish.

Studies in the UK all found that being in debt was related to an increased risk of Common Mental Disorders (CMD) with adjusted Odds Ratios (aOR) after controlling for confounds of between 1.9 (Clark et al., 2012) and 2.8 (Meltzer, Bebbington, Brugha, Farrell, & Jenkins, 2013). Jenkins, Fitch, et al. (2009) reported descriptive statistics only, as did Hintikka, Kontula, Saarinen, Tanskanen, Koskela, and Viinamäki (1998) who reported a greater likelihood of scoring above cut-off on the GHQ in those with debt. Effects were found for neurotic disorders, psychotic disorders, alcohol and drug dependence specifically (Jenkins, et al., 2009; Jenkins et al., 2008; Meltzer et al., 2013) as well as depression (Meltzer et al., 2010; Zimmerman & Katon, 2005). Dose-response effects were also found for number of debts and risk of mental disorder (Jenkins et al., 2008; Meltzer et al., 2013). Meltzer et al. (2011) reported that debt increased the risk of suicidal ideation in a dose-response fashion. Hintikka, Kontula, Saarinen, Tanskanen, Koskela, and Viinamaki (1998) similarly found that debt problems increased the risk of suicidal ideation, but there was no relationship with attempts. Lyons and Yilmazer (2005) found no relationship between debt and self-reported health, whilst a longitudinal study by Polprasert et al. (2006) found that debt did not predict death from disease in Thailand. Finally, Balmer, Pleasence, Buck, and Walker (2006) found that long term illness or disability increased the likelihood of legal problems resulting from debt.

Table 4

Characteristics of Nationally Representative Surveys

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Clark et al. (2012)	UK	Cross-sectional	3383 general pop.	- CIS-R - ACQ on work and life events	- Increased risk of CMD in those in debt, aOR=1.9	- Age, gender, house tenure, marital status, work stressors and life events
Balmer et al. (2005)	UK (England and Wales)	Cross-sectional	5611 general pop.	- ACQ on debt and health	- Long term illness/disability significantly predicted legal problems resulting from debt, and long-term debt - Little evidence that one predominantly came first	- Demographics, qualifications, benefits, income, housing
Hintikka et al. (1998)	Finland	Cross-sectional	4868 general pop.	- ACQ on demographics, alcohol use and suicidal ideation - General Health Questionnaire-12	- Those with GHQ of 3 or more likely to have debt problems (37% vs. 16%) - Debt problems increased risk of suicidal ideation - No relationship between debt and suicide attempts	- None - Mental disorder, alcohol abuse, marital separation, employment
Jenkins et al. (2009)	UK (England and Wales)	Cross-sectional	8545 general pop.	- ACQ on demographics, drug use, finances - Psychosis Screening Questionnaire - Clinical Assessment in Neuropsychiatry - AUDIT - Severity of Alcohol Dependence Questionnaire	Prevalence of disorder in Debt vs. No debt groups: - Any Mental Disorder: 45% vs 20.4% - Neurotic disorder (Depression, OCD, Panic, GAD): 32.5% vs. 14.2% - Psychotic Disorder: 1.6% vs. 0.4% - Alcohol Dependence: 15.2% vs. 6.3% - Drug Dependence: 11.5% vs. 2.7%	- None: descriptives only

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Jenkins et al. (2008)	UK	Cross-sectional	8545 general pop.	- CIS-R - *As per Jenkins 2009*	- High prevalence of debt in those with any mental disorder and neurotic, psychotic, alcohol and drug dependence - Relationships between low income and mental disorder partially moderated by debt - Debt increased risk after controlling for income - Dose-response effect: more debts, greater risk of mental disorder	- Age, gender, status, household size, education, social class, urban or rural, region, income
Lyons & Yilmazer (2005)	US	Cross-sectional	2802 general pop.	- Self-rated health	- Debt-to-asset ratio did not predict self-rated health	- Age, ethnicity, marital status, employment, receive benefits, father still, alive, education income, smoking health insurance
Meltzer et al. (2010)	UK	Cross-sectional	3581 general pop.	- CIS-R	- Being in debt associated with depression, aOR: 2.2	- Age and gender
Meltzer et al. (2011)	UK	Cross-sectional	7461 general pop.	- ACQ on finances, suicidal ideation and behaviours	- Being in debt increased risk of suicidal ideation, aOR=2.0 - Feelings of hopelessness partially mediated relationship - Dose-response effect: more debts	- Age, gender, marital status, employment, drinking, gambling, recent stressful life

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
					from different sources increased risk of suicidal ideation further - Shopping related debts greatest effect	Events
Meltzer et al. (2013)	UK	Cross-sectional	7461 general pop.	- CIS-R - Severity of Alcohol Dependence Questionnaire	- Being in debt increased risk of CMD, aOR=2.83 - Increased risk of phobia, OCD, depression, panic, GAD, mixed anxiety and depression specifically. - Debt increased risk of alcohol dependence (aOR=7.09), drug dependence (aOR=8.44), - Dose response effects: more debts, greater risk. - No differences of type of debt.	- Age, gender, marital status, employment, housing tenure
Polprasert et al. (2006)	Thailand	Longitudinal (7 years)	8,298 general pop.	- Verbal autopsy, medical records and death certificates	- Being in debt did not predict risk of death from disease	- Gender, age, occupation, education, migration, household size, ethnicity, air and drinking water quality, population density, health services
Zimmerman & Katon (2005)	US	Cross-sectional	7278 general pop.	- CES-D	- Higher debt-to-asset ratio increased scores for both men and women - No effect for high income groups	- Ethnicity, past health problems, self-esteem, home ownership, marital

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
						status, children, insurance, home ownership, employment, occupation

Abbreviations: ACQ= Author Constructed Questions, CMD=Common Mental Disorders, pop.=population, CIS-R=Clinical Interview Schedule Revised, aOR=Adjusted Odds Ratios, OCD=Obsessive Compulsive Disorder, GAD=Generalized Anxiety Disorder.

Health Service User Populations

Six studies examining health service user populations are shown in table 5. As specific populations were studied, sample sizes were inevitably small, ranging from 43 to 87. Standardised measures of health were used in all of these studies, however only two controlled for confounds. Patel et al. (1998) and Pothen, Kuruvilla, Philip, Joseph, and Jacob (2003) found that debt increased the risk of CMD and depression in primary care attenders in India after controlling for demographics. Abbo et al. (2008) found that those attending traditional healers were more likely to be psychologically distressed if they were in debt. Hatcher (1994) examined self-harmers, finding higher levels of depression, psychiatric diagnosis and suicidal intent in those in debt. Finally Battersby, Tolchard, Scurrah, and Thomas (2006) found that pathological gamblers with gambling-related debt were more likely to experience suicidal ideation, whilst Maccallum and Blaszczynski (2003) found no relationship between amount of debt and suicidal ideation in gamblers.

Table 5

Characteristics of studies with Health Service User Populations

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Abbo et al. (2008)	Uganda	Cross-Sectional	- 387 attending traditional healers	- Self Reporting Questionnaire-20	- 84.3% of distressed in debt vs. 5.7% non-distressed, OR=2.5	- None
(1998)		Sectional	health attenders	demographics - CIS-R		employment, poverty, widowed, religion
Pothen et al. (2003)	India	Cross-Sectional	- 303 primary health attenders	- ACQ on finances and demographics - CIS-R	- Debt predicted CMD: aOR=2.1 - Debt predicted Depression: aOR=2.4	- Age, gender, poverty
Hatcher (1994)	UK	Cross-Sectional	- 147 self-harmers presenting to hospital	- ACQ on debt - Beck Suicide Intent Scale - Risk of Repetition Scale - Beck Depression Inventory - Beck Hopelessness Scale - GHQ-30	- Those with debt sig. higher scores on suicidal intent, depression, GHQ, hopelessness. - No difference on risk of repetition - Those in debt more likely to receive psychiatric diagnosis (91% vs. 71%)	- None
Battersby et al. (2006)	Australia	Cross-Sectional	- 43 gambling outpatients	- Suicide Ideation sC scale - ACQ demographics and debt	- Debt from gambling increased risk of suicidal ideation and attempts	- None
Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Maccallum &	Australia	Cross-	- 85 pathological	- Beck Scale for	- No difference in amount of gambling	- None

Blaszczynski (2003)	Sectional	gambling outpatients	Suicide Ideation	debt based on presence or absence of suicidal ideation

Abbreviations: ACQ= Author Constructed Questions, CMD=Common Mental Disorders, CIS-R=Clinical Interview Schedule Revised, aOR=Adjusted Odds Ratios.

Debt Management Clients

Four studies examined the health of those undergoing debt counselling; these are shown in table 6. Two cohort studies compared over-indebted clients to the general population, finding an increased likelihood of being overweight and reporting back pain after controlling for confounds (Munster, Ruger, Ochsmann, Letzel, & Toschke, 2009; Ochsmann, Rueger, Letzel, Drexler, & Muenster, 2009). O'Neill, Sorhaindo, Xiao, and Garman (2005) found that self-rated health was linked to reduced debts after a debt management intervention. Selenko and Batinic (2011) found that financial strain, but not amount of debt was related to mental health as measured by the GHQ.

Table 6

Characteristics of studies with Debt Management Clients

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled for
Münster et al. (2009)	Germany	- Cross-sectional - Cohort study	- 949 debt counselling clients -8318 general pop.	- ACQ demographics, smoking, depression - BMI	- Over-indebted more likely to be overweight, aOR=2.6	- Age, gender, education, income, depression, smoking
Ochsmann et al. (2009)	Germany	- Cross-sectional - Cohort study	- *As per Münster*	- ACQ medical problems, debt, back pain	- Over-indebted more likely to report back pain, aOR=10.9	- Age, education, marital status, employment, mental illness, BMI, physical activity
O'Neill et al. (2005)	US	- Intervention trial (case series)	- 3121 debt management clients	- ACQ on finances - Self-rated health	- Those who reported improve health more likely to have reduced their debts (57% vs 40%)	- None
Selenko & Batinic (2011)	Austria	- Cross-sectional	- 106 debt counselling clients	- ACQ on financial strain - General Health Questionnaire-12 item	- No correlation between amount of debt and MH - Sig. correlation between financial strain and MH	- None

Abbreviations: ACQ= Author Constructed Questions, BMI=Body Mass Index, aOR=Adjusted Odds Ratios.

Older adults

Four studies examined relationships between debt and health in older adults; these are shown in table 7. All of these used data from existing wider studies, and had large sample sizes. Debt was found to increase the risk of depression as measured by the CES-D after controlling for confounds (Drentea & Reynolds, 2012; Kaji et al., 2010; Lee & Brown, 2007). However Drentea and Reynolds (2012) found this relationship was moderated by stress about debt. Drentea and Reynolds (2012) also found a relationship with self-reported anxiety. Lee, Lown, and Sharpe (2007) found no relationship between self-rated health and debt.

Table 7

Characteristics of studies with Older Adults

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled
Kaji et al. (2010)	Japan	Cross-sectional	- 10,969 general. pop. older adults (50+)	- ACQ on debtors - CES-D	- Debt sig. predicted mild-moderate (aOR=1.3) and severe (aOR=2.1) Depression	- Gender, age, city vs rural, region.
Lee & Brown (2007)	US	Cross-sectional	- 8845 general pop. older adults (65+)	- 8 items from CES-D	- Being in debt sig. predicted depression	- Age, marital status, education, ethnicity, employment, physical health, income
Lee et al. (2007)	US	Cross-sectional	- 9996 general pop. older adults (65+)	- ACQ finances and Health - Self-rated health	- No effect of self-rated health on consumer debt	- Gender, age, family size, education, income, marital status, ethnicity, employment, housing tenure
Drentea & Reynolds (2012)	US	- Panel survey - Two points	- 1,463 general pop. older adults - Mean age=59	- CES-D - ACQ anxiety and debt	- Depression and anxiety sig. predicted by debt - Debt more strongly related than income or assets - Stress about debt moderated relationship	- Gender, age, ethnicity, employment, health insurance, marital status, physical disability, children

Abbreviations: ACQ= Author Constructed Questions, aOR=Adjusted Odds Ratios, pop.= population, CES-D= Centre for Epidemiological Studies Depression Scale.

Other Specific Populations

Eight studies focused on other specific populations. These are shown in table 8. All these studies controlled for confounds, but only four used standardised measures. Three studies focused on parents. One found debt increased the risk of CMD but not depression in mothers and fathers (Cooper et al., 2008). In a study examining financial hardship in lone mothers, Hope, Power, and Rodgers (1999) found that for women overall, debt was more common in those who were high risk for depression. Another smaller longitudinal study found that debt was related to post-natal depression, but that worry about debt was more important than amount of debt (Reading & Reynolds, 2001). Four studies looked at ethnic minority populations in the US. Drentea (2000) and Drentea and Lavrakas (2000) sampled from the general population but picked areas with a higher proportion of ethnic minorities, and found a relationship between a number of debt variables and self-rated health and anxiety. Yao, Sharpe, and Gorham (2011) found a non-significant trend for better self-rated health to increase the likelihood of debt, whilst Xu (2011) found that debt increased psychological distress only in specific ethnic groups. Finally, two studies looked at farmers. A large study found that debt problems predicted better self-rated health (Berry, Hogan, Ng, & Parkinson, 2011), whilst a smaller study using the CES-D found that a recent increase in debt increased the likelihood of depression (Beseler & Stallones, 2008).

Table 8

Characteristics of studies with other Specific Populations

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled for
Parents						
Cooper et al. (2008)	UK	- Cross-sectional	- 5497 general pop.	- ACQ on finances - CIS-R	- Debt increased risk of CMD in mothers aOR=1.6, and fathers aOR=2.1 - No effect on depression - Debt moderated increased prevalence of CMD and depression in lone mothers	- Age, household size, number children, housing tenure, social class, social support, employment
Reading & Reynolds (2001)	UK	- Longitudinal (6 months)	- 271 mothers with young children	- Edinburgh Post-Natal Depression Scale - ACQ finances, demographics, social support	- No effect of baseline debt on depression at either time point - Debt worries predicted depression at both time points, more than other economic variables - Effect of debt worries no longer sig. when baseline depression controlled	- Income, housing tenure, age, employment, mental illness, number children and age, overcrowding, social support, child health
Hope et al. (1999)	UK	- Cross-sectional	- 5759 women	- Malaise Inventory	- Those in debt sig. more likely to score above cut-off suggestive of depression	- None
Ethnic Minorities						
Drentea (2000)	US	- Cross-sectional	- 1037 general pop. - 16.9% ethnic minority	- ACQ on anxiety and finances	Number days anxious in past month sig. predicted by: - Debt/Income ratio - Default on payments - Debt stress No effect of amount of credit card debt or number of cards.	- Gender, age, education, ethnicity, income, marital status, employment, have children

Study	Country	Design	Sample	Measures Used	Main findings	Confounds controlled for
Drentea & Lavrakas (2000)	US	- Cross-sectional	- 970 general pop. - 16.5% ethnic minority	- Self-rated health - Adapted Physical Performance Scale - BMI - ACQ smoking, drinking, debt	Physical performance sig. predicted by: - Debt/income ratio and debt stress - No effect of amount of credit, number of cards, defaulting or carrying a balance forward - Self-rated health sig. predicted by debt stress index and carrying a balance forward - No effect of debt/income ratio, amount of credit, number of cards or default - BMI, smoking and drinking moderated effect of debt/income on self-rated health	- Gender, age, education, ethnicity, employment, SES, income, BMI smoking, drinking
Yao et al. (2011)	US	- Cross-sectional	- 149 Chinese Americans	- ACQ on debt - Self-rated health	- Non significant trend (p<.10) for better health to increase likelihood of debt	- Age, gender, children, assets, income.
Xu (2011)	US	- Cross-sectional	- 1941 Latino Americans	- Items from K-10 scale of psychological distress - ACQ on finances	- Debt predicted distress in Cubans and Puerto Ricans - No relationship for Mexicans	- Age, gender, physical health, discrimination, income
Farmers						
Besler & Stallones (2008)	US	- Longitudinal (3 years)	- 872 farmers and their spouses	- CES-D - ACQ on finances	- Recent increase in debt increased risk of depression, aOR: 1.9	- Gender, age, marital status, income, health, pesticide poisoning
Berry et al. (2011)	Australia	- Cross-sectional	- 3993 farmers	- ACQ finances, demographics	- Greater debt pressure sig. predicted *better* self-rated health	- Age, education, farming related

	- Self-rated health	variables (trust, market)

Abbreviations: ACQ=Author Constructed Questions, CIS-R=Clinical Interview Scheduled Revised, aOR=Adjusted Odds Ratios, pop.=population, CES-D= Centre for Epidemiological Studies Depression Scale, CMD=Common Mental Disorders, BMI=Body Mass Index.

Other Studies

A further seven studies examined the relationship between debt and health but did not fit into any of the above categories. These are shown in table 9. Elbogen, Johnson, Wagner, Newton, and Beckham (2012) found that military veterans with mental health problems or brain injury were more likely to have large unsecured debts, whilst Finlay-Jones and Eckhardt (1984) found that debt increased the likelihood of being above the cut-off on the GHQ in unemployed young adults. Kassim and Croucher (2006) found that in Khat (amphetamine) users, those in debt to the dealer were more likely to be dependent. In a longitudinal study, Molander, Yonker, and Krahn (2010) found that debt had little impact on changes in drinking over time, though debt increased the likelihood of stopping heavy drinking. In a large survey in India, Patel et al. (2005) found that women in debt were more likely to have chronic fatigue syndrome. Hainer and Palesch (1998) found no relationship between debt and depression in junior doctors. Saxena, Sharma, and Maulik (2003) found that Indian families with a heavy drinker were more likely to be in debt. Finally, Turvey, Stromquist, Kelly, Zwerling, and Merchant (2002) sampled a rural US population finding that an increase in debt increased the likelihood of suicidal thoughts.

Table 9

Characteristics other Studies

Study	Country	Design	Sample	Measures Used	Main findings	Confound controlled
Elbogen et al. (2012)	US	- Cross-sectional	- 1,388 veterans post-deployment	- Davidson Trauma Scale - Patient Health Questionnaire - ACQ on brain injury and finances	- Those with Major Depressive Depressive Disorder, Post Traumatic Stress Disorder or Traumatic Brain Injury sig. more likely to have unsecured debt over $40k (13% vs. 8%)	- None
Finlay-Jones & Eckhardt (1984)	Australia	- Cross-sectional	- 401 unemployed young people (age 16-24)	- GHQ-30 - Present State Examination - ACQ finances, demographics,	- Debt sig. predicted being above cut-off on GHQ in men but not women	- Gender, able to borrow money, resigning from job, dismissed from j job, savings.
Kassim & Croucher (2006)	UK	- Cross-sectional	- 75 male from Yemen background	- ACQ: khat use, demographics - Severity of Dependence Scale	- Those dependent on khat sig. more likely to be in debt to khat seller (37.9% vs 17.4%)	- None
Molander et al. (2010)	US	- Longitudinal - 2 time points 11 years apart	- 5,283 adults - Age 53	- ACQ on drinking	- No effect of debt on changes across time in drinking in the past month, number drinking days, drinks a day, total drinks - Those who experienced debt *mor*e likely to change from heavy to not heavy drinking, aOR: 1.8	- Gender, education, high school IQ, employment, marital status, income physical health, Depression
Patel et al. (2005)	India	- Cross-	-3000 women	- ACQ on health and	- Being in debt related to presence of	- Age, education,

Study	Country	Design	Sample	Measures Used	Main findings	Confound controlled
		sectional		and debt - Scale for somatic symptoms - CIS-R	chronic fatigue syndrome, aOR: 1.3	literacy, marital status, poverty (hunger, toilet and tap water in house)
Hainer & Palesch (1998)	US	- Longitudinal - 2.5 years	- 350 Doctors (family practice residents)	- Beck Depression Inventory - Profile of Mood States	- No effect of indebtedness on depression	- Details not given
Saxena et al. (2003)	India	- Cross-Sectional - Cohort Study	- Slum-dwelling families - 98 with heavy drinker, 99 without	- ACQ on demographics, drinking	- Families with a drinker sig. more likely to be in significant debt (54% vs. 29%) - Debt-to-income ratio sig. higher for drinking group	- None
Turvey et al. (2002)	US	- Cross-sectional	- 1617 rural inhabitants	- ACQ on suicide and debt	- Those with recent increase in debt sig. more likely to have had suicidal thoughts	- None

Abbreviations: ACQ=Author Constructed Questions, aOR=Adjusted Odds Ratios, GHQ=General Health Questionnaire, sig.= Statistically significant.

Meta-Analysis Results

A meta-analysis was conducted to determine the pooled odds ratios for variables reported by multiple studies. The results are shown in table 10, raw data is shown in Appendix 1. There was a statistically significant relationship between debt and presence of a mental disorder, depression, suicide completion or suicide attempt, problem drinking, drug dependence, neurotic disorders (depression, obsessive-compulsive disorder, panic, phobia, generalized anxiety disorder), and psychotic disorders. The only variable where there was no significant difference was smoking.

Table 10

Results of the Meta-Analysis

Variable	Studies	Total Pooled Sample Size	Heterogeneity	Prevalence/Proportions	Odds Ratio* (95% CI)	Overall Effect
Mental Disorder	*n*=7[1]	33961	$\chi 2$= 11.14, p>.05	*Prevalence of Mental Disorder in:* - Debt: 41.9% (1754/4178) - No Debt: 17.5% (5212/29783) *Prevalence of Debt in:* - Mental Disorder: 25.2% (1754/6966) - No Mental Disorder: 8.9% (2424/26995)	3.24 (2.91, 3.60)	*Z*=21.68, *p*<.001
Depression	*n*=4[2]	33987	$\chi 2$= 1.14, p>.05	*Prevalence of Depression in:* - Debt: 15.5% (691/4458) - No Debt: 13.2% (3903/29529) *Prevalence of Debt in:* - Depression: 15% (691/4594) - No Depression: 12.8% (4595/29393)	2.77 (2.5, 3.07)	*Z*=19.45, *p*<.001
Suicide completion*	*n*=4[3]	1069	$\chi 2$= 0.10, p>.05	*Prevalence of Debt in:* - Suicide Completers: 31% (166/535) - Controls: 5.4% (29/534)	7.9 (5.21, 12.0)	*Z*=9.71, *p*<.001

Variable	Studies	Total Pooled Sample Size	Heterogeneity	Prevalence/Proportions	Odds Ratio* (95% CI)	Overall Effect
Suicide completion or attempt*	n=5[4]	5822	$\chi 2$= 14.31, p<.01	*Prevalence of Debt in:* - Suicide Completers/Attempters: 30.9% (181/584) - Controls: 17.2% (903/5239)	5.76 (2.97, 11.18)	Z=5.17, p<.001
Smoking	n=3[5]	11801	$\chi 2$= 33.96, p<.001	*Prevalence of Smoking in:* - Debt: 28.8% (1088/3778) - No Debt: 20.6% (1650/8023) *Prevalence of Debt in:* - Smokers: 39.7% (1088/2738) - Non-smokers: 29.7% (2690/9063)	1.35 (0.66, 2.77)	Z=0.83, p>.05
Problem Drinking	n=5[6]	26706	$\chi 2$= 162.48, p<.001	*Prevalence of Problem Drinking in:* - Debt: 32.2% (1669/5162) - No Debt: 18% (3878/21544) *Prevalence of Debt in:* - Problem Drinking: 30.1% (1669/5547) - No Problem Drinking: 16.5% (3493/21159)	2.68 (1.40, 5.15)	Z=2.96, p<.01
Drug Dependence	n=2[7]	15281	$\chi 2$= 5.01, p<.05	*Prevalence of Drug dependence in:* - Debt: 12.9% (222/1712) - No Debt: 2.6% (258/13569) *Prevalence of Debt in:* - Drug Dependence: 38.3% (222/580)	5.69 (3.82, 8.47)	Z=8.57, p<.001

Variable	Studies	Total Pooled Sample Size	Heterogeneity	Prevalence/Proportions	Odds Ratio* (95% CI)	Overall Effect
Neurotic Disorders (Depression, OCD, Panic, Phobia, GAD)	*n*=2[8]	16521	$\chi 2$= 3.46, *p*>.05	- No Drug Dependence: 10.1% (1490/14701) *Prevalence of Neurotic Disorders in:* - Debt: 36% (710/1971) - No Debt: 15.1% (2197/14550) *Prevalence of Debt in:* - Neurotic Disorders: 24.4% (710/2907) - No Neurotic Disorders: 9.3% (1261/13614)	3.21 (2.64, 3.90)	*Z*=11.63, *p*<.001
Psychotic Disorders	*n*=2[9]	15083	$\chi 2$= 0.02, *p*>.05	*Prevalence of Psychotic Disorders in:* - Debt: 1.9% (32/1630) - No Debt: 0.5% (71/13453) *Prevalence of Debt in:* - Psychotic Disorders: 31.1% (32/103) - No Psychotic Disorders: 10.7% (1598/14980)	4.03 (2.64, 6.16)	*Z*=6.46, *p*<.001

Mantel-Haenszel random effect model weighted by sample size 95% CI.
Abbreviations: OCD= Obsessive-Compulsive Disorder, GAD= Generalized Anxiety Disorder.

* Pooled unadjusted odds ratio
* The prevalence of suicide completion in those with debt is not given as due to equal numbers of completers and controls this estimate would be inflated.

[1] Clark et al., 2012; Finlay-Jones & Eckhardt, 1984; Hintikka et al., 2008; Jenkins et al., 2008; Jenkins et al., 2009; Meltzer et al., 2013; Patel et al., 1998.
[2] Besler & Stallones, 2008; Bridges & Disney, 2010; Kaji et al., 2010; Stuhldreher et al., 2007
[3] Chan et al., 2009; Chen et al., 2006; Wong et al., 2008; Wong et al., 2010.
[4] Chan et al., 2009; Chen et al., 2006; Hintikka et al., 2008; Wong et al., 2008; Wong et al., 2010.
[5] Berg et al., 2010; Drentea & Lavrakas, 2000; Stuhldreher et al., 2007.
[6] Berg et al., 2010; Jenkins et al., 2008; Jenkins et al., 2009; Saxena et al., 2007; Stuhldreher et al., 2007.
[7,8,9] Jenkins et al., 2008; Jenkins et al., 2009.

Discussion

This review aimed to systematically review all the literature examining the relationship between debt and health. A relatively large number of studies were found which examined this relationship, though many of these examined debt in addition to other variables, and few examined debt specifically. The majority of these studies examined relationships with mental health, with most studies on physical health consisting of self-rated health as opposed to more objective measures of health such as body mass index. The research at present consists of a number of different types of research with nationally representative surveys, panel surveys, psychological autopsy studies, and studies with specific populations such as students, older adults and debt management clients all examining the relationship between debt and health.

Overall the results suggest that debt is related to poor health, with some studies showing a dose-response effect with more severe debt being related to more severe health difficulties. Specifically in terms of physical health, debt has been linked to a poorer self-rated physical health, long term illness or disability, chronic fatigue, back pain, higher levels of obesity, and worse health and health related quality of life. No studies have shown a relationship between debt and death other than via suicide, in contrast to previous findings of a relationship between socio-economic status (SES) and mortality (Mackenbach et al., 2008). Debt appears to be more common in suicide completers, and increases the risk of suicidal ideation and attempts after controlling for possible confounds such as mental illness. Individual studies have shown a relationship with drug use, problem drinking and drug dependence as well as tobacco smoking. In terms of mental health, many studies have shown a relationship with common mental disorders and global mental health as measured by the General Health Questionnaire (GHQ). The relationship with depression has been studied most frequently and relationships appear to be strong and robust. There is also limited evidence for a relationship with problems such as anxiety and psychosis. One study has shown a relationship with poorly measured body dissatisfaction, though there are no studies on eating disorder symptoms. The relationships between SES and eating disorders is, however, not as clear as other mental health problems: a large study found no effect of socio-economic variables on the prevalence of eating disorders in adolescents (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011). Nonetheless, additional research is needed to examine relationships with mental health problems such as psychosis and eating disorders, as the literature at present predominantly focuses on

depression. Manic episodes in bipolar disorder can be characterised by impulsive spending sprees (Strakowski, 2012), yet no research has examined the relationships between debt and bipolar disorder specifically.

Despite a relatively large body of literature on the area, there are a number of limitations with the evidence base at present. The main problem with the current research is that the vast majority of studies are cross-sectional, meaning that causality cannot be established. Most current studies simply show a relationship between health and debt, though which affects which is unclear. It might be, for example, that debt induces symptoms of depression. However it might also be that those who are depressed are more prone to debt due to greater levels of unemployment or poor financial management. The few studies which are longitudinal are generally less likely to use standardised measures of health with many relying on self-rated health, which is prone to bias. Thus more longitudinal research using standardised measures is needed to examine relationships across time between debt and health. There are also no prospective cohort studies at present, though these represent a unique opportunity to compare the health of groups who differ on levels of debt across time. In the UK, a 2012 increase in tuition fees is predicted to double debt levels in students (PUSH, 2011). Given the large number of studies here showing a relationships between debt and mental health problems in students specifically, a prospective cohort study may be a valuable way to assess the public health impact of this change.

Whilst many studies control for a number of potential confounding variables this is not always the case. In particular some research fails to separate the specific impact of debt from related wider economic variables such as unemployment and poverty. There are also very different definitions of debt used in the literature. Some compare groups based on high versus low debt; some examine over-indebtedness as defined by a mathematical formula, whilst others define debt as being behind on bill payments. Some also look at gambling related-debt specifically which might have different causes and risk factors to other forms of debt. This means it is somewhat difficult to compare these studies in terms of the health outcomes they demonstrate. Future research would therefore benefit from using a clear operationally defined definition of debt. This review suggests defining debt in research literature simply as having any unsecured loan or being behind on any payments to an extent which is greater than readily-accessible savings. Unmanageable debt could be defined using the criteria set out by Wong et al. (2010) of debt which would

take more than four years to repay given monthly income and expenses. This is a more useful way of measuring debt burden than actual amount of debt, which does not take into account wealth and ability to service this debt. Debt-to-income ratios should be used to quantify severity of debt in order to further examine dose-response relationships with health problems.

The results of the meta-analysis largely confirm the results of individual studies, showing a strong relationship with overall mental disorder, depression, suicide completion or attempt, problem drinking, drug dependence, neurotic disorders and psychotic disorders. The only variable which was not significant was smoking. Odds ratios demonstrate more than a three-fold risk of a mental disorder in those with debt, or alternatively a three-fold risk of debt in those with a mental disorder. Even stronger effects were shown for suicide with completers having nearly an eight-fold risk of debt. The advantages of this meta-analysis are the pooled sample sizes of several thousand. However it is important to note the limitations of this meta-analysis. Firstly, only a few studies provided sufficient data on similar areas to be included. Thus for some of the analyses only two studies are used, and all data is categorical, with no data available on continuous variables such as standardised measure scores. Secondly, as these are unadjusted pooled odds ratios the effects of confounding variables are not controlled for. Thirdly, for suicide completion and attempt, smoking, problem drinking and drug dependence there is significant heterogeneity in the odds ratios for the individual studies, thus the pooled odd ratios may be unreliable and should be interpreted with caution. Finally, it is important to note that the outcomes measured differed somewhat; for example mental disorder was defined as above the cut-off on the GHQ, or meeting the diagnostic criteria based on the clinical interview schedule revised. Thus the outcomes may be slightly different. Debt is also defined differently in different studies. For example for the analysis on problem drinking, Jenkins et al. (2008) defined debt as being currently behind on a tax or bill, whereas Stuhldreher et al. (2007) look at those with past gambling-related debt. Thus the measures of debt are not equivalent, which may explain the observed heterogeneity of findings.

The specific mechanisms by which debt is related to health are still somewhat unclear in the current literature. However a number of studies demonstrated that, in terms of relationships with mental health such as depression, psychological elements appear to be important. For example subjective aspects of debt such as worry and stress about debt,

considering dropping out of university due to debt, financial concern, locus of control around finances or believing finances will worsen are related to mental health. In addition, some studies demonstrate they are more important that objective measures such as amount of debt, and may mediate the relationship between debt and mental health. However there are few longitudinal studies on the area thus it is unclear whether variables such as worry about debt lead to poor mental health, or whether those with poor mental health are more likely to worry about their debt. The one longitudinal study on this (Reading & Reynolds, 2001), found that the effect of worry about debt on later depression disappeared when baseline depression was controlled for, suggesting that poor mental health increases the likelihood of worry about debt. There is also some evidence that the relationship may be due to financial strain, rather than debt per se. This suggests, at a public health level, that recent increases in personal debt in the UK (Credit Action, 2013), may only impact mental health if they lead to an increase in stress and worry about debt. Thus psychological interventions may be of use to help work on the psychological burden of debt. For example cognitive behavioural therapy might be able to reduce worry about finances and work on negative thoughts about a person's financial situation. This may then attenuate the impact of debt on mental health. Similarly mental health professionals need to be aware that some studies suggest that those with poor mental health are more likely to be concerned about debt. Thus interventions to improve mental health may also help reduce worries over finances.

A number of limitations of this systematic review need to be acknowledged. Only three databases were searched, though the relatively small number of papers found via a hand and cited-by search suggest that the search was comprehensive. Only personal unsecured debt such as credit card debt was used, and relationships with secured loans or mortgage debt were not examined. Previous research has shown that those with a mortgage generally have lower levels of psychological distress than those renting (Cairney & Boyle, 2004), however problems with mortgage repayments such as being in arrears have been found to increase the risk of poor mental health (Taylor, Pevalin, & Todd, 2007). As mortgage debt is a different type of debt it is beyond the scope of this review to examine this. However, as previously acknowledged, debt is defined very differently in the literature meaning it is hard to conclude whether health problems are related to any debt, or only problematic debt or specific types of debt.

Nonetheless this review suggests that debt is related to health, and is therefore important to consider by health professionals. Wahlbeck and McDaid (2012) suggest that during the current economic crisis, a holistic view of mental health is needed with, for example, debt relief programmes in addition to input from mental health services. The Royal College of Psychiatrists has also publicised the issue (Fitch, 2006), suggesting that mental health professionals ask about debt and consider it as a potential cause of problems. During the recession the UK government has funded additional psychological therapy for those suffering from financial stress, and suggested that health services offer debt advice (Jenkins, Fitch, et al., 2009). However there is little research on how the impact of debt on health might be reduced. For example, it has been found that increasing repayment flexibility and offering debt advice reduces stress and increases optimism about finances (Field, Pande, Papp, & Park, 2012; Pleasence & Balmer, 2007). However whether this also impacts health is unclear. The specific mechanisms by which debt is related to health are therefore important to examine in further research in order to develop preventative interventions.

Additional longitudinal research is needed to demonstrate causality and help demonstrate whether debt leads to poor health, or whether poor health leads to greater levels of debt. It is important to consider that the relationship may well work both ways or be bi-directional. For example a vicious cycle may develop whereby someone in debt may be more likely to develop depression due to stress, rumination and catastrophic thinking about their debt. This depression may then lead to time off work and impaired problem solving which may worsen financial management skills, which would in turn worsen debt further still. Given increasing levels of debt in the current financial crisis, a psychological perspective may help understand relationships at both an individual and public health level, which can then be used to ensure that those with poor health are not at greater risk of problematic debt, and that those in debt are not at a greater risk of developing mental health problems.

Empirical Paper

Student Mental Health: A Prospective Cohort Study of the Impact of Increased Tuition Fees

Introduction

In recent years there has been an increasing demand for mental health services for students in the UK (RCP, 2011), as well an increase in the number of students committing suicide (Office for National Statistics, 2012). Estimates of the prevalence of psychiatric diagnosis vary considerably depending on research criteria used (RCP, 2011), however it is clear that mental health problems are common in this population. In the United States (US), Eisenberg, Gollust, Golberstein, and Hefner (2007) reported a depressive or anxiety disorder in 15% of college students. Using data from the national epidemiological survey, Blanco et al. (2008) showed that 7% of students had major depression and 12% an anxiety disorder. Overall prevalence rates for mental disorders were similar in students than non-students in this study (Blanco et al., 2008), though other research using self-report measures suggests students have poorer mental health than non-students (Carney et al., 2005). A recent study of several thousand students in the US found depression in 17%, generalized anxiety disorder in 7% and suicidal ideation in 6% (Eisenberg, Hunt, & Speer, 2013). Students show high levels of drug and alcohol use, though levels may be similar to non-students of the same age (Adlaf, Gliksman, Demers, & Newton-Taylor, 2003; Blanco et al., 2008).

University may represent a high risk time for students for a number of reasons: as Reavley, McCann, and Jorm (2012) point out, students start university at a high risk age for the onset of mental disorders. Exam pressure and not adjusting to the university environment have been shown to correlate with psychological stress and distress in students (Verger et al., 2009; Visnjic, Milosavljevic, & Djordjevic, 2009). In addition, mental health while at university is worse than pre university levels, and worsens over time (Bewick, Koutsopoulou, Miles, Slaa, & Barkham, 2010; Cooke, Bewick, Barkham, Bradley, & Audin, 2006), with poorer mental health for those in their final year (Houghton et al., 2012). Andrews and Wilding (2004) found that 9% of students with no symptoms of

depression prior to university had become clinically depressed halfway through their degree; similarly 20% had developed clinical levels of anxiety by this point.

Studies from a number of countries have shown that financial difficulties are related to poorer mental health (Cvetkovski, Reavley, & Jorm, 2012; Eisenberg et al., 2013; Norvilitis et al., 2006; Omigbodun et al., 2006) and higher levels of drug use (Berg et al., 2010; MacCall et al., 2001) in students. In the UK specifically, Roberts et al (1999, 2000) found that poor mental health was related to financial problems, considering dropping out for financial reasons and working outside of university. Jessop et al. (2005) found financial concern predicted emotional problems, whilst Carney et al. (2005) found poorer mental health for students in debt. A three year study by Cooke et al. (2004) found that students at all stages of study had poorer mental health if they were concerned about debt. Similarly Andrews and Wilding (2004) found that financial difficulties predicted depression after controlling for mental health symptoms prior to university. Jessop et al (2005) also found that English students had poorer mental health than students from Finland where levels of student debt are lower (Jessop et al., 2005). A number of studies in the wider UK general population have also shown a relationship between debt and mental health problems in particular depression, as well as substance dependence (Clark et al., 2012; Jenkins et al., 2008; Meltzer et al., 2013; Meltzer et al., 2010).

Due to government legislation passed in 2010, tuition fees for students from England and Wales increased from just over £3k a year in 2011 to £6-9k a year in 2012, with a predicted average annual fee of £8,360 (PUSH, 2011). As a result debt upon graduation is predicted to double to £59k for English students starting in 2012 (PUSH, 2011). Students from Scotland will pay nothing if they study in their own country, but up to £9k if they study elsewhere in the UK (UCAS, 2013). Those from Northern Ireland will pay £3.5k if they study at home or up to £9k if they study elsewhere (UCAS, 2013). As a result, levels of debt are predicted to be considerably lower for those from Scotland and Northern Ireland (PUSH, 2011).

Given previous research demonstrates a relationship between debt, financial difficulties and poor mental health in students, this increase in tuition fees and resulting debt levels may have a considerable impact on the mental wellbeing of UK students, and represent a potentially serious psychological public health problem. This research therefore aimed to

use a prospective cohort study to assess the impact of the fees increase on student mental health, and additionally focus on measuring symptoms of psychosis, eating disorders and alcohol dependence which have received little or no attention in previous research. It is hypothesised that those paying increased fees will show poorer mental health after controlling for potential confounding variables. It is also predicted that for both cohorts financial variables such as personal debt and financial stress will predict symptom severity.

Method

Design

A prospective cohort study was used, comparing students who started university in 2011 to those starting in 2012 when fees increased. First years specifically were recruited in order to minimise differences between the cohorts. Participants were then followed up prospectively and completed the survey twice in their first year.

Participants

Eligible participants were first year undergraduate students starting university in the UK in 2011 or 2012. International students were not included, as they pay different fees. As many participants as possible were recruited for the study via university students unions.

Standardised Measures

Questions were completed online (www.isurvey.soton.ac.uk). The following self-report standardised measures were used, copies of which are provided in Appendix 2. All were available free of charge and written permission was requested for use in this research (see Appendix 3).

- Alcohol Use Disorder Identification Test (AUDIT) (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993): this is a 10 item scale developed by the World Health Organisation to assess for alcohol problems via questions such as "How often do you have six or more drinks on one occasion". Total scores range from 0-40 with higher scores representing more severe alcohol problems, and scores above 7 suggesting possible abuse or dependence (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT has consistently been shown to have good psychometric properties (Reinert & Allen, 2007), and has been used to detect alcohol problems in American college students with a sensitivity of .91 and a specificity of .60 (Kokotailo et al., 2004).

- Clinical Outcomes Routine Evaluation- General Population Version (CORE-GP) (Sinclair, Barkham, Evans, Connell, & Audin, 2005): the CORE was designed to assess the effectiveness of therapeutic work with clinical populations. The CORE-GP is designed for use in non-clinical populations and is therefore appropriate for the current study. This version consists of 14 questions such as "I have felt unhappy". Scores range from 0-56 with higher scores representing worse global mental health. A mean item score above 1.49 for men and 1.63 for women suggests possible mental health problems (Sinclair et al., 2005). This has been shown to have good reliability, and correlate with the full version in students (Sinclair et al., 2005).

- 7 Item Generalized Anxiety Disorder Questionnaire (GAD-7) (Spitzer et al. 2006): this seven item questionnaire is designed to measure symptoms of general anxiety. Questions ask how often in the past two weeks symptoms such as "trouble relaxing" have been experienced. Total scores range from 0-21, with higher scores representing more severe anxiety. A score of 10 or more has been found to detect generalized anxiety disorder with a sensitivity of .89 and a specificity of .82 (Spitzer et al. 2006). This measure has also been shown to be reliable when used in the general population (Löwe et al., 2008).

- Centre for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977): this is a 20 item questionnaire designed for epidemiological research to measure depression in the general population. Participants are asked whether over the past week they have experienced symptoms such as "my sleep was restless". Total scores range from 0-60, with higher scores representing more severe symptoms and a score above 15 suggesting depression (Radloff, 1977). This has a Chronbach's Alpha of .80 when used in household surveys (Radloff, 1977), and has previously been used in research with students (Thompson, Goebert, & Takeshita, 2010).

- Eating Attitudes Test- 26 Item Version (EAT) (Garner, Olmsted, Bohr, & Garfinkel, 1982): this is a 26 item questionnaire designed to measure attitudes towards food and eating via questions such as "I feel that food controls my life". Total scores range from 0-78 with higher scores representing more severe difficulties. There are subscales of dieting, bulimia/food preoccupation and oral control, however for this research only the total score was used. A total score of 20 or more suggests a possible eating disorder (Garner et al.,

1982). This has good psychometric properties for detecting anorexia in women (Garner et al., 1982), and been used in research with both male and female students (Le Grange, Telch, & Tibbs, 1998).

- Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983): this is a 10 item questionnaire designed to measure global perceived stress using questions such as "in the last month, how often have you felt nervous and 'stressed'?" Total scores range from 0-40 with higher scores representing higher stress. This has been shown to have good reliability when used with students (Cohen et al., 1983).

- Family Affluence Scale (FAS) (Currie, Elton, Todd, & Platt, 1997): this is four item measure developed by the World Health Organisation to measure the socio-economic status of adolescents. Questions such as "do you have a bedroom to yourself" are used leading to scores from 0-9 with higher scores representing higher affluence. This measure has been used in a number of countries including England (Bewick et al., 2010). Although it has been designed for adolescents it is well suited to measure the socio-economic status of the families of students starting university.

- Index of Financial Stress (IFS) (Siahpush & Carlin, 2006): this consists of eight questions which measure recent financial stress, such as "I went without meals". Total scores range from 0-8 with higher scores representing greater financial distress/poverty. This measure has been shown to have a Chronbach's Alpha of around .70 (Siahpush & Carlin, 2006), however it has not yet been used with students.

- Prodromal Questionnaire- Brief Version[9] (PQB) (Loewy, Pearson, Vinogradov, Bearden, & Cannon, 2011): this consists of 21 questions designed to measure psychosis risk, such as "do you feel that other people are watching you or talking about you?" The total positive symptoms scale was used for this study ranging from 0-21 with higher score representing greater psychosis risk or more prodromal psychotic symptoms. There is also a distress scale which has a cut-off, however this was not used for this study as its psychometric properties in the general adult population are unclear.

[9] The 2011 cohort did not complete this measure until time two, as the measure was not published until then. An ethics amendment was made to include this measure from time two onwards.

All measures except for the FAS were repeated at both time points. The Chronbach's Alpha for the measures at time one are shown in table 11, which were all above .7. This cannot be calculated for the FAS due to different response options for different questions.

Table 11

Chronbach's Alpha of measures at time one

Measure	Chronbach's Alpha
IFS	.70
AUDIT	.86
CES-D	.95
CORE-GP Total	.90
EAT Total	.93
GAD-7	.92
PSS	.91
PQB Positive total*	.82

* Time one data for 2012 cohort, time two for 2011 cohort.

Author Constructed Questions

Questions were developed to measure demographics, finances, drug and alcohol use, work outside of university and health care use (see Appendix 4[10]). Some of these were based on a previous study on student finances and mental health (Roberts et al., 1999; 2000). Questions asked about type of degree, whether university was their first choice and demographics of age, gender, ethnicity, disability, mature student and accommodation. Questions on finances covered annual tuition fee amount, whether a grant was received, student loan amount, how student loan was perceived (debt have to pay back, debt might have to pay back or an extra tax rather than debt). There were also questions on debt outside of student loan, predicted total debt upon graduation, and predicted time taken to pay this back. Stress about debt was rated as 'Not stressed', 'A little', 'Quite' or 'Very'. Students were asked whether they had seriously considered abandoning university for financial reasons (for example whether they had talked to their tutor about doing so). Similarly a question asked whether they had seriously considered not coming to university

[10] Please note that not all of these questions are analysed in the current study.

for financial reasons (for example if they looked into other career options). Difficulty in paying bills was rated as 'None', 'Very little', 'Slight', 'Some', 'Great', or 'Very Great'.

Participants were also asked whether they had a term time job, whether they currently smoked, and whether they had had an alcoholic drink in the past seven days. Those who had were asked to estimate the total number of drinks in the past seven days for spirits, wine and beer separately. These were then combined into a total index of alcohol consumption. Participants were asked whether they had ever used the following drugs and if so if they had used in the past six months: LSD/Magic mushrooms, ecstasy/MDMA, speed/amphetamines, cannabis, cocaine, heroin/opiates, prescription drugs for non-medical reasons, or other drugs. Participants were asked if they had been told they had a mental health problem, how long ago this was, and whether they had seen a health professional about their mental health in the past 6 months. At time two, participants were also asked whether they were still at university.

Procedure

Every university student union in the UK was sent a standard email about the research (see Appendix 5). If student unions did not reply then university communication departments were also contacted. The email explained that previous research had shown a link between student debt and mental health, and as fees were increasing the study aimed to see whether the increase had an impact on mental health. Student unions were asked to forward another email on to first year undergraduates, or alternatively to post a brief summary on websites or social media (see Appendix 6). Adverts for students did not state that the research was examining the impact of the increase in tuition fees, as this may have biased results. Participants were entered into a lottery to win book vouchers for completion.

Ethics

This research conformed to ethical guidelines from the British Psychological Society and School of Psychology University of Southampton (BPS, 2010; UOS, 2013). Ethics approval was granted through the School of Psychology University of Southampton Ethics Committee. Ethics approval confirmation is show in Appendix 7[11]. All data was electronic. Contact details for follow-up were kept separately from other data to ensure

[11] Please note that some standardised measures mentioned in the ethics approval are not analysed in this study, and are being examined in future analyses of this data.

confidentiality. An information sheet was provided online which explained what was involved, any potential benefit or risks, eligibility for the study, confidentiality and details on ethics approval (see Appendix 8). It was specified that no specific feedback or advice would be available, and that the questions were of a personal nature so some participants may find them upsetting.

A consent form (see Appendix 9) had to be signed prior to participation indicating that participants had read the information sheet, agreed for their data to be used, and understood that the data was confidential and that they could leave at any time. The debriefing form included contact details for mental health support agencies, including details for those who might be experiencing suicidal ideation (see Appendix 10). The specific research question on tuition fees was not shared in recruitment adverts, information sheet or debriefing form, and participants were told the research was to examine whether 'factors such as finances, alcohol use and demographic variables affect students' mental health'. Thus a small amount of deception was involved. In line with BPS (2010) guidelines, this was done as it was essential to the research design, and this deception was outlined in the ethics application.

Missing data

For author-constructed questions there was little missing data and this was not filled-in. Specific demographic questions were missing for no more than three participants, and financial variables for no more than nine. For measures at time one, missing data increased in measures which were placed at the end of the survey, as some participants did not complete all questions. Participants were included if they completed demographic and financial questions and at least one measure. Data was missing for four participants on the IFS, three on the FAS, 16 on the AUDIT, eight on the CORE-GP, 12 on the EAT, 20 on the CES-D, 23 on the PQB, 36 on the GAD-7, and 44 on the PSS. For individual items on standardised measures, any participants who had completed at least 50% of the items for that measure had their data filled in. The mode for that item for all participants was used, and the subscales scores were then calculated as normal.

Statistical Analysis

Exploratory analyses using chi-square cross tables and a Multiple Analysis of Variance (MANOVA) analysed whether the two cohorts differed on any demographic or financial

variables, in order to determine which variables needed to be controlled for. Primary analyses consisted of hierarchical multiple linear or logistic regression for each measure separately. A mixed factorial MANOVA was also used to assess changes over time. The PQB was not completed by the 2011 cohort until time two. Thus for this measure 2011 at time two was compared to 2012 at time one, and 2011 time three to 2012 time two. Data was analysed using SPSS 20 for Windows.

Results

Recruitment

A recruitment flow diagram is shown in figure 2. At time one, 681 participants were included and 60.4% (*n*=411) of these re-completed at time two. Of the 114 universities contacted, 46 advertised the survey for the 2011 cohort, and 44 for the 2012 cohort. The universities covered a wide spread in geographical area and ranking (see Appendix 11 for a list of which universities took part). For the 2011 cohort, time one data was collected between February and June 2012, time two was collected in August and September 2012. For the 2012 cohort, time one data was collected between October and December 2012, and time two between February and March 2013.

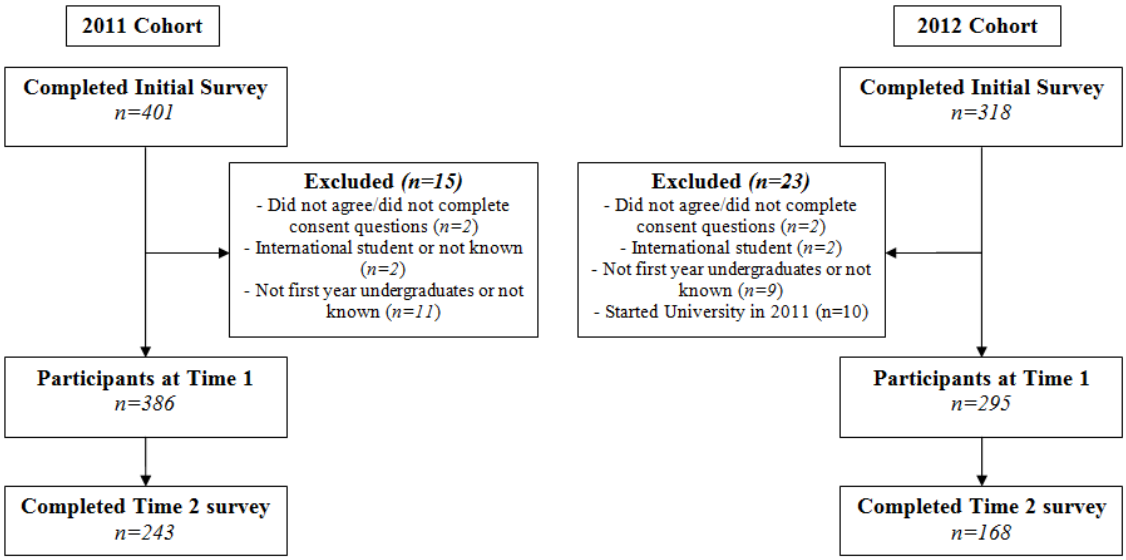

Figure 2: *Recruitment Flow Diagram*

Normality of Data

Boxplots were used to identify outliers more than 2 Standard Deviations (SD) outside the mean (see Appendix 12). At time 1, three outliers for anticipated total debt upon

graduation and one for the Alcohol Use Disorders Identification Test (AUDIT) total were removed. There were no outliers for time two data.

A Levene's test compared homogeneity of variance between the cohorts. This showed equal variances for age $F(1, 675) = 1.99$, $p>.05$, non-student loan debt $F(1, 654) = 0.20$, $p>.05$, total drinks in the past week $F(1, 677) = 1.11$, $p>.05$, Family Affluence Scale (FAS) $F(1, 676) = 1.16$, $p>.05$, Index of Financial Stress (IFS) $F(1, 675) = 0.54$, $p>.05$, Alcohol Use Disorders Identification Test (AUDIT) total $F(1, 663) = 3.25$, $p>.05$, Centre for Epidemiological Studies Depression Scale (CES-D) $F(1, 656) = 0.89$, $p>.05$, Clinical Outcomes Routine Evaluation General Population Version (CORE-GP) total $F(1, 671) = 0.04$, $p>.05$, EAT total $F(1, 667) = 0.09$, $p>.05$, 7 Item Generalized Anxiety Disorder Questionnaire (GAD-7) $F(1, 643) = 0.36$, $p>.05$, Perceived Stress Scale (PSS) $F(1, 635) = 0.07$, $p>.05$ and Prodromal Questionnaire- Brief Version positive symptoms total (PQB) $F(1, 513) = 1.92$, $p>.05$. Variances were significantly different for student loan this year $F(1, 644) = 149.89$, $p<.001$ and anticipated total debt upon graduation $F(1, 641) = 52.34$, $p<.001$.

A Kolmogorov-Smirnov test demonstrated that all variables were significantly non-normally distributed; age $D(677) = 0.35$, $p<.001$, Student loan this year $D(646) = 0.15$, $p<.001$, non-student loan debt $D(656) = 0.39$, $p<.001$, anticipated total debt upon graduation $D(642) = 0.09$, $p<.001$, total drinks in the past week $D(679) = 0.28$, $p<.001$, FAS $D(679) = 0.15$, $p<.001$, IFS $D(679) = 0.19$, $p<.001$, AUDIT $D(671) = 0.14$, $p<.001$, CES-D $D(659) = 0.08$, $p<.001$, CORE-GP total $D(673) = 0.06$, $p<.001$, EAT total $D(670) = 0.19$, $p<.001$, GAD-7 $D(645) = 0.13$, $p<.001$, PSS $D(637) = 0.05$, $p<.001$ and PQB $D(515) = 0.14$, $p<.001$. However with large samples this test can be significant even when the distribution is normal (Field, 2009, p. 148). Skewness and Kurtosis were therefore also used to assess normality of distribution (see Appendix 13). These were outside of the normal range (-2 to +2) for age, non-student loan debt, anticipated total debt upon graduation, student loan this year and EAT total. Histograms confirmed that these variables were non-normally distributed whilst the others were normally distributed (see Appendix 14). Non-normal variables were transformed into categorical variables, with EAT scores categorised as either above or below the cut-off.

Participant Characteristics

The demographic characteristics of the overall sample, along with differences between the cohorts identified via chi-square cross-tables are shown in Table 12. The sample was predominantly female, with more male participants in the 2011 than 2012 cohort. The 2011 cohort had more participants of white ethnicity, whilst the 2012 cohort had more participants from England. There were fewer humanities students in the 2012 cohort, and less students in rented accommodation in the 2012 cohort. Table 13 demonstrates the characteristics of the sample on mental health history and substance use. There were no cohort differences on having a diagnosed mental health problem and recent health service use. The 2011 cohort drank more heavily and was more likely to have used cannabis recently.

Annual tuition fees were clustered into 3 main categories: £0-2.9k[12], £3-4k, and £8-9k. Twenty-two participants reported paying outside of these categories and were excluded from analyses. Table 14 shows the cohort differences in financial variables. The 2012 cohort paid higher fees, had larger student loans, higher predicted debt upon graduation and were more likely to receive a grant. The 2012 cohort also predicted it would take longer to pay back the loan or that they would never pay it back, but were more likely to see it as an extra tax rather than debt. There was no difference between the cohorts on debt outside of student loan, stress about debt, difficulty paying bills, having a term-time job and considering not coming or abandoning university for financial reasons. A MANOVA found no difference on the IFS and FAS; Pillai's trace, $V = .001$, $F(2, 674) = 0.353$, $p > .05$.

At time one, AUDIT scores ranged from 0-34/40, *M*=8.4, *SD*=6.7, with 47.2% (*n*=316) scoring above the cut-off. CES-D scores ranged from 0-60/60, *M*=21.7, *SD*=13.8, with 60.5% (*n*=399) above cut-off. CORE-GP total scores ranged from 1-54/56, *SD*=11.1, *M*=23.6, with 52.6% (*n*=353) above cut-off. EAT total scores ranged from 0-71/78, Median=6, with 17.2% (*n*=115) above cut-off. GAD-7 scores ranged from 0-21/21, *M*=7.1, *SD*=5.8 with 30.4% (*n*=196) above cut-off. Scores on the PSS ranged from 0-40/50, *M*=18.8, *SD*=8.2. PQB positive symptoms total ranged from 0-20/21, *M*=4, *SD*=3.8.

[12] In the current sample the majority (63.9%, n=140) of those paying £0-2.9k a year were students originally from Scotland, whilst 32% (n=30) were from England. This is in line with the fees stats prior to 2012: Scottish students studying in Scotland paid no fees whilst English students studying in Scotland paid £1,820 a year. The £3-4k and £8-9k fees groups are predominantly from England (88.5%, n=184 and 96.4%, n=216).

Table 12

Differences between cohorts on demographics

Variable	Overall sample % (*n*)	2011 cohort % (*n*)	2012 cohort % (*n*)	$\chi 2$	Sig.
Gender					
Male	24 (163)	21.4 (82)	27.5 (81)	3.41	$p<.05$
Female	76 (516)	78.6 (302)	72.5 (214)		
Age					
17-19	78.1 (529)	75 (288)	82.3 (241)	5.37	$p>.05$
20-29	18.9 (128)	21.4 (82)	15.7 (46)		
30 plus	3 (20)	3.6 (14)	2 (6)		
Ethnicity*					
White	87.2 (592)	94.5 (363)	77.6 (229)	45.87	$p<.001$
Black	1.3 (9)	0.5 (2)	2.4 (7)		
Asian	2.7 (18)	0.5 (2)	5.4 (16)		
Mixed	7.1 (48)	3.4 (13)	11.9 (35)		
Other	0.9 (6)	0.3 (1)	1.7 (5)		
Have a Disability	8.5 (58)	8.1 (31)	9.2 (27)	0.25	$p>.05$
Mature student	10.5 (71)	10.2 (39)	10.8 (32)	0.08	$p>.05$
Part of UK from					
England	71.6 (486)	63 (243)	82.9 (243)	40.39	$p<.001$
Scotland	23.4 (159)	31.9 (123)	12.3 (36)		
Wales	2.9 (20)	2.3 (9)	3.8 (11)		
Northern Ireland	2.1 (14)	2.8 (11)	1 (3)		
Type of degree					
Business/Law	9 (61)	6.8 (26)	11.9 (35)	27.85	$p<.001$
Humanities	24 (163)	28.1 (108)	18.7 (55)		
Medicine	4 (27)	4.9 (19)	2.7 (8)		
Nursing	1.2 (8)	1.3 (5)	1 (3)		
Other Health Prof.	1.6 (11)	0.8 (3)	2.7 (8)		
Maths/Economics	5.9 (40)	5.2 (20)	6.8 (20)		
Sciences	16.2 (110)	18.2 (70)	13.6 (40)		
Human/Social sciences	20.2 (137)	19.8 (76)	20.7 (61)		
Engineering	4.1 (28)	2.3 (9)	6.5 (19)		
Other	13.7 (93)	12.5 (48)	15.3 (45)		
Term-time accommodation					
University halls	74.5 (506)	73.4 (282)	75.9 (224)	11.98	$p<.01$
Rent with other students	9.4 (64)	12.5 (48)	5.4 (16)		
At home with parent/guardian	10.8 (73)	8.9 (34)	13.2 (39)		
Other	5.3 (36)	5.2 (20)	5.4 (16)		

* Does not add up to 100% as some refused to state

Table 13

Differences between cohorts on mental health history, service use and substance use

Variable	Overall sample % (*n*)	2011 cohort % (*n*)	2012 cohort % (*n*)	χ^2	Sig.
Diagnosed with mental health problem	26.2 (178)	27.6 (106)	24.4 (72)	0.88	*p*>.05
When diagnosed					
0-6 months ago	13.2 (23)	14.4 (15)	11.4 (8)	8.83	*p*>.05
6-12 months ago	13.8 (24)	9.6 (10)	20 (14)		
1-2 years ago	20.7 (36)	19.2 (20)	22.9 (16)		
2-3 years ago	17.8 (31)	18.3 (19)	17.1 (12)		
3-5 years ago	14.9 (26)	20.2 (21)	7.1 (5)		
5 years or more ago	19.5 (34)	18.3 (19)	21.4 (15)		
Seen health professional about mental health, past 6 months	27.4 (186)	28.6 (110)	25.9 (76)	0.4	*p*>.05
Alcohol past week					
None	42.7 (290)	37.1 (143)	50 (147)	13.02	*p*<.001
Moderate (1-9 drinks)	35.3 (240)	37.1 (143)	33 (97)		
Heavy (10+ drinks)	21.9 (14)	25.7 (99)	17 (50)		
Current smoker	12.1 (82)	12 (46)	12.2 (36)	0.92	*p*>.05
Cannabis use					
Ever used	35.1 (238)	37.4 (144)	32 (238)	2.16	*p*>.05
Used past 6 months	17.1 (110)	19.9 (74)	13.2 (36)	4.92	*p*<.05
Ecstasy use					
Ever used	9.6 (65)	10.6 (41)	8.2 (24)	1.19	*p*>.05
Used past 6 months	3.9 (26)	3.4 (13)	4.5 (13)	0.49	*p*>.05
Amphetamine use					
Ever used	5.9 (40)	7.3 (28)	4.1 (12)	3.06	*p*>.05
Used past 6 months	1.9 (13)	2.1 (8)	1.7 (5)	0.13	*p*>.05
Cocaine use					
Ever used	6.5 (44)	7 (27)	5.8 (17)	0.42	*p*>.05
Used past 6 months	2.2 (15)	2.1 (8)	2.4 (7)	0.09	*p*>.05

Table 14

Differences between cohorts on financial variables

Variable	Overall sample % (*n*)	2011 cohort % (*n*)	2012 cohort % (*n*)	$\chi 2$	Sig.
Annual tuition fees					
£0-2.9k	33.5 (21)	48.7 (182)	13.3 (37)	466.99	$p<.001$
£3-4k	31.9 (208)	51.3 (192)	5.7 (16)		
£8-9k	34.6 (226)	0 (0)	81 (226)		
Receive a grant	44.5 (301)	39.8 (152)	50.5 (149)	7.74	$p<.01$
Student Loan this year					
£0	14.1 (91)	17 (61)	10.5 (30)	106.38	$p<.001$
Up to £3k	12.1 (78)	13.9 (50)	9.8 (28)		
£3-5k	39.5 (255)	45.1 (162)	32.4 (93)		
£5-8k	18.3 (118)	21.2 (76)	14.6 (42)		
£8k+	16.1 (104)	2.8 (10)	32.8 (94)		
How perceive student loan					
Debt will have to pay back	73.4 (493)	81.3 (308)	63.1 (185)	28.69	$p<.001$
Debt might have to pay back	9.4 (63)	7.4 (28)	11.9 (35)		
Extra tax (rather than debt)	17.3 (116)	11.3 (43)	24.9 (73)		
Debt apart from student loan					
£0	71.3 (468)	73.4 (210)	69.7 (258)	1.08	$p>.05$
<£1k	16.3 (108)	15 (43)	17.3 (64)		
£1k+	12.3 (81)	11.5 (33)	13 (48)		
Anticipated total debt upon graduation					
<£10k	21.7 (139)	27.8 (101)	13.6 (38)	202.54	$p<.001$
£10k-20k	20.4 (131)	27.5 (100)	11.1 (31)		
£20-35k	29.8 (191)	28.6 (140)	18.3 (51)		
£35k+	28.2 (181)	6.1 (22)	57 (159)		
How long predict will take to pay back					
0-5 years	15.2 (102)	19.6 (74)	9.5 (28)	95.72	$p<.001$
6-10 years	15.2 (102)	19 (72)	10.2 (30)		
11-15 years	20.1 (135)	25.9 (98)	12.6 (37)		
16-20 years	21.1 (142)	20.9 (79)	21.4 (63)		
21 years	16.1 (108)	9.8 (37)	24.1 (71)		
Will never pay it back	12.4 (83)	4.8 (18)	22.1 (65)		
How stressed about debt					
Very	8.2 (56)	9.6 (37)	6.4 (19)	4.17	$p>.05$
Quite	19.4 (132)	20.6 (79)	18 (53)		
A little	32.8 (223)	30.5 (117)	35.9 (106)		
Not	39.5 (268)	39.3 (151)	39.7 (117)		

Variable	Overall sample % (*n*)	2011 cohort % (*n*)	2012 cohort % (*n*)	$\chi 2$	Sig.
Difficulty paying bills					
Very great	4.6 (31)	4.2 (16)	5.1 (15)	2.51	*p*>.05
Great	6.5 (44)	6.3 (24)	6.8 (20)		
Some	20.9 (142)	22.4 (86)	19 (56)		
Slight	14.6 (99)	15.4 (59)	13.6 (40)		
Very little	25.8 (175)	24.2 (93)	27.9 (82)		
None	27.6 (187)	27.6 (106)	27.6 (81)		
Have a term time job	22.6 (154)	23.4 (90)	21.7 (64)	0.27	*p*>.05
Considered not coming to university financial reasons	27.7 (188)	26.8 (103)	28.9 (188)	0.36	*p*>.05
Considered abandoning university financial reasons	12.1 (82)	13.5 (52)	10.2 (82)	1.75	*p*>.05
Financial Measures	Mean(*SD*)	Mean(*SD*)	Mean(*SD*)	*F*	Sig.
FAS	5.77 (1.66)	5.72(1.62)	5.83(1.72)	0.353	*p*>.05
IFS	1.78 (1.68)	1.74(1.67)	1.78(1.68)		

Predictors of Mental Health at Time One

Linear Multiple Regression Formula

Linear multiple regression was used to examine cohort differences and the effect of financial variables after controlling for potential confounds. This was conducted separately for each measure except for the EAT as this was non-normally distributed. Variables were entered hierarchically. All demographic variables were added, even though some did not differ between the two cohorts, in order to control for potential confounds and identify mediators. Whether participants had a mental health diagnosis was not added as there was no difference between the cohorts. Alcoholic drinks in the past week was added for all measures except the AUDIT as there was a significant difference between the cohorts, and this may be a mediating factor. Cannabis use in the past 6 months was added as there was a difference between cohorts. All financial variables were added to assess effects on mental health.

The variables were entered in the same way for each measure, with a total of 23 steps. The full details are shown in Appendix 15. Cohort was entered first followed by tuition fees, demographic variables, financial variables and additional variables such as drinking in the past week. All categorical variables with more than one level were entered as dummy

variables, with the most common level being the dummy/reference variable. A significance level of $p<.05$ was set. Mean substitution was used for missing data.

In terms of the time one data meeting assumptions, the most conservative estimate is that the number of participants should be $n \geq 50 + (8 \text{ x number of predictors})$. At time one there were 60 predictors (including multiple comparisons with variables with multiple levels), requiring a minimum sample size of 530, below the sample size of 681. Data was interval quality and there was independence of cases. Single distribution, homogeneity of variance and outliers had already been checked. Bivariate distribution was checked using histograms for cohort and fees and appeared normal (see Appendix 16). There were too many variables for bivariate distribution to be checked for all predictors, but this appeared normal for IFS and FAS (see Appendix 17). Plotting ZRESID against ZPRED showed homoscedasticity for all variables except AUDIT and PQB where there was some heteroscedasticity (see Appendix 18). For the final models no predictors had tolerance <0.1, and all variables were included suggesting no co-linearity.

Linear Multiple Regression Results

The model was significant for CES-D (depression): F (68,612) = 3.55 $p<.001$, $R^2=.20$; AUDIT (alcohol dependence): F (66,614) = 3.22 $p<.001$, $R^2=.26$; CORE-GP (global mental health) F (68,612) = 4.15 $p<.001$, $R^2=.32$; GAD-7 (anxiety): F (68,612) = 2.58 $p<.001$, $R^2=.22$, PSS (stress): F (68,612) = 3.13 $p<.001$, $R^2=.26$ and PQB (psychotic symptoms): F (68,612) = 2.44 $p<.001$, $R^2=.21$. The β (standardised beta) values and significance for all variables in the final models where all variables had been entered are shown in table 15. For all regression results (tables 15-17), dummy/reference variables are in brackets, and $-\beta$ values indicate the dummy variable is associated with a higher score, whilst $+\beta$ values indicate the comparison variable is associated with a higher score.

There was no difference between the cohorts on any measures. CES-D and CORE-GP scores were higher for those paying lower fees. Demographic variables of gender, disability, family affluence, term time accommodation and type of degree were significant predictors, as was month of completion. Those with smaller student loans had higher AUDIT scores, whilst those with larger loans had higher PQB scores. AUDIT scores were also related to higher non-student loan debt. Greater stress about debt predicted higher scores on the CES-D, CORE-GP, GAD-7 and PSS. Higher IFS scores predicted higher

scores on the CES-D, AUDIT, CORE-GP, PSS and PQB. Those who had considered not coming to university for financial reasons had higher scores on the CES-D, CORE-GP, GAD-7 and PQB. Those who were at university through clearing had higher CES-D, CORE-GP, PSS and PQB scores. Those who had not drunk alcohol in the past week had higher GAD-7 scores, whilst cannabis use in the past 6 months predicted higher scores on the CES-D.

Table 15

Time One Linear Regression Final Models

Predictor	CES-D Depression *β*	AUDIT Alcohol *β*	CORE-GP Global MH *β*	GAD-7 Anxiety *β*	PSS Stress *β*	PQB Psychotic *β*
Cohort						
(2011) vs. 2012	0.10	-0.04	0.07	0.07	0.03	0.01
Fees						
(£8-9k) vs. £3-4k	0.19*	0.12	0.2*	0.06	0.12	-0.05
(£8-9k) vs. £0-2.9k	0.19*	0.07	0.19*	0.03	0.14	-0.04
Demographic Variables/Confounds						
Gender						
(Female) vs. Male	-0.07	0.11**	-0.07	-0.1*	-0.12**	0.05
Disability						
(None) vs. Disability	0.11**	-0.05	0.14***	0.09*	-0.07	0.05
Mature Student						
(Not) vs. Mature student	-0.10*	-0.08	-0.08	-0.09	-0.08	-0.05
Family Affluence						
FAS Total	0.01	0.08	-0.06	-0.04	-0.05	-0.11*
Age						
(17-19) vs. 20-29	0.02	0.04	0.07	0.03	-0.01	0.03
(17-19) vs. 30+	0.0	0.03	0.0	-0.02	-0.03	0.02
Ethnicity						
(White) vs.						
Other	-0.03	0.01	-0.02	-0.04	-0.06	-0.01
Mixed	0.06	0.06	0.03	0.01	0.04	0.03
Asian	0.02	-0.06	0.02	0.03	0.04	-0.02
Black	0.02	-0.06	0.01	-0.01	0.04	0.04
Term Time Accommodation						
(Halls) vs.						
Rented	-0.03	-0.13**	-0.02	-0.03	0.02	-0.08
Home	0.05	-0.1*	0.0	0.03	0.06	0.12**
Other	-0.05	-0.1*	-0.06	-0.01	0.02	-0.06
Area of Study						
(Humanities) vs.						
Business/Law	-0.05	0.09	-0.03	-0.03	-0.05	-0.06
Medicine	-0.03	-0.01	-0.03	-0.01	0	-0.04
Nursing	0.03	-0.06	0.01	0.0	0.02	0.02
Other Health Prof.	0.01	0.04	0.02	-0.02	0.02	0.01
Maths/Economics	-0.05	-0.03	-0.01	-0.07	-0.03	-0.08
Sciences	0.0	-0.05	-0.02	-0.02	-0.02	-0.04
Social/Human Sciences	0.0	-0.02	-0.01	-0.02	-0.02	-0.12*
Engineering	-0.08	0.01	-0.08*	-0.06	-0.08	-0.03
Other	-0.02	0.0	-0.02	-0.02	-0.02	0.05
Month Survey Completed						
(March) vs.						
Feb	-0.05	-0.01	-0.02	0.01	-0.03	-0.01

	CES-D	AUDIT	CORE-GP	GAD-7	PSS	PQB
	β	*B*	*B*	*β*	*β*	*β*
Apr	-0.04	-0.01	-0.05	0.83	-0.03	-0.04
May	0.02	0.06	0.01	-0.04	0.01	-0.02
June	0.03	0.0	0.03	0.05	0.03	-0.02
Oct	0.04	0.05	0.05	0.01	0.06	0.01
Dec	0.02	-0.05	0.08*	-0.01	0.05	0.01
Part of UK from (England) vs.						
Northern Ireland	0.0	0.03	0.02	-0.01	-0.01	0.0
Scotland	0.03	0.04	0.01	0.08	0.02	-0.03
Wales	0.05	-0.07	0.06	0.06	-0.01	0.04
Financial Variables						
Student Loan this year (£3-5k) vs.						
None	0.03	0.08	0.01	0.0	0.0	0.03
Up to £3k	-0.03	0.13**	-0.08	-0.03	-0.03	-0.01
£5-8k	0.02	0.08	-0.02	0.01	-0.02	0.0
£8k+	0.08	0.08	0.04	0.01	0.0	0.11*
Other Current Debt (Nothing) vs.						
Up to £1k	0.0	0.09*	0.03	0.0	-0.02	-0.01
£1k+	-0.07	0.04	-0.04	-0.02	-0.05	-0.04
Anticipated debt upon graduation (£20-35k) vs.						
Under £10k	0.03	-0.02	0.08	0.06	0.05	0.06
£10-20k	0.01	-0.01	0.0	-0.02	0.01	-0.01
£35k+	-0.02	0.0	0.02	0.01	-0.01	-0.07
Financial Stress						
Total IFS	0.15**	0.20***	0.14**	0.08	0.11*	0.12*
Problems Paying Bills (No Difficulty) vs.						
Very Great	0.09	-0.08	0.08	0.1	0.05	0.06
Great	0.03	-0.03	0.07	0.04	0.05	0.02
Some	0.01	-0.03	0.02	0.02	0.01	-0.01
Slight	0.0	0.03	0.05	0.02	0.03	0.01
Very Little	-0.01	0.03	0.02	0.02	0.02	-0.03
Receive a Grant (No Grant) vs. Grant	-0.01	0.03	-0.02	-0.06	0.01	-0.02
How Stressed about Debt (Not at all) vs.						
A Little	0.15**	0.06	0.14**	0.09	0.17***	0.0
Quite	0.15**	0.03	0.16**	0.11*	0.15**	0.01
Very	0.16**	0.0	0.18***	0.17**	0.23***	0.03
Predicted Time to Pay back Student Loan (16-20 years) vs.						
I will never pay it back	0.07	-0.02	0.05	-0.04	0.05	-0.04
21+ years	0.06	-0.03	0.05	0.02	0.06	-0.07
11-15 years	0.01	0.07	0.01	-0.02	0.01	-0.04
6-10 years	-0.01	-0.02	-0.02	-0.01	0.0	-0.03

	CES-D *β*	AUDIT *β*	CORE-GP *B*	GAD-7 *β*	PSS *β*	PQB *β*
0-5 years	0.01	0.07	-0.01	-0.01	-0.01	-0.07
Consider Dropping out for Financial Reasons						
(No) vs. Yes	0.05	0.05	0.05	-0.01	0.05	0.01
Consider not coming to University for Financial Reasons						
(No) vs. Yes	0.13**	0.02	0.1*	0.13**	0.08	0.17***
How Student Loan is Perceived						
(Debt will have to pay back) vs.						
An extra tax rather than debt	-0.01	0.06	0.03	-0.04	0.0	-0.03
Debt might have to pay back	0.06	0.05	-0.07	-0.01	0.05	0.07
Other Variables/Possible Mediators						
Term Time Job						
(No Job) vs. Job	-0.06	0.0	-0.07	-0.05	-0.04	-0.04
University Preference						
(First Choice) vs.						
Through Clearing	0.09**	0.02	0.09*	0.05	0.09*	0.14***
Back up/Insurance choice	0.01	0.01	0.01	-0.02	-0.01	-0.04
Alcohol Consumption in Past Week						
(No Drinking) vs.						
Moderate Drinking 1-9 drinks	-0.08	-	-0.04	-0.1*	-0.06	-0.02
Heavy Drinking 10+ drinks	0.0	-	0.0	-0.01	0.04	0.05
Cannabis Use in Past 6 Months						
(No use) vs. Use	0.08*	0.24	0.07	0.04	0.04	0.07

*=p<.05, **p<.01, ***p<.001

Mediators in Time One Data

Each step of the time one models was analysed to identify possible mediators of the effect of financial variables. A variable was considered to be a mediator if it was a significant predictor (p<.05), until a new variable which was also a significant predictor was entered at which point it became non-significant for all subsequent steps.

CES-D (Depression):

FAS was a significant predictor at step 10 (β=-0.09, p<.05), however this was non-significant (β=-0.08, p>.05), when debt outside of student loan was added in step 11. However this effect of non-student debt became non-significant (β=-0.00, p>.05) when IFS was added at step 13. Difficulty paying bills was significant at step 15 for very great vs. none (β=0.18, p<.001), however this became non-significant (β=.09, p>.05) when stress about debt was added at step 16. Maths/Economics had higher scores than

humanities students at step 12 (β=-.09, p<.05), however this was non-significant (β=-.06, p>.05) when IFS (Index of Financial Stress) was added at step 13.

AUDIT (Alcohol Dependence):

At step 1 the 2011 cohort had higher scores (β=-0.14, p<.001), however this was non-significant (β=-0.02, p>.05), when tuition fees was added at step 2. Paying £3-4k tuition fees predicted higher scores than paying £8-9k at step 10 (β=.17, p<.05), however this was non-significant at step 11 (β=.15, p>.05) when non-student loan debt was added. Scores were higher for those of mixed ethnicity than white ethnicity at step 12 (β=.08, p<.05), however this was non-significant at step 13 (β=.07, p>.05), when IFS was added. At step 9 business/law students had higher scores than humanities students (β=.09, p<.05), however this was non-significant at step 10 (β=.08, p>.05), when student loan amount was added.

CORE-GP (Global Mental Health):

FAS was a significant predictor at step 12 (β=-.14, p<.01), but this was non-significant at step 13 (β=.08, p>.05), when IFS was added. Those from Wales had higher scores than those from England at step 12 (β=.08, p<.05), but this was non-significant at step 13 (β=.07, p>.05), when IFS was added. Those who owed up to £1k in non-student loan debt scored higher than those who owed nothing at step 12 (β=.11, p<.01), however this was non-significant at step 13 (β=.03, p>.05) when IFS was added. Difficulty paying bills was significant at step 15 (very great vs. none β=.18, p<.001; great vs. none β=.19, p<.05, some vs. none β=.11, p<.05), however these became non-significant at step 16 (very great vs. none β=.09, p>.05; great vs. none β=.07, p>.05, some vs. none β=.02, p>.05), when stress about debt was added. Scores were higher for those who completed the survey in December than March at step 13 (β=.08, p<.05), however this was non-significant at step 14 (β=.06, p>.05) when difficulty paying bills was added.

GAD-7 (Anxiety)

Scores were higher at step 12 for those in humanities compared to maths/economics (β=-.09, p<.05) and engineering (β=.10, p<.05), however these were non-significant at step 13 (maths/economics β=-.06, p>.05; engineering β=-.08, p>.05) when IFS was added. Scores were higher for those from Wales than those from England at step 12 (β=.08, p<.05), but not at step 13 (β=.07, p>.05) when IFS was added. At step 15 those who had some difficulty paying bills had higher scores than those with no difficulty (β=.10, p<.05),

however this was non-significant at step 16 (β=.02, p>.05), when stress about debt was added. Those who had very great difficulty paying bills had higher scores than those with no difficulty at step 17 (β=.11, p<.05), however this was non-significant at step 18 (β=.09, p>.05), when considering not coming to university for financial reasons was added. At step 21 those who were a little stressed about debt had higher scores than those who were not stressed about debt (β=.09, p<.05), however this was non-significant at step 22 (β=.09, p>.05), when alcohol use in the past week was added. Finally, IFS was significant at step 17 (β=.12, p<.05), however this was non-significant at step 18 (β=.10, p>.05), when considering not coming to university for financial reasons was added.

PSS (Stress)

PSS scores were higher for those who completed the survey in October than March at step 13 (β=.09, p<.05), however this was non-significant at step 14 (β=.07, p>.05), when difficulty paying bills was added (very great vs. none β=.161, p<.01; great vs. none β=.1, p<.05; some vs. none β=.11, p<.05). This effect at step 15 of difficulty paying bills was, however, non-significant at step 16 (very great vs. none β=.05, p>.05; great vs. none β=.04, p>.05; some vs. none β=.01, p>.05), when stress about debt was added. Finally, lower FAS scores significantly predicted higher PSS at step 13 (β=-.11, p<.01), however this was non-significant at step 13 (β=-.06, p>.05), when IFS was added,

PQB (Psychotic Symptoms)

PQB scores were higher for humanities than maths/economics students at step 12 (β=-.1, p<.05), however this was non-significant at step 13 (β=-.08, p>.05), when IFS was added.

Logistic Regression for Eating Attitudes Test

A binary logistic regression was conducted to predict being above the cut-off on the Eating Attitudes Test 26 Item Version (EAT) at time one. Predictors were entered in a hierarchical fashion, however not all variables could be included as this led to maximum number of iterations being reached. Cohort, fees, gender and all financial variables were entered in a total of nine steps (see Appendix 19). In terms of assumptions for the logistic model, outliers had already been dealt with and multicollinearity was not problematic in the linear models. Logistic regression cannot be used to examine the same people at different points in time (Field, 2009, p. 273). Thus this was appropriate to examine time one but not time two data.

A total of 535 cases were analysed (146 were excluded as they had missing data). The final model significantly predicted being above the cut-off (omnibus $\chi 2$= 76.14, *df*=38, *p*<.001), accounting for 13.3% to 22.9% of variance. Overall 19.1% were correctly identified. The Hosmer and Lemeshow test was non-significant = 4.41, *F*=8, *p*>.05, suggesting a good fitting model. Table 16 displays the Wald statistics and odds ratios (Exp(B)) for all of the variables, demonstrating that only female gender and higher IFS scores significantly predicted being above the cut-off.

Table 16

Predictors in logistic regression for Eating Attitudes Test

Variable (Reference Category)	B	SE	Wald	Sig	Exp (B)	95% CI Lower	Upper
Cohort (2011)	-0.10	0.56	0.03	*NS*	0.91	0.31	2.69
Annual Tuition Fees (£8-9k)			1.50				
£0-2.9k	0.14	0.67	0.04	*NS*	1.15	0.31	4.29
£3-4k	0.53	0.66	0.65	*NS*	1.70	0.47	6.17
Gender (Female)	-1.77	0.51	11.90	*p*<.01	0.17	0.06	0.46
FAS	0.15	0.09	2.62	*NS*	1.16	0.97	1.38
Student Loan this Year (£3-5k)			1.91				
None	-0.23	0.77	0.09	*NS*	0.79	0.18	3.56
Up to £3k	-0.25	0.63	0.16	*NS*	0.78	0.23	2.68
£5-8k	0.04	0.42	0.01	*NS*	1.04	0.45	2.38
£8k+	-0.46	0.49	0.88	*NS*	0.63	0.24	1.64
Anticipated Debt Upon Graduation (£20-35k)			2.12				
Under £10k	0.25	0.55	0.20	*NS*	1.28	0.43	3.77
£10-20k	-0.47	0.43	1.19	*NS*	0.63	0.27	1.45
£35k+	0.12	0.43	0.07	*NS*	1.12	0.49	2.60
Non-student loan Debt (Nothing)			0.06	*NS*			
Up to £1k	-0.05	0.39	0.01	*NS*	0.95	0.44	2.06
£1k+	0.07	0.42	0.03	*NS*	1.07	0.47	2.46
IFS	0.24	0.11	4.50	*p*<.05	1.27	1.02	1.59
Difficulty Paying Bills (No Difficulty)			2.26				
Very Great	0.39	0.82	0.23	*NS*	1.48	0.30	7.40
Great	0.03	0.69	0.00	*NS*	1.03	0.27	3.96
Some	-0.24	0.48	0.25	*NS*	0.79	0.31	2.01
Slight	-0.23	0.49	0.23	*NS*	0.79	0.30	2.06
Very Little	-0.50	0.43	1.32	*NS*	0.61	0.26	1.42
How Perceive Student Loan (Debt have to pay back)			0.39				
Debt might have to pay back	-0.18	0.55	0.11	*NS*	0.83	0.28	2.46
An extra tax rather than debt	0.17	0.38	0.20	*NS*	1.19	0.57	2.48
How Stressed About Debt (Not at all)			1.17				
Very	-0.08	0.60	0.02	*NS*	0.92	0.29	2.97
Quite	0.18	0.43	0.17	*NS*	1.19	0.51	2.79
A Little	-0.21	0.38	0.31	*NS*	0.81	0.38	1.71
Predicted Time to Pay Back Loan (0-5 years)			7.56				
6-10 years	-0.02	0.75	0.00	*NS*	0.98	0.23	4.25
11-15 years	1.09	0.67	2.62	*NS*	2.97	0.79	11.09
16-20 years	0.62	0.71	0.77	*NS*	1.87	0.46	7.54

	B	SE	Wald	Sig	Exp (B)	95% CI Lower	Upper
21 years	1.20	0.74	2.63	*NS*	3.32	0.78	14.13
Never	1.00	0.76	1.73	*NS*	2.72	0.61	12.14
Considered Abandoning Uni. for Financial (No)	0.14	0.47	0.09	*NS*	1.15	0.45	2.91
Considered Not Coming to Uni for Financial (No)	0.51	0.32	2.43	*NS*	1.66	0.88	3.14
Term Time Job (No)	-0.23	0.34	0.47	*NS*	0.79	0.41	1.54
University Choice (First Choice)			0.64	*NS*			
Insurance or Back-Up	-0.32	0.50	0.42	*NS*	0.72	0.27	1.92
Through Clearing	0.23	0.55	0.18	*NS*	1.26	0.43	3.73
Past Week Drinking (None)			4.73				
Moderate, 1-9 drinks	-0.22	0.32	0.47	*NS*	0.81	0.43	1.50
Heavy, 10+ drinks	0.57	0.36	2.59	*NS*	1.78	0.88	3.58
Used Cannabis in past 6 months (No)	0.24	0.37	0.41	*NS*	1.27	0.61	2.61

NS= Non-significant ($p>.05$)

Predictors of Mental Health at Time Two

Time Two Completion

Levels of completion at time two were similar for the 2011 (63%, n=243) and 2012 (56.9%, n=168) cohorts. A logistic regression analysed whether any variables predicted drop out. Cohort, gender and all finances variables were added in a hierarchical way as were time one subscale scores and alcohol and cannabis use. The final model significantly predicted time two completion; omnibus $\chi 2$= 178.63, df=45, $p<.001$, 36.7%-56.4% variance explained and 77.9% correctly identified. The Hosmer and Lemeshow test was non-significant = 8.3, df=8, $p>.05$, suggesting a good fitting model. Higher time one Index of Financial Stress (IFS) scores significantly predicted non-completion: B=-.374, Wald=4.74, $p<.05$ as did higher Prodromal Questionnaire brief version (PQB) positive symptoms total B=.153, Wald=5.98, $p<.05$.

Changes Over Time

A mixed factorial MANOVA assessed changes in scores between time one and two, and interactions with tuition fees. A 2 (time one, time two) by 3 (£0-2.9k, £3-4k, £8-9k) design was used with CES-D, GAD-7, CORE, PSS and AUDIT scores as the dependent variables. EAT could not be included due to non-normal distribution. PQB data was collected at time

3 for the 2011 cohort, at which point a number of participants had dropped out[13]. Therefore including this in the MANOVA would have reduced the sample size, so the PQB was analysed as a separate analysis of variance. In terms of meeting necessary assumptions, the data was interval and normally distributed.

There was a significant main effect of time, with a decrease over time on the GAD-7 (Anxiety); $F(1,336)=19.78$, $p<.001$, CORE (Global Mental Health); $F(1,336)=12.63$, $p<.001$, CES-D (Depression); $F(1,336)=23.07$, $p<.001$, PSS (Stress); $F(1,336)=18.98$, $p<.001$, and PQB (Psychotic Symptoms); $F(1,280)=10.82$, $p<.001$. There was no main effect of time on AUDIT (Alcohol Dependence) scores; $F(1,336)=0.61$, $p>.05$. There was no main effect of tuition fees on scores on the GAD-7 $F(2, 336)=1.22$, $p>.05$; CORE $F(2, 336)=0.11$, $p>.05$, CES-D $F(2, 336)=0.48$, $p>.05$, PSS; $F(1, 336)=0.16$, $p>.05$ or PQB; $F(1,280)=1.46$, $p>.05$. There was a significant main effect of tuition fees on scores on the AUDIT; $F(1,336)=5.45$, $p<.01$. A bonferonni post-hoc test revealed that scores were significantly higher for those paying £0-2.9k than £8-9k; Mean Difference=2.19, $p<.05$, and higher for those paying £3-4k than £8-9k; Mean Difference=2.16, $p<.05$.

There was no significant time*tuition fees interaction for score on the AUDIT; $F(1,336)=1.11$, $p>.05$ or PQB; $F(1,280)=2.6$, $p>.05$. There was however a significant interaction for the GAD-7; $F(2, 336)=4.83$, $p<.01$, CORE; $F(2, 336)=4.90$, $p<.01$, CES-D; $F(2,336)=7.03$, $p<.001$ and PSS; $F(1,336)=5.58$, $p<.01$. Figures 3 to 6 display the interactions, which demonstrate that scores decreased over time for those paying £0-2.9k or £3-4k, but stayed the same for those paying £8-9k.

[13] In the 2011 cohort, 179 participants completed time 3 and 162 time 4. Data collection is on-going with time 3 data not yet collected for the 2012 cohort.

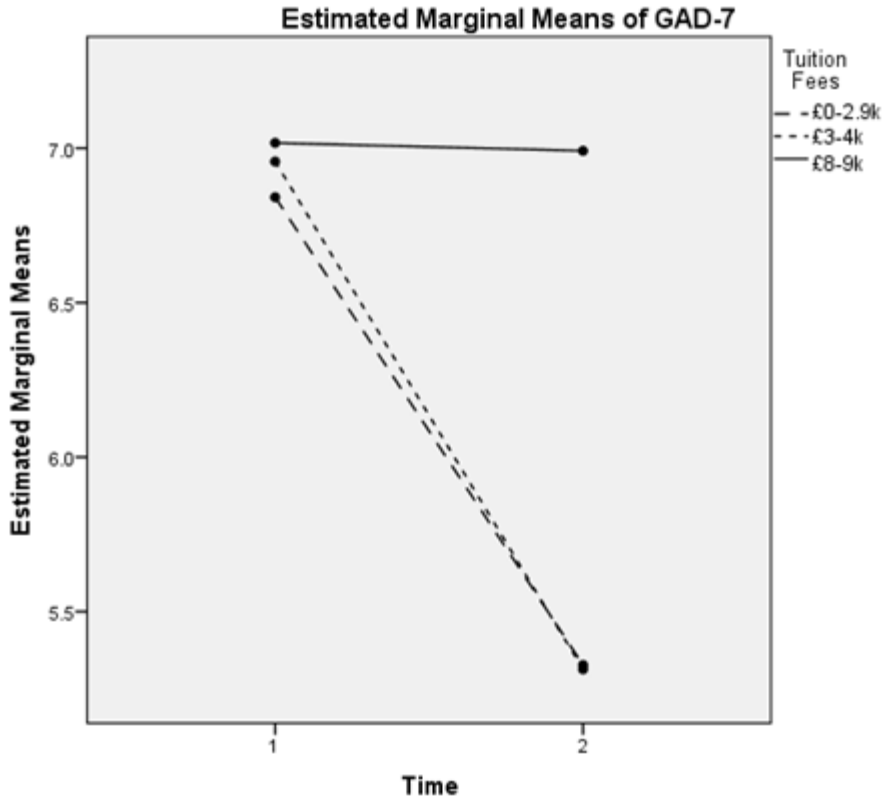

Figure 3: Interaction between Time and Fees for GAD-7 (Anxiety)

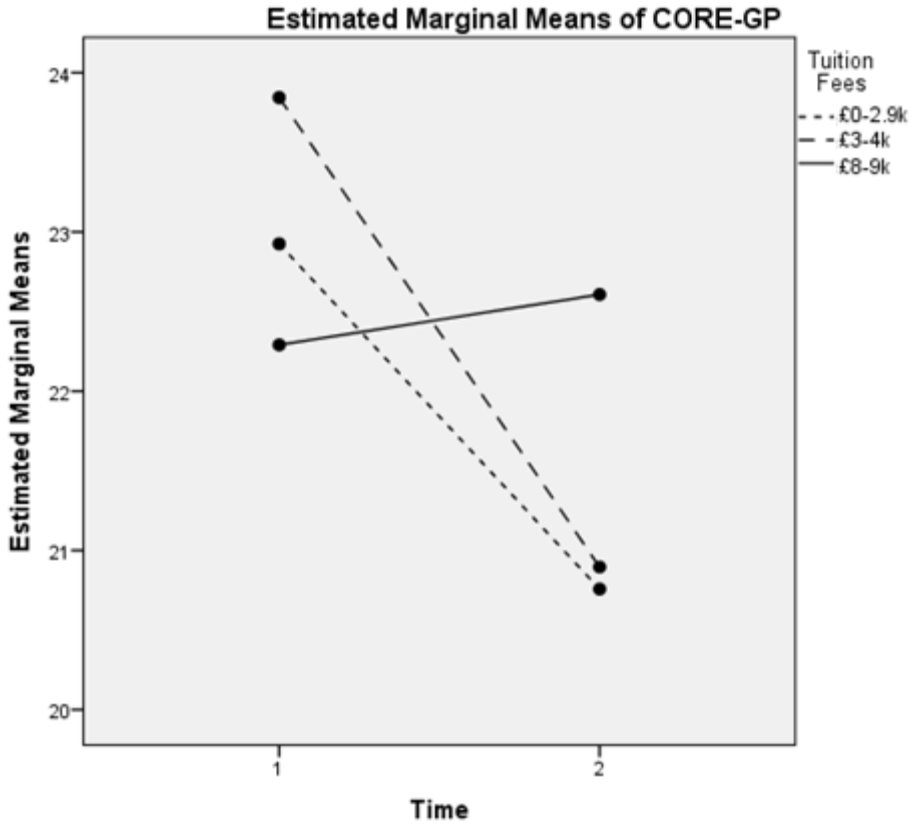

Figure 4: Interaction between Time and Fees for CORE-GP (Global Mental Health)

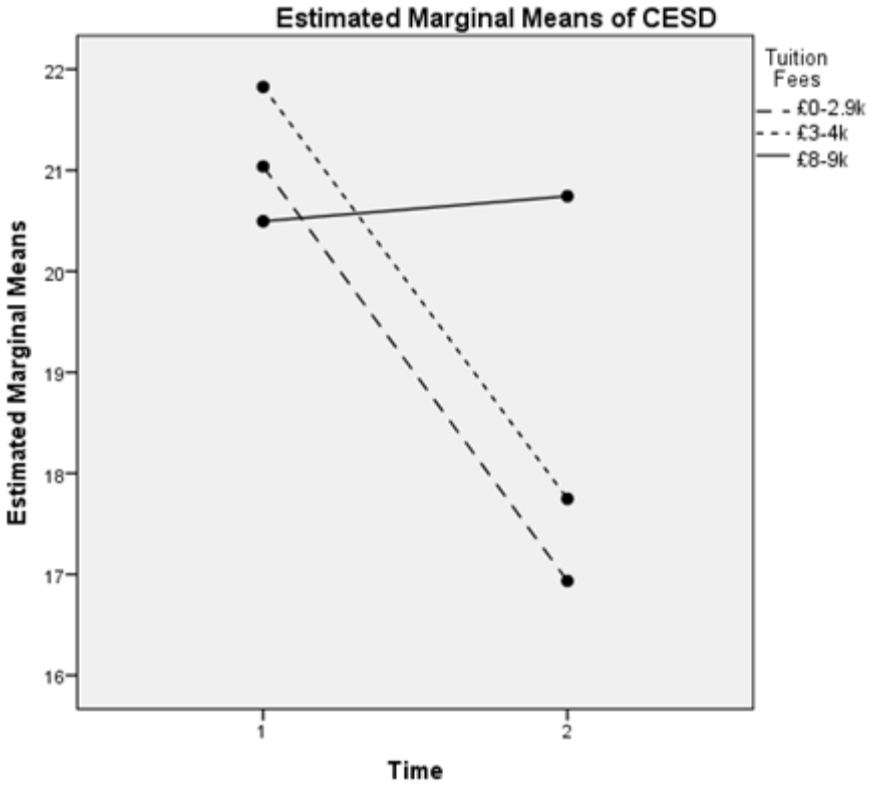

Figure 5: Interaction between Time and Fees for CES-D (Depression)

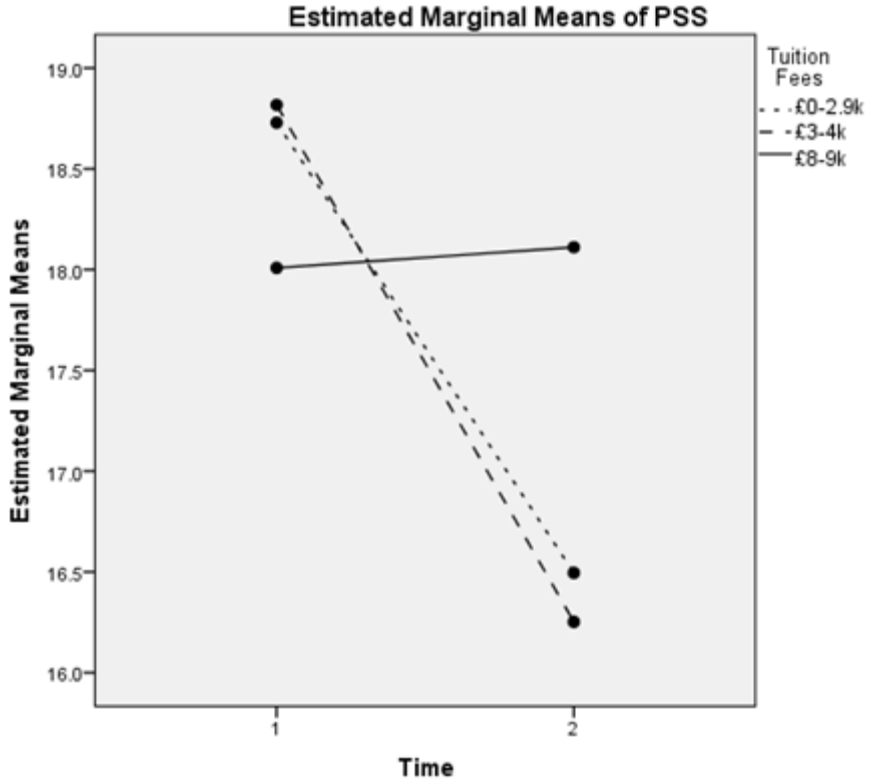

Figure 6: Interaction between Time and Fees for PSS (Stress)

Hierarchical Multiple Regression Formulas

The same time one predictor variables were entered in the same order to predict scores at time two. Two additional variables were entered; whether participants were still at university, and the time one score for that measure (see Appendix 20 for details). This was to see whether financial variables at time one were related to mental health at time two, after controlling for baseline scores. In terms of meeting assumptions at time two, all measures were normally distributed (details are not given here for the sake of conciseness), and there were no outliers. Bivariate distribution appeared normal for cohort and fees (see Appendix 21) and IFS and FAS (see Appendix 22). There was some heteroscedasticity for GAD-7 and PQB scores (see Appendix 23). At time two there were 62 predictors, requiring a sample size of 546 minimum based on the most conservative estimate. The sample size of 411 was below this, however a formula of $n \geq 104 +$ number of predictors can be used when examining the contribution of individual predictors, this would require only 164 participants. All variables were included in the final models and only cohort and month completed had tolerance <0.1 suggesting some co-linearity.

Hierarchical Multiple Regression Results

At time two the final model was significant for CES-D (Depression): F (66,344) = 7.72 p<.001, R^2=.60; AUDIT (Alcohol Dependence): F (64,346) = 14.88 p<.001, R^2=.73; CORE-GP (Global Mental Health): F (66,344) = 8.42 p<.001, R^2=.62; GAD-7 (Anxiety): F (66,344) = 6.91 p<.001, R^2=.57, PSS (Stress): F (66,344) = 5.89 p<.001, R^2=.53 and PQB (Psychotic Symptoms): F (66,344) = 6.47 p<.001, R^2=.55. Table 17 shows the final models with and without time one scores included. Demographic variables of having a disability, female gender, area of UK, age and area of study were significant predictors as was month of completion. Neither cohort nor fees were significant predictors for any of the measures at time two. Those with a student loan of more than £8k had higher scores on the PBQ than those with a £3-5k loan, however this was no longer significant when time one scores were added.

IFS scores significantly predicted CES-D and GAD-7 even after time one was controlled for. IFS also predicted CORE scores, but not when time one was added. Stress about debt was a significant predictor for CES-D, CORE, GAD-7 and PSS, but not when time one scores were included. Those predicting 16-20 years to pay back their student loan had higher scores than those predicting 6-10 years on the CORE, GAD-7 and PSS even after

time one was included. Those who had considered dropping out for financial reasons had higher CES-D scores, but not when time one was added. Those who saw their loan as debt they ‘might have to pay back’ had higher scores than ‘will have to pay back’, but not when time one was added. Those seeing loan as ‘an extra tax’ or ‘debt might have to pay back’ had higher scores on the CORE than ‘debt will have to pay back’, but only when time one scores were added. Being at university through clearing was associated with higher scores on the CES-D, CORE and GAD-7 until time one scores were added. Those who were at their first choice university had higher scores than those with a backup choice on the AUDIT when time one scores were added. Finally, cannabis use in the past 6 months was a significant predictor of AUDIT scores, but not when time one was included.

Table 17

Time Two Linear Regression Final models

Predictor	CES-D Depression *β* *Final Model*	*+T1 score*	AUDIT Alcohol *β* *Final Model*	*+T1 score*	CORE-GP Global MH *β* *Final Model*	*+T1 score*	GAD-7 Anxiety *β* *Final Model*	*+T1 score*	PSS Stress *β* *Final Model*	*+T1 score*	PQB Psychotic *β* *Final Model*	*+T1 score*
Cohort												
(2011) vs. 2012	1.55	1.61	-.90	-.86	1.49	1.20	1.68	.39	.53	-.45	1.59	.80
Fees												
(£8-9k) vs. £3-4k	.08	-.02	.11	.01	.20	.07	-.09	-.08	.07	.02	.17	.17
(£8-9k) vs. £0-2.9k	-.01	-.05	.06	-.02	.10	.03	-.16	-.07	-.03	-.06	.20	.15
Demographic Variables/Confounds												
Gender												
(Female) vs. Male	-.09	-.04	.09	.03	-.04	.00	-.18**	-.10*	-.15*	-.08	-.07	-.07
Disability												
(None) vs. Disability	.18***	.09*	-.12*	-.05	.17**	.08*	.18***	.10*	.17***	.12**	.12*	.08
Mature Student												
(Not) vs. Mature student	-.05	.01	-.20	-.08	-.04	-.04	-.07	.00	-.03	.03	-.14	-.04
Family Affluence												
FAS Total	.02	.0	.03	.00	-.03	.00	-.05	-.04	-.03	-.03	-.06	.01
Age												
(17-19) vs. 20-29	.04	.04	.12	.05	-.02	-.04	.04	.02	-.03	-.02	.00	-.03
(17-19) vs. 30+	.02	.04	.19	.06	-.04	-.02	.10	.12*	.02	.04	.06	.01
Ethnicity												
(White) vs.												
Other	.03	.05	.03	.03	.05	.07	.04	.06	.00	.03	-.06	-.05
Mixed	.09*	.04	.08	.03	.06	.01	.04	.00	.06	.04	-.01	-.02
Asian	-.07	-.03	-.07	.00	-.09	-.06	-.07	-.05	-.05	-.04	.00	.02

	CES-D		AUDIT		CORE-GP		GAD-7		PSS		PQB	
	β Final Model	*+T1 score*	*B Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*
Black	.03	.00	-.16	-.04	.06	.05	.02	.02	.04	.02	-.02	-.03
Term Time Accommodation (Halls) vs.												
Rented	-.05	-.05	-.05	.01	-.05	-.06	-.07	-.07	-.01	-.04	-.06	-.01
Home	-.05	-.06	-.12*	-.05	-.02	-.02	-.03	-.04	.00	-.04	.00	-.11*
Other	-.05	-.03	-.11	-.01	-.07	-.01	-.07	-.08	.02	.00	-.02	.00
Area of Study (Humanities) vs.												
Business/Law	.06	.07	.03	.00	.04	.04	.06	.04	.06	.06	-.08	-.03
Medicine	-.02	.01	.03	.00	-.04	.00	.01	.02	-.02	-.01	-.12*	-.07
Nursing	.08	.02	-.03	-.01	.12*	.08	.03	.00	.06	.03	-.02	-.04
Other Health Prof.	.04	.01	.15**	.05	.04	-.01	.04	.03	.09	.08	.06	.04
Maths/Economics	.04	.05	-.07	-.01	.04	.04	-.01	.02	.08	.08	-.05	.00
Sciences	.1	.06	-.03	-.02	.08	.07	.07	.07	.04	.03	-.03	-.03
Social/Human Sciences	.03	.00	-.04	-.05	.04	.03	.03	.01	.02	.01	-.10	-.02
Engineering	.0	.02	-.02	-.02	-.01	.02	-.01	.00	-.04	-.01	-.06	-.07
Other	.07	.07	.02	-.01	.06	.06	.02	.01	.08	.09*	-.03	-.06
Month Survey Completed (Aug) vs.												
Feb	-1.47	-1.60	.94	.85	-1.32	-1.11	-1.70	-.39	-.44	.52	-1.33	-.59
Sep	-.04	-.11**	-.06	-.02	-.03	-.06	-.02	-.09*	.04	.02	.00	.00
Part of UK from (England) vs.												
Northern Ireland	-.03	-.04	.01	-.02	-.03	-.04	.00	-.01	-.02	-.01	.01	-.01
Scotland	.15*	.06	.06	.02	.20**	.11	.19*	.09	.22**	.17**	.03	.06
Wales	.08	.04	.00	.05	.03	-.02	.12*	.05	.06	.05	.00	-.02

Financial Variables	CES-D *B*		AUDIT *B*		CORE-GP *β*		GAD-7 *β*		PSS *β*		PQB *β*	
Student Loan this year	*Final Model*	*+T1 score*	*Final Model*	*+T1 score*	*Final Model*	*+T1 score*	*Final Model*	*+T1 score*	*Final Model*	*+T1 score*	*Final Model*	*+T1 score*
(£3-5k) vs.												
None	-.1	-.08	-.06	-.05	-.06	.01	-.03	.02	-.11	-.07	-.06	-.06
Up to £3k	-.05	-.03	.09	-.02	-.09	-.01	-.02	-.01	-.07	-.05	.01	.02
£5-8k	-.04	-.05	.04	-.04	.01	.03	-.04	-.04	-.03	-.02	.00	-.01
£8k+	.05	-.03	.03	-.02	.05	.01	.02	.02	.03	.01	.17**	.06
Other current Debt												
(Nothing) vs.												
Up to £1k	.04	.02	.05	-.02	.03	.00	.05	.03	.02	.02	.00	.00
£1k+	-.08	.00	.06	.06	-.07	-.01	-.03	.00	-.06	-.02	-.01	.03
Anticipated Debt upon Graduation												
(£20-35k) vs.												
Under £10k	.08	.07	.00	.05	.07	.01	.04	.00	.07	.05	.00	-.05
£10-20k	-.03	-.02	.00	-.01	-.05	-.03	-.10	-.06	-.04	-.03	-.07	-.07
£35k+	-.01	.03	-.02	.00	-.02	-.03	-.02	-.02	-.01	.00	-.03	.00
Financial Stress												
Total IFS	.21**	.11*	.13	.04	.14*	.07	.19**	.13*	.14	.06	.14	.04
Problems Paying Bills												
(No Difficulty) vs.												
Very Great	.09	-.02	-.13	-.04	.15*	.06	.09	.00	.10	.02	-.11	-.14*
Great	.01	.01	.04	.02	.03	.00	-.03	-.06	-.01	-.04	.02	.03
Some	-.03	-.07	.08	.01	.01	-.03	-.10	-.14*	.05	.01	-.15	-.10
Slight	-.07	-.06	.06	.01	-.04	-.07	-.03	-.03	.06	.04	.01	.05
Very Little	-.12*	-.11*	.10	.01	-.05	-.05	-.07	-.09	.02	-.01	-.05	.02
Receive a Grant												
(No Grant) vs. Grant	.03	.01	.03	.02	-.01	-.02	.04	.07	.06	.03	.04	.03

	CES-D *β* *Final Model*	*+T1 score*	AUDIT *B* *Final Model*	*+T1 score*	CORE-GP *β* *Final Model*	*+T1 score*	GAD-7 *β* *Final Model*	*+T1 score*	PSS *β* *Final Model*	*+T1 score*	PQB *β* *Final Model*	*+T1 score*
How Stressed about Debt												
(Not at all) vs.												
A Little	.09	.02	-.04	-.07	.10	.03	.06	.04	.14*	.07	-.05	-.06
Quite	.13*	.00	-.01	.00	.14*	.03	.15*	.06	.15*	.07	-.01	-.05
Very	-.02	-.03	-.04	-.02	.07	.00	.02	.00	.07	.02	.06	.04
Predicted Time to Pay back Student Loan												
(16-20 years) vs.												
I will never pay it back	-.05	-.10	.00	.03	-.03	-.07	-.06	-.05	-.07	-.08	-.10	-.08
21+ years	.01	.00	-.05	.02	.03	.00	-.05	-.04	-.02	-.01	-.11	-.05
11-15 years	-.02	-.03	.06	.06	-.02	-.02	-.08	-.08	-.04	-.02	-.08	-.04
6-10 years	-.1	-.08	.01	.01	-.14*	-.11*	-.15*	-.14*	-.14*	-.11*	.02	.08
0-5 years	-.03	-.03	.08	.02	-.08	-.07	-.11	-.10	-.07	-.07	-.02	.05
Consider Dropping out for Financial Reasons												
(No) vs. Yes	.13*	.08	.12	.00	.10	.05	.09	.04	.08	.04	.08	.09
Consider not coming to University for Financial Reasons												
(No) vs. Yes	.07	.01	.02	.04	.07	.04	.03	-.02	.04	.02	.06	-.06
How Student Loan is Perceived												
(Debt will have to pay back) vs.												
An extra tax rather than debt	.02	.06	.05	-.03	.06	.087*	-.01	.04	.04	.05	.00	.00
Debt might have to pay back	.09	.05	.10	.02	.10	.081*	.05	.04	.10*	.05	.07	.03
Other Variables/Possible Mediators)												
Term Time Job												
(No Job) vs. Job	-.02	.0	.01	.03	-.05	-.01	-.07	-.04	-.07	-.06	-.06	-.04

	CES-D		AUDIT		CORE-GP		GAD-7		PSS		PQB	
	β Final Model	*+T1 score*	*B Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*	*β Final Model*	*+T1 score*
University Preference												
(First Choice) vs.												
Through Clearing	.12*	.06	.08	.06	.12*	.07	.14**	.08	.08	.03	.02	-.08
Back up/Insurance choice	-.02	-.03	-.08	-.8**	-.01	-.01	.04	.03	-.01	-.01	.01	-.01
Alcohol Consumption in Past Week												
(No Drinking) vs.												
Moderate Drinking 1-9 drinks	-.05	.0	-		-.07	-.05	.01	.08	-.05	-.01	-.05	-.03
Heavy Drinking 10+ drinks	-.04	-.05	-		-.03	-.04	.01	.01	-.03	-.07	.03	.01
Cannabis Use in Past 6 Months												
(No use) vs. Use	.06	-.01	.22***	-.01	.05	-.01	.03	.00	.08	.05	.10	.02
Dropped out of Uni.												
(Still at Uni.) vs. Dropped Out	-.12	-.6	-.01	.00	-.04	-.08	-.05	-.05	-.02	-.03	-.05	-.07
Time 1 Score	-	.64***	-	.8***		.65***	-	.60***	-	.53***	-	.67***

*=p<.05, **p<.01, ***p<.001

Discussion

Overall Cohort Differences

This study used a prospective cohort design to examine the impact of increased tuition fees on student mental health. The results overall are not as clear-cut as initially hypothesised. In their first term at university, those paying lower fees had more symptoms of depression and poorer global mental health, against the initial hypothesis and research suggesting that lower tuition fees are associated with better mental health (Jessop et al., 2005). This held after demographic variables were controlled for, thus differences between the cohorts on variables such as gender and ethnicity cannot explain this difference. Though this finding seems at odds with previous research with student populations, research with other populations has shown that factors such as worry about debt (Reading & Reynolds, 2001) and financial strain (Selenko & Batinic, 2011) are more important than amount of debt per se. Though the cohorts differed on student loan size, they did not differ on financial stress (being unable to pay bills etc.) or stress about debt. Thus the lack of difference at time one is perhaps understandable.

However differences became apparent at time two as participants progressed through their first year. For the sample as a whole, mental health improved over their first year in line with the findings of Cooke et al (2006). The significant interaction between fees and time demonstrated that whilst those paying lower fees had an improvement in anxiety, depression, stress and global mental health over time, those paying more stayed the same. Previous findings suggest that students with higher financial concern have a greater deterioration in mental health over time (Cooke et al., 2004). It might be that in their first term, students are preoccupied with settling in and socialising, and it is not until the second term that they start to worry about finances. However given that the cohorts did not differ in worry about debt, this cannot explain the effect entirely. It is important to consider that demographic differences between the cohorts, which could not be statistically controlled for, may be responsible for the interaction. There was no such interaction for psychotic symptoms. One previous study has shown that those with a diagnosed psychotic illness are more likely to have problematic debt (Jenkins et al., 2008), however it might be that there is no relationship for what is more likely sub-clinical symptoms. There was also no interaction for alcohol dependence, and those paying less did in fact have higher scores. This is at odds with previous research demonstrating that those with alcohol dependence have a higher proportion of debt (Jenkins et al., 2008;

Meltzer et al., 2013). It may be simply that those paying lower fees have more disposable income to spend on alcohol.

Effect of Other Financial Variables

A number of demographic variables, as well as cannabis and alcohol use and time of completion, predicted scores. A full discussion of these is not possible or necessary, however they were generally in line with other research, for example showing higher levels of anxiety in women (Vesga-López et al., 2008). As hypothesised, a number of financial variables other than tuition fees were related to mental health in this sample. At time one, lower family affluence predicted increased psychotic symptoms, in line with research documenting that psychosis is related to low socio-economic status (Werner, Malaspina, & Rabinowitz, 2007). However this was not repeated at time two. Those with a greater student loan showed more psychotic symptoms but not when initial symptoms were controlled for. Thus it might be that those with psychotic symptoms are more likely to take out a larger student loan, rather than debt exacerbating symptoms. The relationship between debt and alcohol dependence was variable with no clear results. Previous research has shown a relationship between debt and more binge drinking in students (Berg et al., 2010; Nelson et al., 2008).

There was no relationship between anticipated future debt and mental health, against previous findings of a relationship with depression (Stradling, 2001). There was no relationship between having a term time job and mental health. Some studies with students have shown poorer mental health in those working (Carney et al., 2005), whilst others has shown no relationship (Cooke et al., 2004). However those predicting it would take them longer to pay back had poorer global mental health and higher stress and anxiety, even after controlling for initial symptoms. It might be then that the rumination over future debt may lead to poorer mental health. How loans were perceived was inconsistently related to scores, thus the significant difference in how the two cohorts viewed their loans may have had little impact. It is important to consider that student loan debt is a different type of debt. Much of the literature has studied the health consequences of ‘over-indebtedness’ or ‘unmanageable debt’, which is based on the proportion of debt to income (Munster et al., 2009; Wong et al., 2010). As student loans are repaid at a fixed percentage (Gov.uk, 2013), it is essentially impossible to become over-indebted. Student loan debt may therefore be less strongly related to mental health than other types of debt such as credit cards.

The strongest correlate of mental health was perhaps financial stress, which predicted higher levels of depression, anxiety, stress, psychotic symptoms, alcohol dependence, poorer global mental health and high eating disorder risk at time one. Previous research in the general population has demonstrated that such financial strain is correlated with mental distress (Selenko & Batinic, 2011). At time two, financial stress was related to depression and anxiety after controlling for initial scores. This suggests that financial stress independently contributes to worsening symptoms; it is not that those with more severe symptoms are poorer at managing their finances. Stress about debt was similarly shown to be an important predictor of mental health in line with other studies with students (Cooke et al., 2004). However this did not hold when initial symptoms was controlled for, thus it may be that those with poor mental health are more likely to worry about their finances, in line with other findings (Reading & Reynolds, 2001). Considering not coming to university for financial reasons was related to mental health until time one scores were added, suggesting that those with poorer mental health are more likely to worry about this. Similarly those who considered dropping out had higher depression, in line with other findings (Roberts et al., 1999; 2000). However this did not hold at time two, thus it appears that those who are depressed are more likely to consider dropping out. There was no difference in those who did drop out, though this may simply be due to low statistical power because of few people doing so. Being at university through clearing was related to mental health until time one was controlled for, thus this may worsen symptoms initially, but it does not appear to lead to on-going poorer mental health.

Mediators of Financial Variables

Mediators in the data demonstrate that a number of financial variables may be indirectly related to mental health. It was not possible to examine mediators at time two in this paper, though future papers will examine this. Those with lower family affluence were more depressed due to more non-student loan debt, and were more stressed with poorer mental health due to greater financial stress. This supports previous assertions that relationships between mental health and socioeconomic status are indirect and due to factors such as financial hardship (Butterworth et al., 2012). Difficulty paying bills affected mental health, anxiety and stress via stress about debt. Alcohol use appeared to moderate the relationship between stress about debt and anxiety. Financial stress also accounted for poorer mental health and higher depression in those with greater debt, poorer mental health and greater

anxiety in those from Wales, and differences in anxiety and psychotic symptoms based on type of degree. These findings support previous research with students that debt leads to depression via increased financial stress (Lange & Byrd, 1998). The effect of difficulty paying bills and financial stress on anxiety appears to be due to considering not coming to university for financial reasons. Higher levels of financial stress appeared to explain greater alcohol dependence in those of mixed ethnicity. Cohort differences in alcohol dependence appeared to be related to tuition fees, which in turn was mediated by non-student loan debt. There were no differences between cohorts on such debt, thus it may be that those with lower fees have more disposable income to spend on alcohol. Differences in alcohol dependence based on type of degree also appeared to be related to student loan amount. Finally, variations in stress and mental health at different times of year appeared to be related to difficulty paying bills. Overall this suggests that a number of relationships may be indirect, and research is needed to further examine the specific causal mechanisms involved.

Limitations

There has been one previous cohort study (Jessop et al., 2005), and one longitudinal study (Cooke et al., 2004) examing the relationships between debt and mental health in students. However this is the first study to examine the longitudinal impact of cohorts who differ on fees and resulting debt levels, a unique opportunity provided by recent government legislation in the UK. A number of different variables were assessed using standardised measures, all of which were shown to have good internal reliability. Studies in the area, particularly in the US, tend not to use standardised measures (Adams & Moore, 2007; Berg et al., 2010). Psychotic and eating disorder symptoms, which have rarely been examined in the area were measured, and a number of potential confounding variables were controlled for. However not all possible confounds were assessed. For example, students with children are more prone to distress (Pryjmachuk & Richards, 2007). If they are also more prone to financial difficulties then this may affect results. The sample size is larger than many previous studies on finances and mental health in UK students (Roberts et al., 1999, 2000; Ross et al., 2006), and those with large samples have only used one measure of mental health (Carney et al., 2005; Cooke et al., 2004). However the sample size might not have been large enough for the time two regression so the results need to be interpreted with caution. Drop out was relatively large but similar to Cooke et al. (2004)

where 65% completed the final time point. As more psychotic symptoms and financial stress predicted drop out this may have had an impact on the results at time two.

In terms of statistics, there was some heteroscedasticity for some variables meaning regression may not have been ideal. However the large percentage of variance explained and little or no co-linearity suggests that regression was appropriate. Missing data levels were quite high for some of the measures, and mean substitution used for regression analyses increased sample sizes but might have influenced the results. A large number of statistical tests were used. The statistics computed to assess differences between cohorts were simply to identify variables which needed to be controlled for in the regression analyses, and so this is not necessarily problematic. A single regression for six measures at two time points, plus one logistic regression and two MANOVAs means a total of 15 statistical tests for the primary analyses. Thus there is a risk of an inflated experimentwise alpha level and some of the significant differences may be type 1 errors. Whilst a bonferonni correction could have been used it was decided that this was not necessary as the statistics were computed for the measures separately. In terms of mediating analyses, due to the number of steps and variables it was not possible to run three separate regressions analyses as suggested by Baron and Kenny (1986). However an analysis of mediators via changes in different steps of hierarchical regression has previously been used in research in the area (Jessop et al., 2005).

The sample used here may not be representative of the British undergraduate population as a whole. Although the sample included mature students and those from a number of subjects, it was heavily female. This has been a problem in previous research (Roberts et al., 1999; Jessop et al., 2005). The survey was advertised as a 'Student Mental Health Survey', and relied on self-selection, thus it is possible that those with mental health difficulties were more likely to take part. This appears to be the case given the high proportion of participants who scored above the cut-off points. The results might therefore suggest that students with pre-existing mental health problems are less likely to improve with time if they are paying increased fees, rather than suggesting such an effect for all students. Finally, this study used a relatively short follow-up period. Mental health worsens over time for students (Bewick et al., 2010), particularly for those who worry about finances (Cooke et al., 2004), thus differences between the cohorts may become more pronounced with time. This research is on-going and the 2011 cohort has now been

followed up at four time points. A follow-up beyond graduation would be ideal as the impact of student loan debt might not be felt until graduates begin looking for a job or trying to buy a house.

Conclusions and Clinical Implications

Though the tuition fees increase had no immediate impact, it appears to impede recovery over time, and may therefore result in more students with mental health problems or greater chronicity for those with pre-existing difficulties. This then would increase pressure on mental health services serving this population. The increase in tuition fees and resulting higher levels of debt is something that neither students nor mental health professionals can change and that the government is unlikely to reverse. However what offers promise for psychological intervention is the fact that subjective psychological factors such as stress about debt were more important that actual amount of debt. This suggests that psychological interventions such as Cognitive Behaviour Therapy (CBT) may be useful to try to work with negative, perhaps catastrophic thoughts about debt. Similarly Acceptance and Commitment Therapy (Hayes, 1999) may be useful to work with students beliefs about their debt which might be entirely realistic. Work on values may be useful to help students live a fulfilling life in spite of a large student loan. Similarly, mindfulness has been shown to improve depression and anxiety (Hofmann, Sawyer, Witt, & Oh, 2010), and can be used to help tolerate distressing thoughts about difficult situations, in this case debt. The effect of predicted time to pay back loan on mental health in this sample suggests that worry and rumination about possible future finances may be detrimental to mental health. Thus mindfulness based cognitive therapy (Segal, Williams, & Teasdale, 2002), with its focus on being in the present moment may be helpful.

Those with poorer mental health worried more about their finances, suggesting that interventions to improve depression would have a knock-on impact on financial concern, or ability to manage finances. There are however few studies examining the effectiveness of psychological interventions for depression and anxiety for students specifically (Reavley & Jorm, 2010). It has been pointed out that it is hard for mental health services to support students who may live in different parts of the country during holidays (Towl, 2013). Thus computer based CBT, which has been shown to reduce depression in students (Richards, Timulak, & Hevey, 2013), may offer a flexible intervention which can be

accessed remotely. Interventions such as increasing flexibility of debt repayment (Field et al., 2012), and offering debt advice (Pleasence & Balmer, 2007) have been found to reduce stress and increase optimism around finances. Though student loan debt is different to other forms of debt, such interventions may be useful for students who have, for example, credit card debt. Elbogen, Tiegreen, Vaughan, and Bradford (2011) have developed a recovery orientated approach to improving financial management in those with mental health problems which may serve as a useful framework. However at present there is no research on the effectiveness of psychological interventions for those with debt-related mental health problems.

From a public health perspective, given that financial stress is more strongly related to mental health than size of student loan, it might be that offering larger loans or additional grants to those who are struggling to pay the bills may be beneficial to mental health, at least in the short term. It has previously been suggested that mental health professionals should assess financial difficulties in those with mental health problems (Fitch, Chaplin, Trend, & Collard, 2007), and the Royal College of Psychiatrists has led a campaign targeted at mental health professionals to increase awareness about the relationship between debt and mental health (Fitch, 2006).

The current results suggest a bi-directional relationship whereby financial difficulties in students induce or exacerbate poor mental health, but those with problems with depression are also more prone to financial difficulties. The implication is that organisations such as student unions who give financial advice should consider screening for psychological problems in those requesting help. Brief self-report measures such as the Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001) and 7 Item Generalized Anxiety Disorder Questionnaire (Spitzer et al. 2006), may be useful to screen for depression and anxiety in these settings. Similarly, general practitioners and student counsellors should consider asking about financial difficulties when assessing problems such as depression and anxiety. The ‘Debt and Health Evidence Form’ has been developed specifically for this purpose (Fitch, Chaplin, & Tulloch, 2010). Early intervention has been suggested as key to stop mental health problems leading to drop out in students (RCP, 2011), and it might be that such prevention needs to focus on both mental health and financial difficulties. Financial literacy training has been shown to improve money management and in turn to improve perceived financial well-being in Malaysian students (Sabri & Falahati,

2012). Such an approach combined with brief psychological interventions for emotional wellbeing may be an effective way to tackle both poor mental health and financial difficulties integratively. Previous research has used posters in universities to raise awareness about depression (Merritt, Price, Mollison, & Geddes, 2007), and such mental health promotion campaigns focusing on the role of financial difficulties may encourage help-seeking.

Future research is needed to monitor the on-going impact of increased tuition fees on student mental health. It might be, for example, that those whose debt ends up being greater than predicted have worse mental health. Research is also needed to identify which interventions may be effective. Previous research with students has used structural equation modelling to show how debt leads to depression via indirect routes such as predicted future financial strain and locus of control (Lange & Byrd, 1998). However there is no unifying theory for students or other populations on the specific mechanisms by which debt is related to poor mental health. Such a theory might incorporate findings that financial strain is more important than debt per se, and that the role of psychological factors such as locus of control, perceived helplessness and rumination are important. Tentative evidence suggests that different types of debt have stronger or weaker relationships with mental health (Jenkins et al., 2009). Student loans represent a specific type of debt in the way they are repaid. Student debt may also have less of an impact on psychological well-being than other forms of debt at it is seen as purposeful, in a similar way that mortgage debt has less effect on depression than credit card debt (Brown et al., 2005). The findings here and from previous research demonstrate that the reason debt is incurred is important, as those who considered dropping out had more symptoms (Roberts et al., 1999, 2000), perhaps because they were unsure whether university would be worth the cost. Further research and a better theoretical understanding are needed to help clinical psychologists and other mental health professionals prevent and intervene with the psychological consequences of what has become an inevitable part of student life.

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Appendix 1: Meta-Analysis Raw Data

Mental Disorder

Clark 2012 (author contact)		**Mental Disorder *n*=476**	**No Mental Disorder *n*=2906**
	Debt *n*=282	83	199
	No Debt *n*=3100	393	2707
Hintikka 2008		**Mental Disorder *n*=1130**	**No Mental Disorder *n*=4688**
	Debt *n*=950	351	599
	No Debt *n*=4868	779	4089
Jenkins 2009		**Mental Disorder *n*=2012**	**No Mental Disorder *n*=6533**
	Debt *n*=1090	491	599
	No Debt *n*=7455	1521	5934
Jenkins 2008		**Mental Disorder *n*=1993**	**No Mental Disorder *n*=6482**
	Debt *n*=987	462	525
	No Debt *n*=7488	1531	5957
Patel 1998		**Mental Disorder *n*=141**	**No Mental Disorder *n*=162**
	Debt *n*=165	99	66
	No Debt *n*=138	42	96
Finlay-Jones & Eckhardt (1984)		**Mental Disorder *n*=49**	**No Mental Disorder *n*=88**
	Debt *n*=81	31	50
	No Debt *n*=56	18	38

Depression

Besleer & Stallones 2008 (author contact)		**Depression *n*=81**	**No Depression *n*=781**
	Debt *n*=126	21	105
	No Debt *n*=736	60	676
Bridges & Disney 2010 (pooled)		**Depression *n*=965**	**No Depression *n*=20151**
	Debt *n*=3721	353	3368
	No Debt *n*=17395	612	16783
Kaji et al 2010 (author contact, pooled)		**Depression *n*=3309**	**No Depression *n*=7660**
	Debt *n*=586	307	279
	No Debt *n*=10383	3002	7381
Stuhldreher et al 2007		**Depression *n*=239**	**No Depression *n*=801**
	Debt *n*=25	10	15
	No Debt *n*=1015	229	786

Suicide

Chan et al 2009 (author contact)		**Suicide completers *n*=150**	**Controls *n*=150**
	Debt *n*=46	39	7
	No Debt *n*=254	111	143
Chen et al 2006		**Suicide completers *n*=150**	**Controls *n*=150**
	Debt *n*=54	46	8
	No Debt *n*=246	104	142
Wong et al 2010 (pooled)		**Suicide completers *n*=150**	**Controls *n*=149**
	Debt *n*=55	47	8
	No Debt *n*=244	103	141
Wong et al 2008		**Suicide completers *n*=85**	**Controls *n*=85**
	Debt *n*=40	34	6
	No Debt *n*=130	51	79

With attempts as well:

Hintikka et al 2008		**Suicide attempters *n*=49**	**None attempters *n*=4704**
	Debt *n*=889	15	874
	No Debt *n*=3864	34	3803

Smoking

		Smokers *n*=2260	**Non Smokers *n*=7630**
Berg et al 2010	**Debt *n*=3330**	960	2340
	No Debt *n*=6590	1300	5290
Drentea & Lavrakas 2000		**Smokers *n*=260**	**Non Smokers *n*=611**
	Debt *n*=453	118	335
	No Debt *n*=418	142	276
Stuhldreher et al. 2007		**Smokers *n*=218**	**Non Smokers *n*=822**
	Debt *n*=25	10	15
	No Debt *n*=1015	208	807

Problem Drinking

Berg et al 2010		**Drinking *n*=3671**	**No drinking=6208**
	Debt *n*=3299	1287	2012
	No Debt *n*=6580	2384	4196
Jenkins et al 2009		**Drinking *n*=636**	**No drinking=7909**
	Debt *n*=1090	166	924
	No Debt *n*=7455	470	6985
Jenkins et al 2008		**Drinking *n*=563**	**No drinking=6482**
	Debt *n*=665	140	525
	No Debt *n*=6380	423	5957
Saxena, Sharma & Maulik 2003		**Drinking *n*=98**	**No drinking=99**
	Debt *n*=83	54	29
	No Debt *n*=114	44	70
Stuhldreher et al 2007		**Drinking *n*=579**	**No drinking=461**
	Debt *n*=25	22	3

	No Debt *n*=1015	557	458

Drug Dependence

Jenkins et al 2009		**Drug *n*=326**	**No Drug *n*=8219**
	Debt *n*=1090	125	965
	No Debt *n*=7455	201	7254
Jenkins et al 2008		**Drug *n*=254**	**No Drug *n*=6482**
	Debt *n*=622	97	525
	No Debt *n*=6114	157	5957

Neurotic Disorder

Jenkins et al 2009		**Neurotic Disorder *n*=1413**	**No Neurotic *n*=7132**
	Debt *n*=1090	354	736
	No Debt *n*=7455	1059	6496
Jenkins et al 2008		**Neurotic Disorder *n*=1494**	**No Neurotic *n*=6482**
	Debt *n*=881	356	525
	No Debt *n*=7095	1138	5957

Psychotic Disorder

Jenkins et al 2009		**Psychotic *n*=47**	**Not Psychotic *n*=8498**
	Debt *n*=1090	17	1073
	No Debt *n*=7455	30	7425
Jenkins et al 2008		**Psychotic *n*=56**	**Not Psychotic *n*=6482**
	Debt *n*=540	15	525
	No Debt *n*=5998	41	5957

Appendix 2: Copies of Standardised Measures

Permission has been granted where necessary to reproduce these measures here. They are not to be copied for other purposes.

CES-D

Center for Epidemiologic Studies Depression Scale (CES-D)

Date: _____

Below is a list of some of the ways you may have felt or behaved. Please indicate how often you've felt this way during the **past week**. Respond to all items.

Place a check mark (✓) in the appropriate column. **During the past week...**	**Rarely or none of the time (less than 1 day)**	**Some or a little of the time (1-2 days)**	**Occasionally or a moderate amount of time (3-4 days)**	**All of the time (5-7 days)**
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt that I could not shake off the blues even with help from my family.				
4. I felt that I was just as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeful about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was restless.				
12. I was happy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I enjoyed life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people disliked me.				
20. I could not "get going."				

AUDIT

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place an X in one box that best describes your answer to each question.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

PQB

Please indicate whether you have had the following thoughts, feelings and experiences **in the past month** by checking "yes" or "no" for each item. **Do not include experiences that occur only while under the influence of alcohol, drugs or medications that were not prescribed to you.** If you answer "YES" to an item, also indicate how distressing that experience has been for you.

1. **Do familiar surroundings sometimes seem strange, confusing, threatening or unreal to you?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

2. **Have you heard unusual sounds like banging, clicking, hissing, clapping or ringing in your ears?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

3. **Do things that you see appear different from the way they usually do (brighter or duller, larger or smaller, or changed in some other way)?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

4. **Have you had experiences with telepathy, psychic forces, or fortune telling?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

5. **Have you felt that you are not in control of your own ideas or thoughts?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

6. **Do you have difficulty getting your point across, because you ramble or go off the track a lot when you talk?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

7. **Do you have strong feelings or beliefs about being unusually gifted or talented in some way?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

8. **Do you feel that other people are watching you or talking about you?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

9. **Do you sometimes get strange feelings on or just beneath your skin, like bugs crawling?**
   ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
   ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

10. **Do you sometimes feel suddenly distracted by distant sounds that you are not normally aware of?**
    ☐ **YES** ☐ **NO** ***If YES:*** When this happens, I feel frightened, concerned, or it causes problems for me:
    ☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

11. Have you had the sense that some person or force is around you, although you couldn't see anyone?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

12. Do you worry at times that something may be wrong with your mind?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

13. Have you ever felt that you don't exist, the world does not exist, or that you are dead?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

14. Have you been confused at times whether something you experienced was real or imaginary?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

15. Do you hold beliefs that other people would find unusual or bizarre?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

16. Do you feel that parts of your body have changed in some way, or that parts of your body are working differently?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

17. Are your thoughts sometimes so strong that you can almost hear them?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

18. Do you find yourself feeling mistrustful or suspicious of other people?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

19. Have you seen unusual things like flashes, flames, blinding light, or geometric figures?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

20. Have you seen things that other people can't see or don't seem to see?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

21. Do people sometimes find it hard to understand what you are saying?

☐ YES ☐ NO *If YES:* When this happens, I feel frightened, concerned, or it causes problems for me:

☐ Strongly disagree ☐ disagree ☐ neutral ☐ agree ☐ strongly agree

CORE-GP

CORE - GP
(14 Item)

IMPORTANT - PLEASE READ THIS FIRST

This form has 14 statements about how you have been OVER THE LAST WEEK.
Please read each statement and think how often you felt that way last week.
Then tick the box which is closest to this.

Please use a dark pen (not pencil) and tick clearly within the boxes.

	Over the last week	Not at all	Only Occasionally	Sometimes	Often	Most or all the time
1	I have felt tense, anxious or nervous	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
2	I have felt I have someone to turn to for support when needed	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
3	I have felt O.K. about myself	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
4	I have felt able to cope when things go wrong	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
5	I have been troubled by aches, pains or other physical problems	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
6	I have been happy with the things I have done.	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
7	I have had difficulty getting to sleep or staying asleep	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
8	I have felt warmth or affection for someone	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
9	I have been able to do most things I needed to	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
10	I have felt criticised by other people	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
11	I have felt unhappy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
12	I have been irritable when with other people	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
13	I have felt optimistic about my future	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0
14	I have achieved the things I wanted to	☐ 4	☐ 3	☐ 2	☐ 1	☐ 0

EAT-26

Part B: Check a response for each of the following statements:		Always	Usually	Often	Some times	Rarely	Never
1.	Am terrified about being overweight.	□	□	□	□	□	□
2.	Avoid eating when I am hungry.	□	□	□	□	□	□
3.	Find myself preoccupied with food.	□	□	□	□	□	□
4.	Have gone on eating binges where I feel that I may not be able to stop.	□	□	□	□	□	□
5.	Cut my food into small pieces.	□	□	□	□	□	□
6.	Aware of the calorie content of foods that I eat.	□	□	□	□	□	□
7.	Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	□	□	□	□	□	□
8.	Feel that others would prefer if I ate more.	□	□	□	□	□	□
9.	Vomit after I have eaten.	□	□	□	□	□	□
10.	Feel extremely guilty after eating.	□	□	□	□	□	□
11.	Am preoccupied with a desire to be thinner.	□	□	□	□	□	□
12.	Think about burning up calories when I exercise.	□	□	□	□	□	□
13.	Other people think that I am too thin.	□	□	□	□	□	□
14.	Am preoccupied with the thought of having fat on my body.	□	□	□	□	□	□
15.	Take longer than others to eat my meals.	□	□	□	□	□	□
16.	Avoid foods with sugar in them.	□	□	□	□	□	□
17.	Eat diet foods.	□	□	□	□	□	□
18.	Feel that food controls my life.	□	□	□	□	□	□
19.	Display self-control around food.	□	□	□	□	□	□
20.	Feel that others pressure me to eat.	□	□	□	□	□	□
21.	Give too much time and thought to food.	□	□	□	□	□	□
22.	Feel uncomfortable after eating sweets.	□	□	□	□	□	□
23.	Engage in dieting behavior.	□	□	□	□	□	□
24.	Like my stomach to be empty.	□	□	□	□	□	□
25.	Have the impulse to vomit after meals.	□	□	□	□	□	□
26.	Enjoy trying new rich foods.	□	□	□	□	□	□

FAS

Does your family own a car, van or truck?

No [0] **Yes, one [1]** **Yes, two or more [2]**

Do you have your own bedroom for yourself?

No [0] **Yes [1]**

During the past 12 months, how many times did you travel away on holiday with your family?

Not at all [0] **Once [1]** **Twice [2]** **More than twice [3]**

How many computers does your family own?

None [0] **One [1]** **Two [2]** **More than two [3]**

GAD-7

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Total Score ___ = Add Columns ___ + ___ + ___

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

IFS

In the past 6 months did any of the following happen to you because of a shortage of money? . . .

1. Could not pay electricity, gas or telephone bills on time
   Yes **No**

2. Could not pay the mortgage or rent on time
   Yes **No**

3. Pawned or sold something
   Yes **No**

4. Went without meals,
   Yes **No**

5. Was unable to heat home
   Yes **No**

6. Asked for financial help from friends and family
   Yes **No**

7. Asked for help from welfare/community organizations
   Yes **No**

8. Could you raise, within a week, $2000 for an emergency?
   Yes **No**

PSS

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Name _____ Date _____

Age _____ Gender (*Circle*): **M F** Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Appendix 3: Copyright Permission

AUDIT

RE: Alcohol Use Disorder Identification Test

msb [msb@who.int]

Sent: 05 July 2011 15:00

To: Richardson T.H.

Dear Mr Richardson,

On behalf of the World Health Organization (WHO), we are pleased to grant you the permission to use the AUDIT instrument in your research project provided that WHO is acknowledged as the source of the material and copyright holder and that there is no suggestion that WHO endorses any specific company, products or services.

Best regards.

Teresita Narciso
Management of Substance Abuse

CORE-GP

Re: Using the CORE in an online survey

Richard Evans [riche@btclick.com]

Sent: 17 July 2011 13:07

To: Richardson T.H.

The Trustees of the CORE System Trust are willing to grant you a licence to reproduce the CORE34 outcome measure electronically using the online survey tool described subject to no changes being made to the form, copyright being acknowledged, use being limited to the academic survey of student health with Southampton University as described (which we take to be small scale

since it is unfunded)

Richard Evans
Trustee
CORE System Trust

GAD-7

RE: GAD-7

Donna Burgett [dburgett@regenstrief.org]

Sent: 07 July 2011 20:23

To: Richardson T.H.

Hello,
The PHQ is now in public domain and freely available for use. Copies of the PHQ family of measures, including the GAD-7 are available at the website: www.phqscreeners.com. Also, translations, a bibliography, an instruction manual (with scoring information) and other information are also provided on the website.
Kind regards,

Donna

Donna Burgett
Administrative Assistant to Kurt Kroenke, MD
Regenstrief Institute, Inc.
1050 Wishard Blvd., RG5, Indianapolis, IN 46202

CES-D

To: Richardson T.H.
08 July 2011 22:17
NIMH Info [nimhinfo@nih.gov]

Dear Thomas:

Thank you for your e-mail to the National Institute of Mental Health (NIMH), part of the National Institutes of Health (NIH).

The Center for Epidemiologic Studies Depression (CES-D) Scale is in the public domain and can be copied, revised, or reproduced as needed. Citation of the NIMH as the source is appreciated. We are sending this scale as an attachment to this e-mail.

If you need information about scoring and interpretation of data, we suggest you search the literature through PubMed, the National Library of Medicine's searchable database of 20 million scientific research abstracts and citations at: http://www.ncbi.nlm.nih.gov/pubmed.

We hope this information is helpful. The NIMH conducts and supports medical research to improve people's mental health. We provide a wide range of information based on that research. If you have additional questions, please contact us again.

Information Resource Center
National Institute of Mental Health
E-mail: nimhinfo@nih.gov
Website: http://www.nimh.nih.gov

EAT-26

EAT-26

eat26_reproduce_permission@eat-26.com [eat26_reproduce_permission@eat-26.com]

Sent: 01 July 2011 15:32

To: Richardson T.H.

Thank you for your permission request to reproduce and use the EAT-26. The EAT-26 is protected under copyright; however, all fees and royalties have been waived because it has been our wish for others to have free access to the test.

Please consider this e-mail as granting you permission to reproduce the test for the purpose suggested in your request as long as the EAT-26 is cited properly. The correct citation is: "The EAT-26 has been reproduced with permission. Garner et al. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878."

You can download a copy of the scoring instructions and the test on the homepage of the EAT-26 website. If you use the written version of the test, it is recommended that you provide respondents with the link to the EAT-26 website (www.eat-26.com) so that they can learn more about the test.

Again, thank you for requesting permission to reproduce and use the EAT-26. If you intend on publishing your work, please send me your results so that they can be included in a research

database being developed on the EAT-26 website (www.eat-26.com).

Best wishes,

David M. Garner, Ph.D.
Administrative Director
River Centre Clinic
5465 Main Street
Sylvania, OH 43560
dm.garner@gmail.com

PSS

Re: Perceived stress scale

Sheldon Cohen [scohen@andrew.cmu.edu]

Sent: 01 July 2011 16:15

To: Richardson T.H.

no charge for use of PSS in nonprofit work. See our website:
www.psy.cmu.edu/~scohen click on scales

FAS

RE: Family Affluence Scale

Candace Currie [cec53@st-andrews.ac.uk]

Sent: 12 October 2011 19:35

To: Richardson T.H.

Dear Thomas

It's free to use but please reference its source - from the Currie et al 2008 and 1997 papers. Please see the doc paper I sent you.

I would love to hear more about your survey

Candace

IFS

Re: Index of Financial Stress

Mohammad Siahpush [msiahpush@unmc.edu]

Sent: 10 October 2011 14:49

To: Richardson T.H.

Dear Thomas,

You are free to use the questions.

Cheers,

Mohammad Siahpush, PhD
Professor and Graduate Program Director
Department of Health Promotion, Social and Behavioral Health
College of Public Health
University of Nebraska Medical Center
984365 Nebraska Medical Center
Omaha, NE 68198-4365
USA

Email: msiahpush@unmc.edu
Tel: 402-559-3437
Fax: 402-559-3773

PQB

To: Richardson T.H.

Hello Thomas,

You are welcome to use the measure without a fee. It is really meant to screen for positive symptoms of attenuated psychosis and not to be used as a continuous measure of liability to psychosis, but you can see how it works for you. Best of luck with your research.

Rachel

Rachel Loewy, PhD
Associate Professor
Prodrome Assessment, Research & Treatment (PART) Program
UCSF Department of Psychiatry
P: 415-476-7659; F: 415-476-7320
http://partprogram.ucsf.edu
http://www.prepwellness.org

Appendix 4: Author Constructed Questions

Registration Questions

a. Are you a first year undergraduate?

Yes

No

If No- thank you but we only require first year undergraduate to take part.

b. Are you an internationalstudent (not a British resident/citizen)?

Yes- I'm an international student

No- I'm a British student

If Yes- thank you but we only require British students to take part

c. What year did you start University?

- 2011

- 2012

- Other

If Other- thank you but we only require those starting University in 2011 or 2012 to take part

d. Which part of the U.K. did you live in before going to University?

- England

- Wales

- Scotland

- Northern Ireland

e. What best describes the area of your degree

- Business or Law

- Humanities

- Medicine

- Nursing

- Other Health professions (Occupational therapy, physiotherapy, podiatry, midwifery)

- Mathematics/Economics

- Sciences

- Social/Human sciences

- Engineering

- Other

f. What is the title of your course?

_____

g. Was this your first University choice?

- Yes: was my first choice

- No: Was an 'insurance' or 'back-up' choice

- No: I got the offer through clearing

h.We would like to contact you every three or four months to ask these questions to see how you are. All contact information will be kept anonymously, and not linked to your question responses. You will be emailed a personalised anonymous code for when you log in the future. Please could we have your:

Email address:_____

Alternative Email address:_____

Telephone number (we will only contact you on this in the event that your email address does not work)**:_____**

<u>Demographics</u>

1. Gender

Male [ ] 1

Female [ ] 2

2. Age _____

3. Ethnic Status

a) Black or Black British

- Caribbean
- African
- Any other Black background within (a)

b) White

- British
- Irish
- Any other White background

c) Asian or Asian British

- Indian
- Pakistani
- Bangladeshi
- Any other Asian background within (c)

d) Mixed

- White & Black Caribbean
- White & Black African
- White & Asian
- White & Hispanic
- Any other mixed background

e) Other ethnic groups

- Chinese
- Japanese
- Hispanic
- Any other ethnic group
- Do not state

7. Do you have a disability?

Yes [ ] 1

No [ ] 2

IF YES *Please give details* .....

8. Are you a mature student?

Yes [ ] 1

No [ ] 2

9. Where do you live during term time at the moment?

University Halls

Rented Flat/House with Other Students

At home with parents/guardian

Other

Your Finances

10. How much are your annual tuition fees?

£0–1.5k £1.5-3k £3-4k £4-6k £6-7k
£7-8k £8-9k £9k

11. Do you receive a grant of any kind? yes no

If 'Yes' how much per year is this approximately? _____

12. How much is your student loan this year? _____

13. Approximately how much do you currently owe overall for your student loan? _____

14. How do you see your student loan?
Debt I will have to pay back
Debt I might have to pay back
An extra tax (rather than debt)

15. Approximately how much money do you owe apart from student loan, i.e. overdraft, credit card, other loans, borrowing from friends etc. _____

16. What do you think will be your total debt when you graduate (including your student loan)? _____

17. How long do you think this will take you to pay back?
0-5 years 6-10 years 11-15 years 16-20 years 21+ years I will never pay it all back

18. a. How stressed do you feel about your level of debt?

4 **3** **2** **1**

Very Stressed Quite Stressed A little stressed Not stressed

b. Have you seriously considered abandoning your course because of any financial difficulties (For example talking to your tutor about doing so, looking into career options etc.).

Yes No

c. Did you seriously consider not coming to University due to financial concerns? (For example did you look into other career options, apply for jobs etc.)

Please answer

Yes No

17a. How much difficulty do you have in meeting the payment of bills?

1	2	3	4	5	6
Very Great	Great	Some	Slight	Very Little	None
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Work outside of University

18. Do you have a term time job in order to help pay for your education?

yes no

If 'Yes' roughly how many hours a week do you work? _____

Roughly how much a week do you earn? £_____

19. Has your job ever caused you to miss lectures/seminars?

Never	[ ]	1
Rarely	[ ]	2
Sometimes	[ ]	3
Frequently	[ ]	4

20. Do you feel work stops you succeeding at university?

Very much so	[ ]	1
Quite a lot	[ ]	2
A little	[ ]	3

Not at all [ ] 4

Drug and Alcohol Use

21. Do you smoke cigarettes now?

Yes [ ] 1

No [ ] 2

22. How many cigarettes DO you CURRENTLY smoke/day ----------

23. Have you had an alcoholic drink in the last seven days?

Yes [ ] 1

No [ ] 2

If NO Go to question 29

24. In the last seven days roughly how many drinks have you had of each of the following?

a. Spirits (Whisky, Gin, Vodka etc) ----------**measures**

b. Wine (Including sherry, port, vermouth) ---------- **glasse**s

c. Beer (including lager and cider) ---------- **pints**

26a. Have you ever used Ecstasy/MDMA? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26b. Have you ever used LSD or Magic Mushrooms? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26c. Have you ever used Speed/Amphetamines? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26d. Have you ever used Cannabis? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26e. Have you ever used cocaine? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26f. Have you ever used Heroin/Opiates? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26g. Have you ever used prescription drugs for non-medical reasons? Yes/No

If Yes:

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

26h. Have you ever used any other drugs not mentioned here? Yes/No

If Yes:

Please state which drugs you are referring to:_____

Age when first used? _____

Have you used in the past 6 months? Yes/No

Roughly how many days in the past month have you used this drug?_____

Health Care Usage

27. Have you ever been told by a health professional that you have a mental health problem?

Yes No

a. If Yes what did they say the problem was?

_____

b. When were you first told this?

0-6 months ago 6-12 months ago 1-2 years ago 2-3 years ago 3-5 years ago 5 or more years ago

Yes No

28. Have you seen any health professionals about stress, worry, anxiety or depression or your mental health in the past 6 months?

Yes No

If Yes Please state how many times you have seen each of the following

	Never	Once	2-3 Times	4-5 Times	5 Times or more
a) University Health Service					
b) University Counselling Service					
c) GP outside of University					
d) Psychologist					
e) Psychiatrist					
f) Counsellor/Therapist					
g) Nurse					
g) Other					

29. Have you been taking any medication for stress, worry, anxiety or depression in the past 6 months?

Yes **No**

Appendix 5: Recruitment Email to Students Unions

Dear *X*,

My name is Thomas Richardson I am a Doctoral student in the School of Psychology, University of Southampton. As part of my studies I am conducting a research study to examine the impact of the increase in tuition fees on student mental health. As you will be aware, fees are due to increase from £3290 in 2011 to £6-9k in 2012. Previous research has shown that students with higher levels of debt have more symptoms of depression and other mental health problems.

I am therefore trying to see whether the increase has an effect on first year undergraduates. This will involve asking first year British undergraduate students completing a confidential online survey about their mental health which will take around 30 minutes to complete. This would be completed a couple of times a year.

In terms of your involvement, I would greatly appreciate it if you could help me with recruitment by simply forwarding the email below to as many first year undergraduate students. I will then ask you to do the same with first years starting next year, when fees have increased. I will do the rest, and will email students to remind them to complete the follow-up surveys. Students will also be entered into a lottery to win book vouchers if they take part.

I hope this survey will help demonstrate whether the increase has an effect on students' mental health. This study has full ethical approval from the University of Southampton, and is being supervised by experts in the area.

It is of vital importance that you do not advertise the fact that this is a study on debt and fees as this may bias results. It is therefore being referred to as the 'Student Mental Health Survey' which aims to examine whether factors such as finances, alcohol use and demographic variables affect student mental health.

I would greatly appreciate your co-operation by sending the email below to first year undergraduate students (please do not include this email). Please do not hesitate to contact me if you have any questions.

Kind Regards,

Thomas Richardson

Trainee Clinical Psychologist
University of Southampton

Appendix 6: Recruitment Email and Advert to Students

Advert for Websites and Social Media

National Student Mental Health Survey:

First Year undergraduates wanted to take part in a national survey to see how factors such as finances, alcohol use and demographics variables affect student mental health'. This will take around 20 minutes to complete and you will get the chance to win a number of £50 book vouchers. www.isurvey.soton.ac.uk/2725 for more details.

Email

Dear Student,

I hope you are settling into your first year at University well. Some students find it hard when they start University, and may experience problems with their mental health such as depression. The University of Southampton is conducting a national Student Mental Health Survey to see whether factors such as finances, alcohol use and demographic variables affect students' mental health.

I am writing to invite you to take part in this research. It would involve completing an online survey which will take around 30 minutes to complete. You will then be invited to re-do this survey every three or four months. All information is completely confidential. This study has full ethical approval from the University of Southampton, and is being supervised by experts in the area.

By completing the survey you will also be placed in a lottery to win a number of £50 book vouchers. It is also hoped that this survey will be able to help students in the long run by helping plan services and interventions for those experiencing difficulties.

Please click the link below to access the survey. This will explain the research in more detail and you can then decide whether to take part. You can leave the survey at any time.

https://www.isurvey.soton.ac.uk/2725

Please feel free to contact studentmentalhealthsurvey@gmail.com if you have any questions.

Many thanks,

Student Mental Health Survey
University of Southampton

Appendix 7: Ethics Approval Confirmation

Your Ethics Submission (Ethics ID:984) has been reviewed and approved

ERGO [DoNotReply@ERGO.soton.ac.uk]

Actions

To: Richardson T.H.

Dissertation

31 January 2012 16:11

Submission Number: 984
Submission Name: The Impact of Increased University Fees on the Mental Health of First Year Students in the UK: A Prospective Cohort Study.
This is email is to let you know your submission was approved by the Ethics Committee.

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment)

Comments
None
Click here to view your submission

ERGO : Ethics and Research Governance Online
http://www.ergo.soton.ac.uk

DO NOT REPLY TO THIS EMAIL

Appendix 8: Information Sheet

Study Title: Student Mental Health Survey

Researcher: Thomas Richardson, Ron Roberts, Peter Elliott

Ethics number: 3491

Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to tick a relevant box.

What is the research about?
This research is being conducted at the University of Southampton and University of Kingston to examine the well-being, physical and mental health of British students starting university in 2011 and 2012.

In particular we want to see what affects students' well-being, whether issues such as finances, alcohol use and demographic variables are important.

Why have I been chosen?
All British first year undergraduate students starting university in 2011 or 2012 are being invited to take part.

What will happen to me if I take part?
If you agree to take part you will be asked to complete an online survey about your physical and mental health. This will take around 30 minutes to complete. Specifically this will ask about things such as alcohol use, your finances, mood, your worries and stress levels. If you agree to take part we will email you every three or four months asking you to complete some of the questionnaires again to see how you are doing.

Are there any benefits in my taking part?
We will not be able to provide you with any feedback about your problems, however we will give you contact information for a number of services to contact if you are worried about your health. We hope that this research will show what factors influence student's mental health, and that this will be able to help students in the future.

A random lottery will allocate a number of winners a £50 book voucher. If you win you will simply be emailed requesting details of a postal address to send the voucher to.

Are there any risks involved?
Some of the questions will ask about your mental health so there is a small risk you will find these upsetting. There is contact information available for relevant services should this happen.

Will my participation be confidential?
This research complies with the Data Protection Act and University Policies. All responses to questions will be kept completely confidential. We will ask you for an email address but this will be kept separate from your answers to the questions. Your responses to the questions will be confidential.

What happens if I change my mind?
You are free to leave the study at any time, and choose not to answer any specific questions you don't want to. You have the right to contact the researchers via email (studentmentalhealthsurvey@gmail.com) to request that your data is destroyed if you do not wish it to be used.

What happens if something goes wrong?
If you have any concerns about the study then you can contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 4663, email slb1n10@soton.ac.uk

Where can I get more information?
Please contact Thomas Richardson on studentmentalhealthsurvey@gmail.com if you have any questions about this research.

Appendix 9: Consent Form

CONSENT FORM (*Version 4*)

Study title: Student Mental Health Survey

Researcher name: Thomas Richardson, Ron Roberts, Peter Elliott
Ethics number: 3491

Please tick the following boxes to show you agree to take part in the study. You need to tick **every box** in order to take part.

I have read and understood the information sheet and if I have any questions I have contacted the author (studentmentalhealthsurvey@gmail.com)	☐
I agree to take part in this research project and agree for my data to be used for the purpose of this study	☐
I understand my participation is voluntary and I may withdraw at any time without my legal rights being affected	☐
I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All information collected is confidential.	☐

Appendix 10: Debriefing Form

Student Mental Health Survey- Debriefing Statement

Thank you for your time. We greatly appreciate you helping out with our research. Our aim is to see whether variables such as alcohol use, finances, and demographics are related to mental health in students. If you would like to know more or would like to be emailed about any resulting publications please email studentmentalhealthsurvey@gmail.com.

If you have found any of the questions upsetting, or you are worried about your mental health here are some organisations you can contact for information:

- Your University's Students' Union, Health or Counselling Service.

- Your General Practitioner will be able to give advice on mental health and refer you on to specialist help if necessary.

- NHS Direct: Their website has a health checker service http://www.nhsdirect.nhs.uk/en/CheckSymptoms where you can find out about a number of conditions including mental health problems. You can also phone them 24/7 on 0845 4647

- NHS choices: This website has an A-Z of health problems and information on them http://www.nhs.uk/conditions/Pages/hub.aspx

- Talk to Frank: Information about drugs: 0800 77 66 00 TEXT 82111 http://www.talktofrank.com/

- National Drink Helpline: 0800 917 8282

- Mind Info Line: This provides confidential information about mental health. Phone 0300 123 3393 (9am-5pm Monday-Friday) or email info@mind.org.uk

- Sane Line: This provides information and support about mental health difficulties. Phone 0845 767 8000 (6pm-11pm)

- Samaritans: They provide confidential support to those in distress, including those who are contemplating suicide. Phone 08457 90 90 90 (24 hours a day) or email jo@samaritans.org

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 4663, email slb1n10@soton.ac.uk

Thank you again for your help with our research

Appendix 11: List of Universities which took part

Which Universities took part

Y= Took Part

Ranking*	University	Took part 2011	Took part 2012
1	Cambridge		
2	Oxford	Y	Y
3	Imperial College London		
4	London School of Economics		Y
5	Durham		
6	St Andrews	Y	Y
7	University College London	Y	
8	Warwick		
9	Lancaster		Y
10	Bath		Y
11	Bristol	Y	Y
12	York	Y	
13	Edinburgh	Y	Y
14	Southampton		Y
15	Exeter	Y	Y
16	King's College London		
17	Nottingham	Y	Y
18	SOAS		
19	Loughborough	Y	
20	Sussex		Y
21	Glasgow		
22	Birmingham		
23	Leicester		Y
24	Newcastle		Y
25	Aston		Y
26	Sheffield	Y	
27	East Anglia		
28	Surrey		
29	Manchester		Y
30	Liverpool		
31	Queen's, Belfast		Y
32	Leeds		
33	Royal Holloway	Y	Y
34	Kent	Y	Y
35	Reading		Y
36	Queen Mary	Y	
37	Cardiff	Y	
38	Essex		

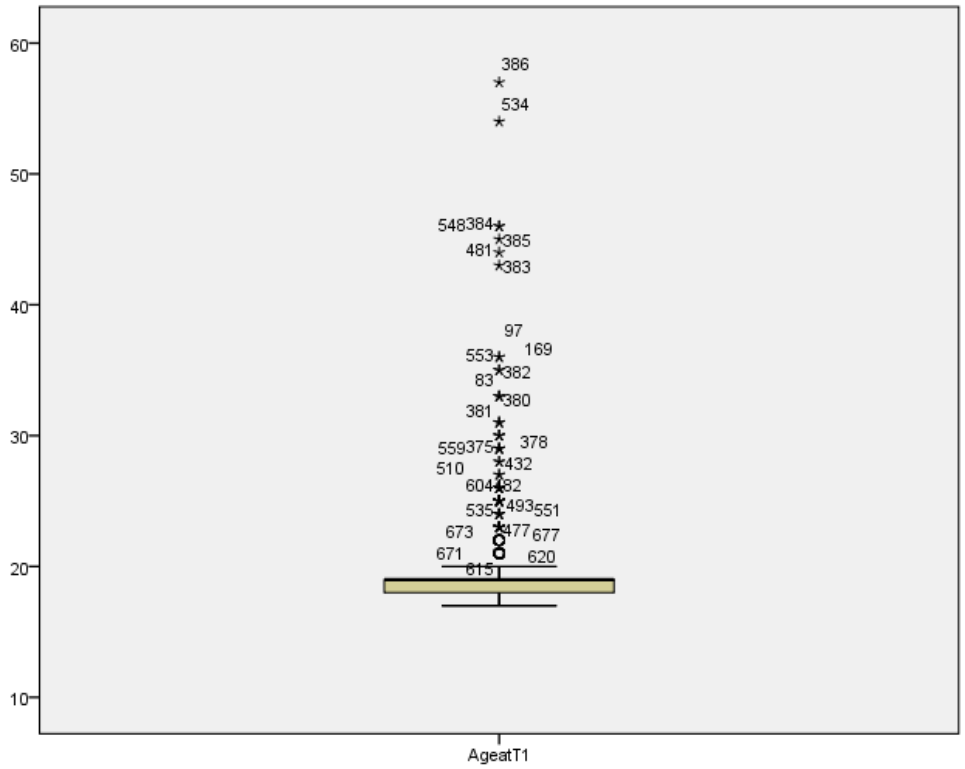
39	Heriot-Watt	Y		
40	Strathclyde	Y		
41	City		Y	
42	Buckingham			
43	Dundee			
44	Keele	Y		
45	Stirling		Y	
46	Aberdeen	Y	Y	
47	Oxford Brookes			
48	Hertfordshire			
49	Aberystwyth		Y	
50	Brunel			
51	Robert Gordon	Y		
52	Ulster	Y	Y	
53	Plymouth	Y		
54	Swansea			
55	Nottingham Trent	Y		
56	Chichester	Y		
57	Goldsmiths College	Y		
58	Huddersfield			
59	University of the Arts, London			
60	Northumbria			
61	West of England, Bristol			
62	Bournemouth	Y	Y	
63	Hull	Y		
64	Sheffield Hallam	Y		
65	Central Lancashire	Y	Y	
66	Birmingham City		Y	
67	Lincoln			
68	Brighton		Y	
69	UWIC, Cardiff			
70	Winchester			
71	Middlesex			
72	Coventry			
73	Bradford		Y	
74	Roehampton	Y	Y	
75	Gloucestershire		Y	
76	Glasgow Caledonian		Y	
77	Westminster	Y		
78	Bangor			
78	University for the Creative Arts	Y		
79	Chester	Y	Y	
80	De Montfort	Y	Y	
81	Portsmouth	Y		

83	Glamorgan	Y	Y
83	Edinburgh Napier	Y	
84	Bath Spa	Y	Y
85	Cumbria	Y	
86	Queen Margaret		Y
87	Kingston		
88	University of Wales, Newport		
89	Teesside		
90	Sunderland		
91	Trinity Saint David		
92	Manchester Metropolitan		
93	West London		Y
94	Abertay Dundee		
95	Leeds Metropolitan	Y	Y
96	Salford	Y	Y
97	Edge Hill	N	
98	Staffordshire	Y	
99	Canterbury Christ Church		
100	Liverpool John Moores		
101	York St John		
102	Bedfordshire		
103	Glyndwr		Y
104	Northampton		
105	Worcester	Y	
106	Buckinghamshire New	Y	Y
107	Derby		Y
108	Greenwich	Y	
109	Anglia Ruskin		
110	Southampton Solent	Y	Y
111	West of Scotland		
112	East London		
113	Bolton		
114	London Metropolitan		
115	London South Bank	Y	

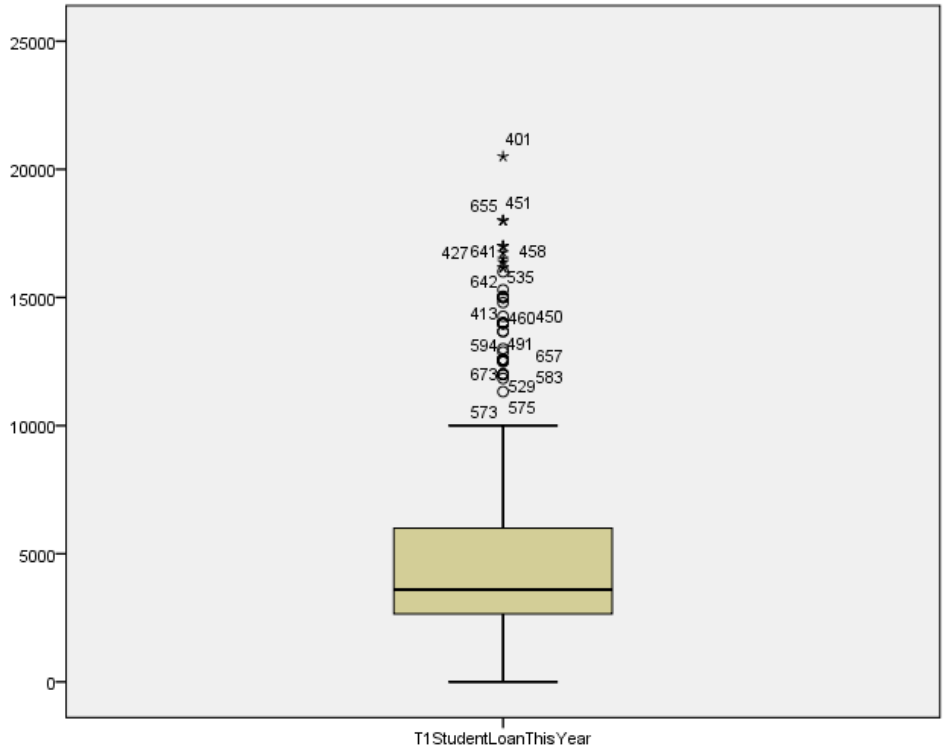
*Times Higher Education Rankings 2010

Appendix 12: Boxplots for Continuous Variables at Time 1

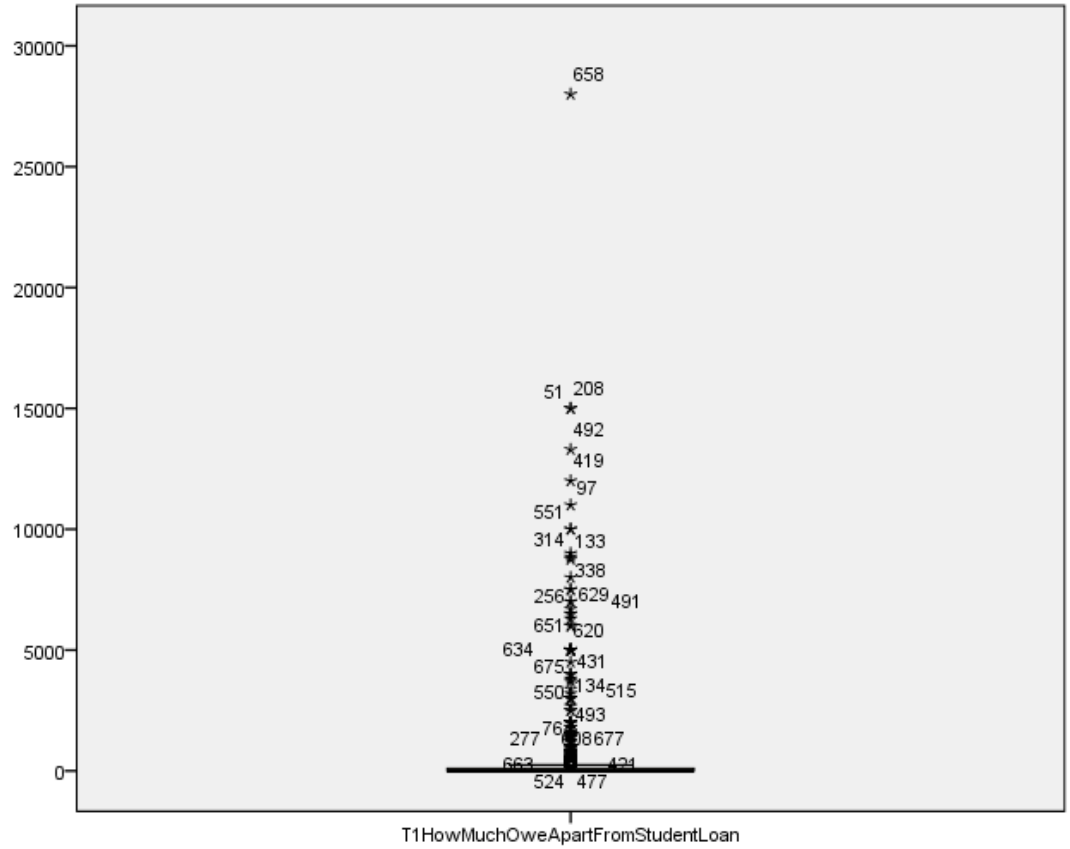
Age



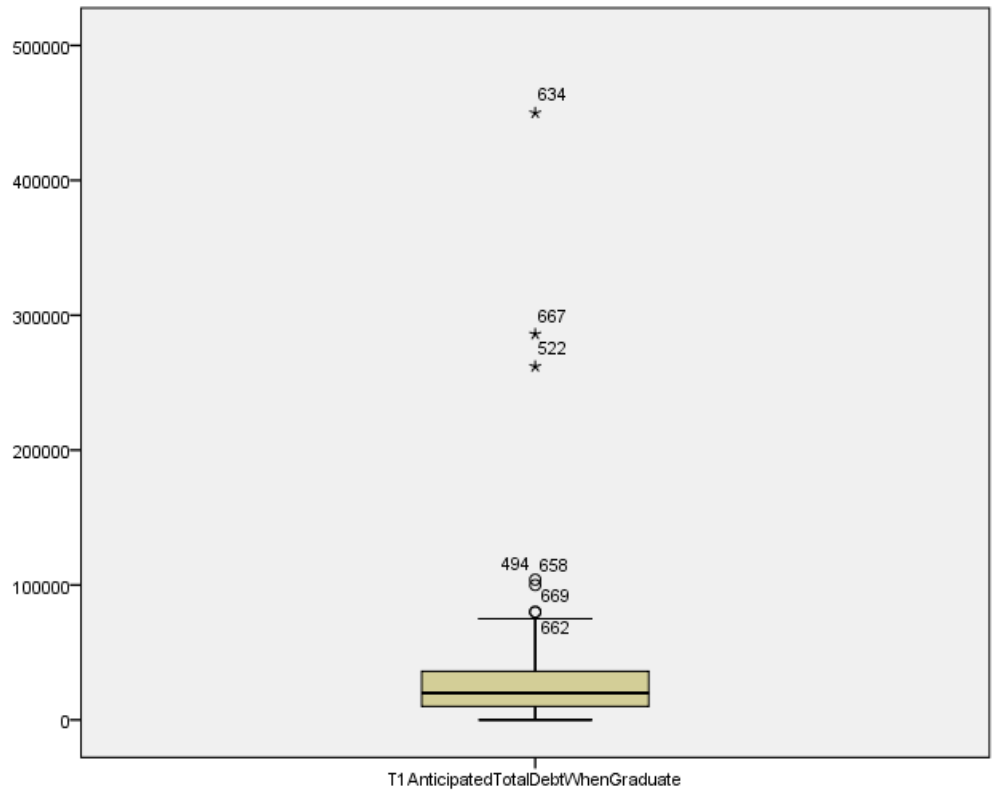
Student Loan This Year



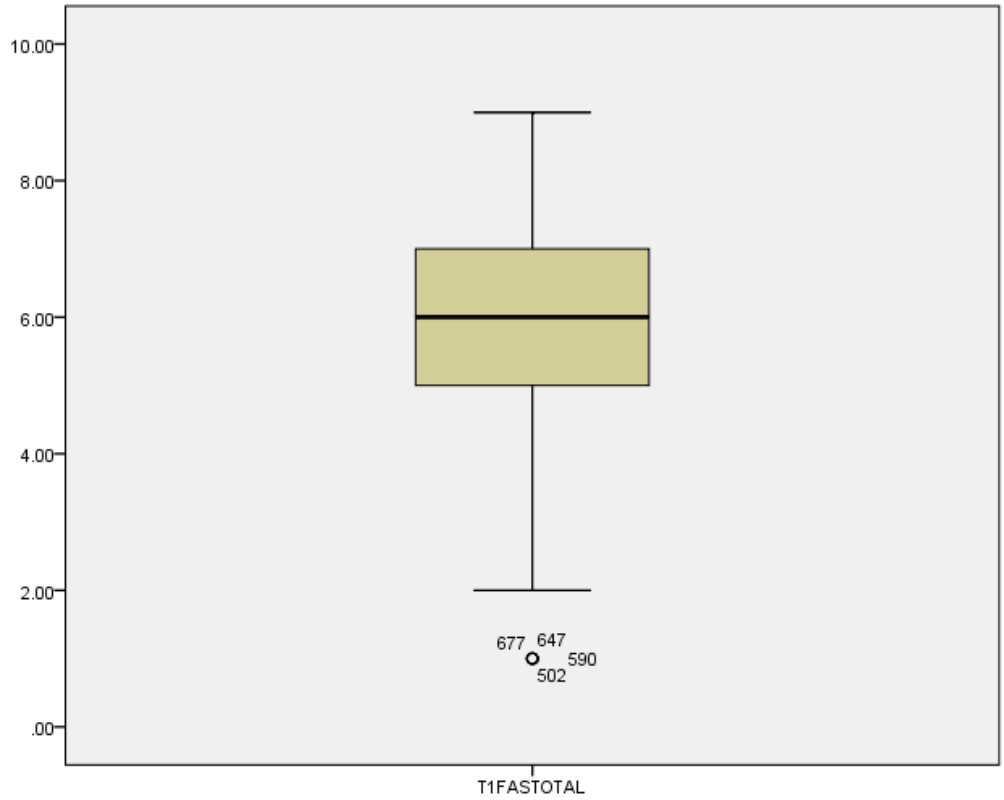
Non-student Loan Debt



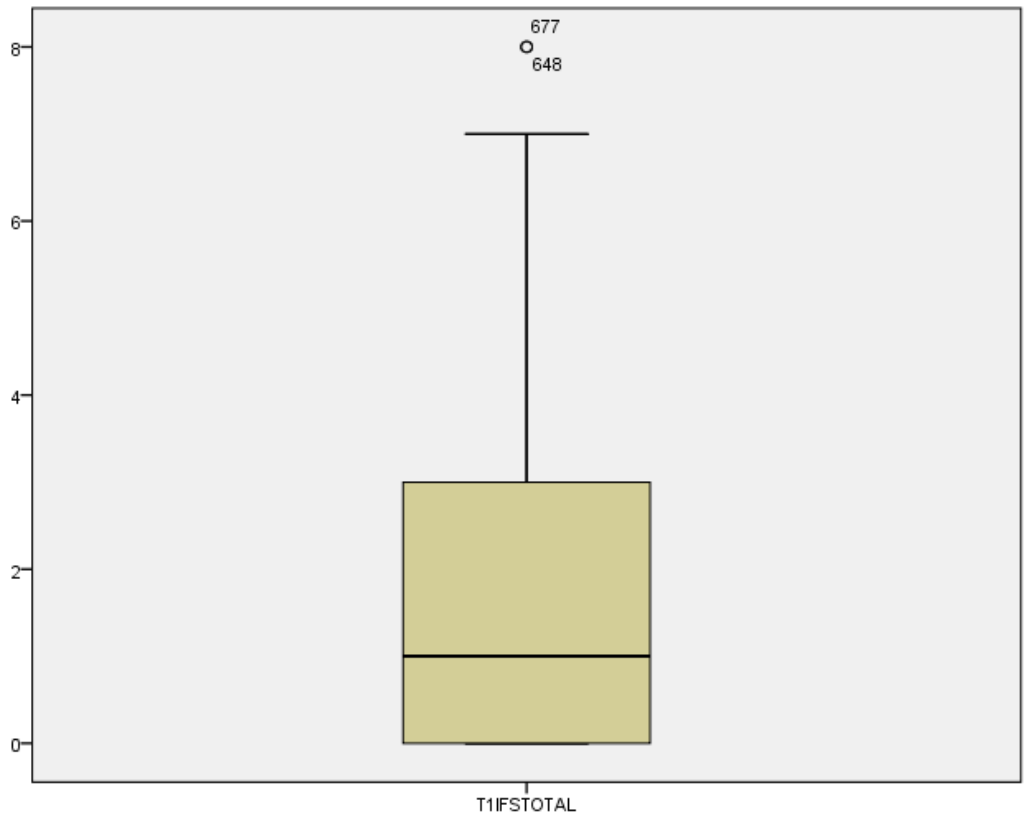
Anticipated Total Debt Upon Graduation



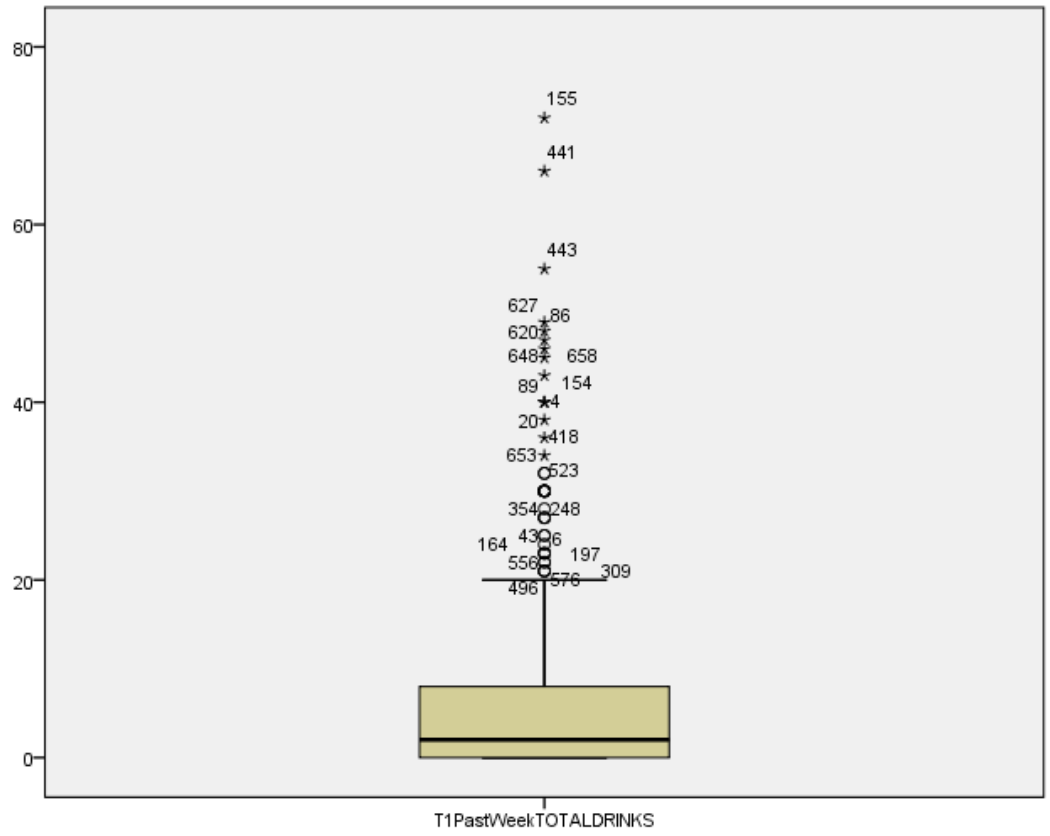
FAS


10.00
8.00
6.00
4.00
2.00
.00
677
647
590
502
T1FASTOTAL

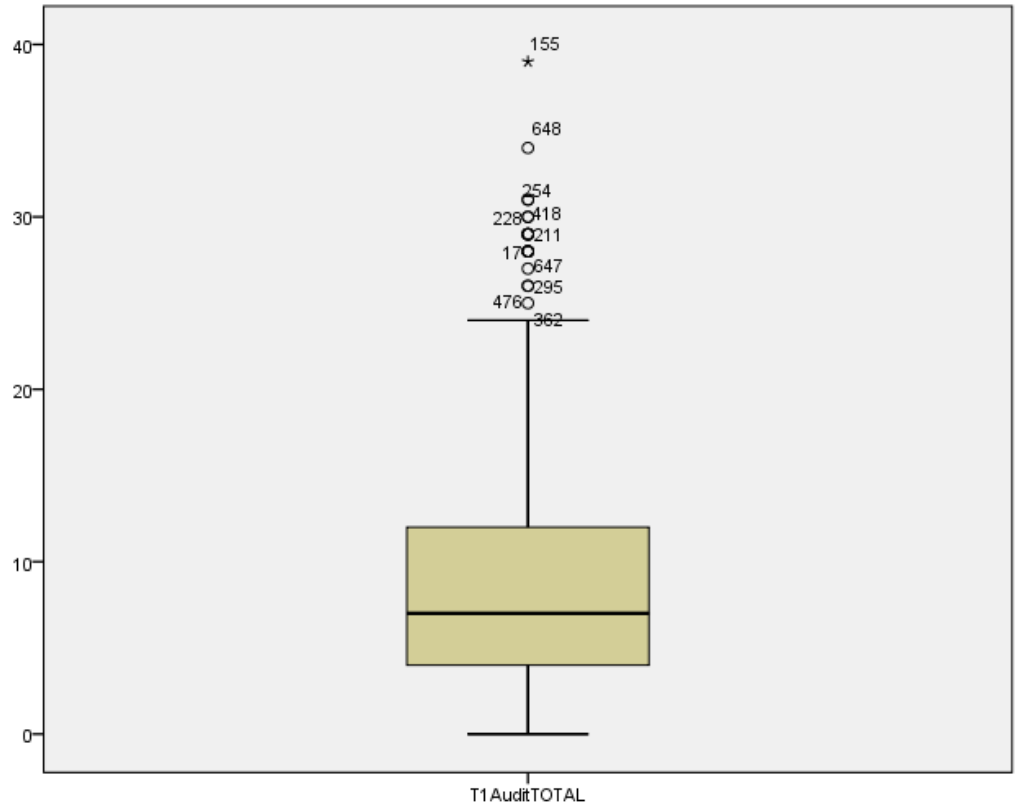
IFS


8
6
4
2
0
677
648
T1IFSTOTAL

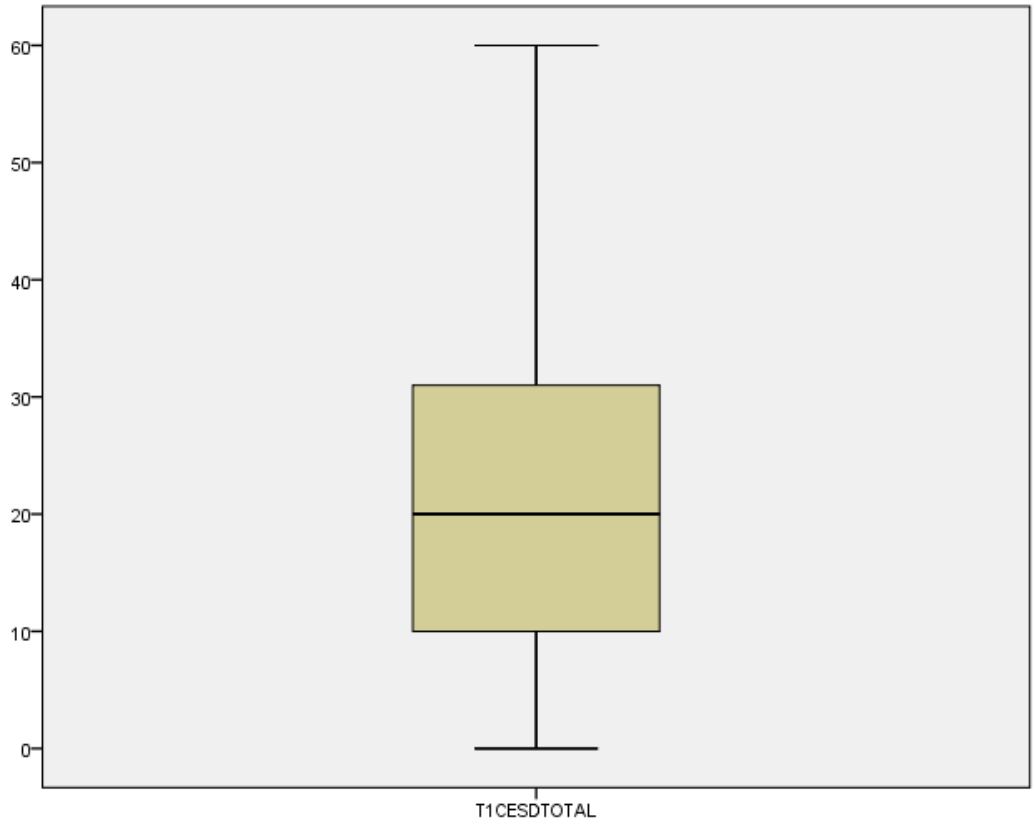
Past Week Number of Alcoholic Drinks



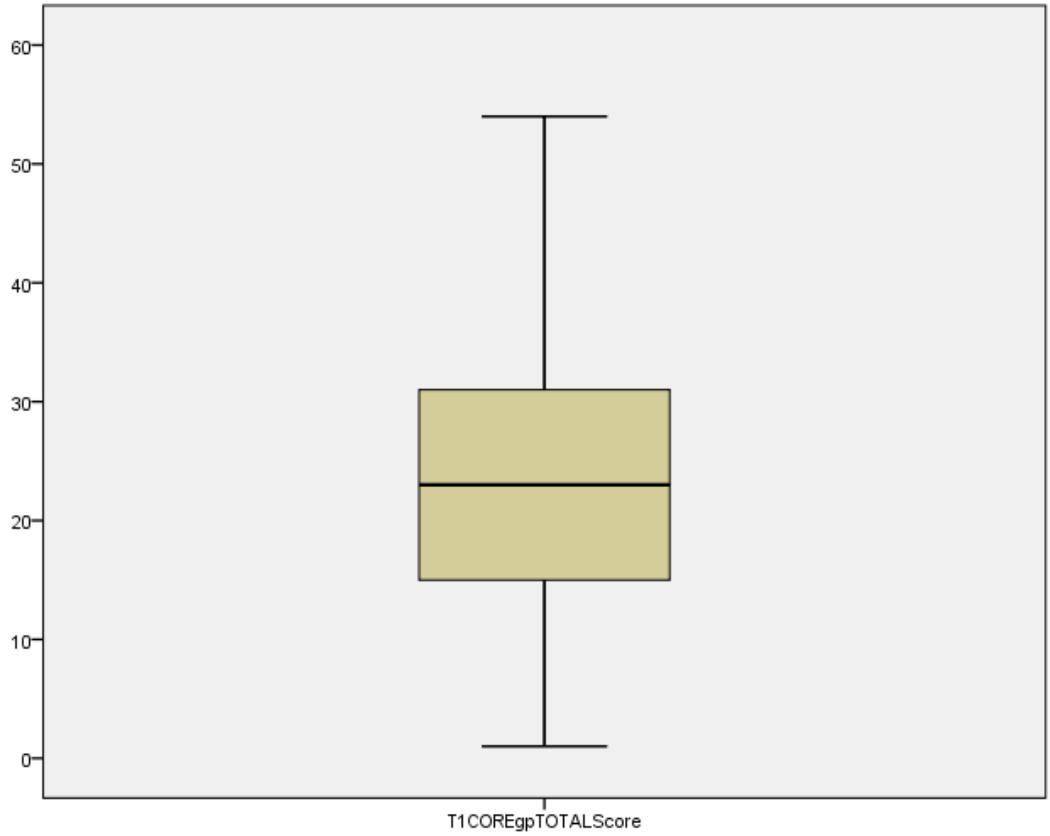
AUDIT



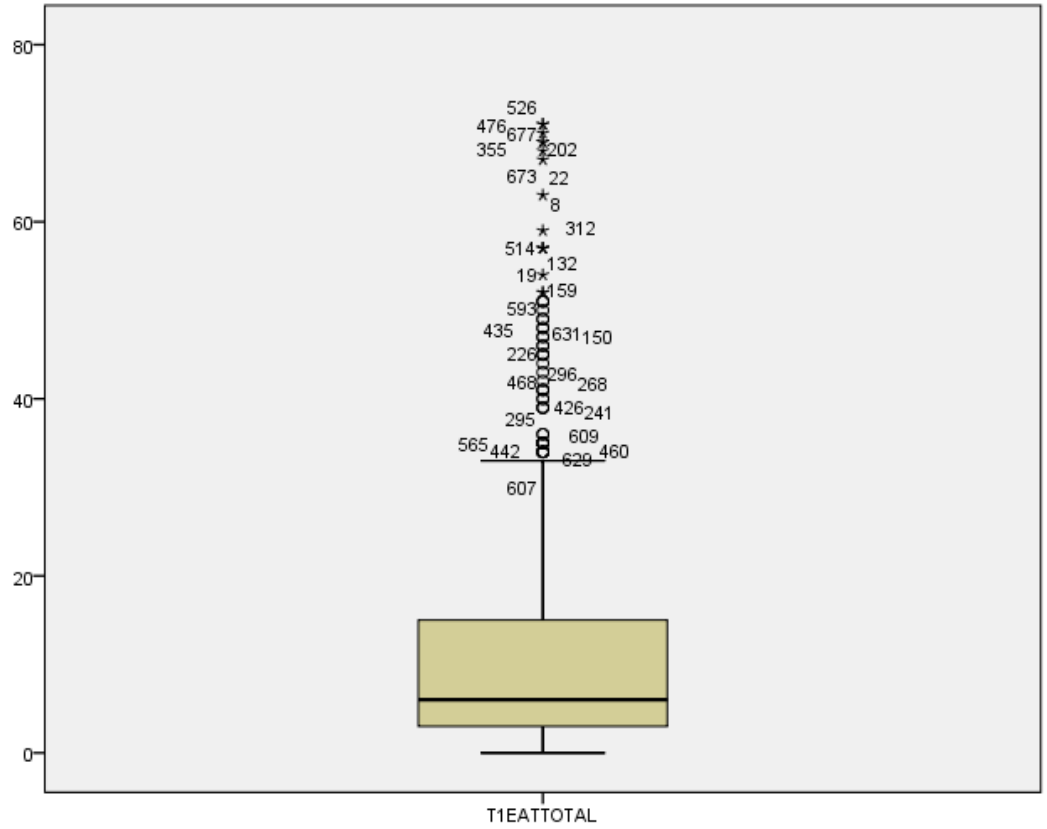
CES-D


60
50
40
30
20
10
0
T1CESDTOTAL

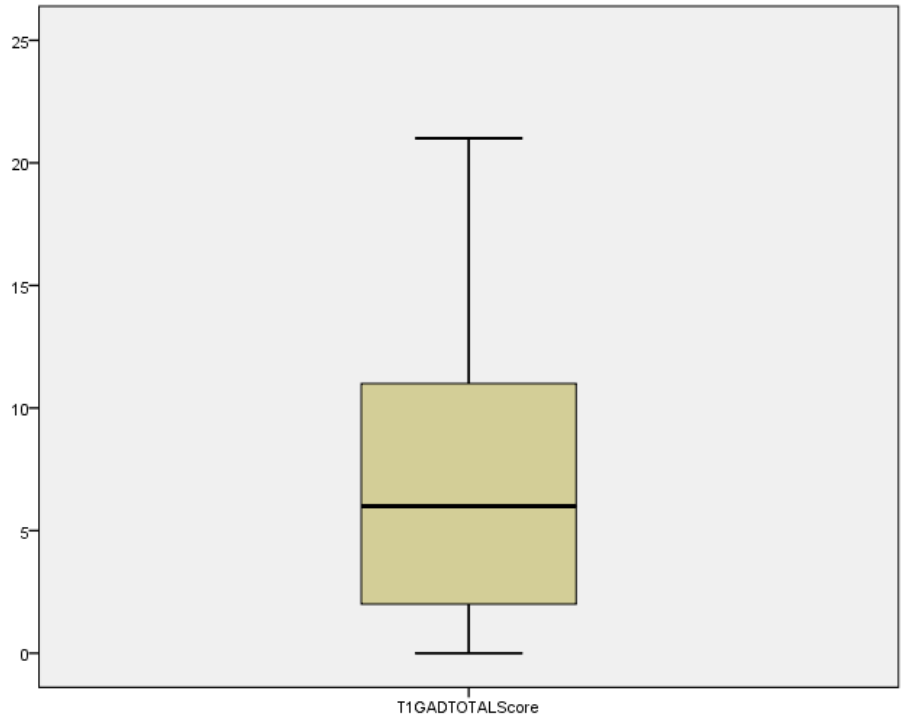
CORE-GP


60
50
40
30
20
10
0
T1COREgpTOTALScore

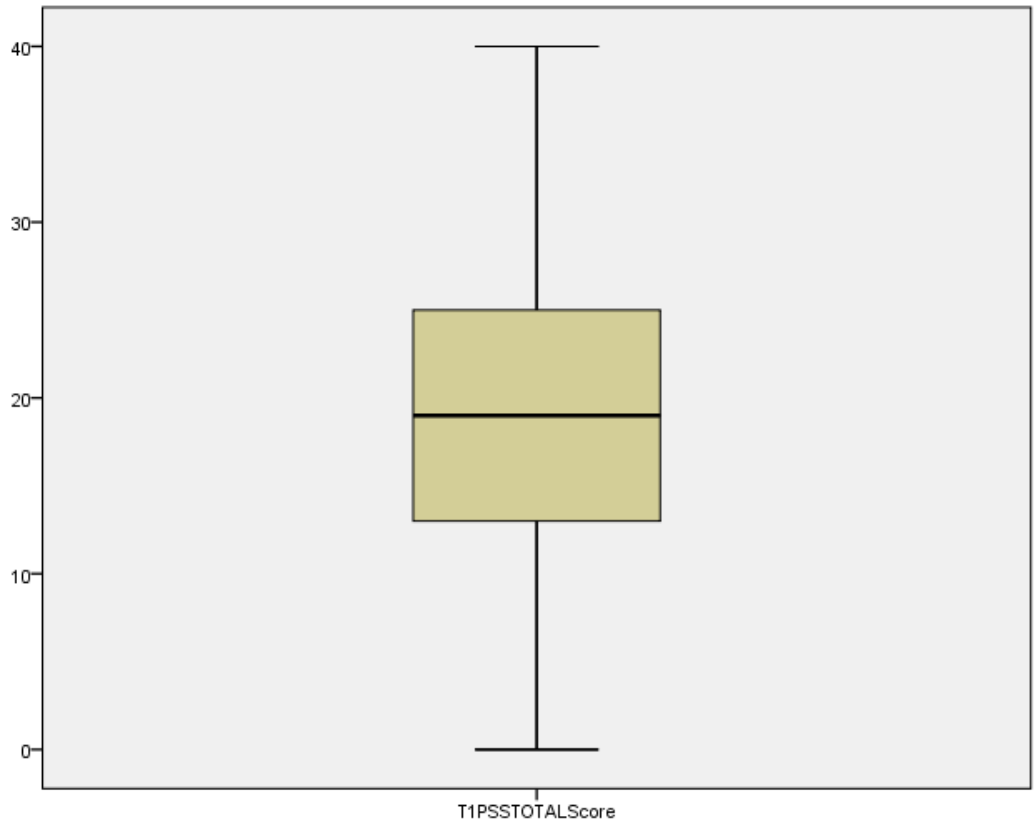
EAT


80
60
40
20
0
526
476
677
355
202
673
22
8
312
514
132
19
159
593
435
631
150
226
468
296
268
426
241
295
609
565
442
460
629
607
T1EATTOTAL

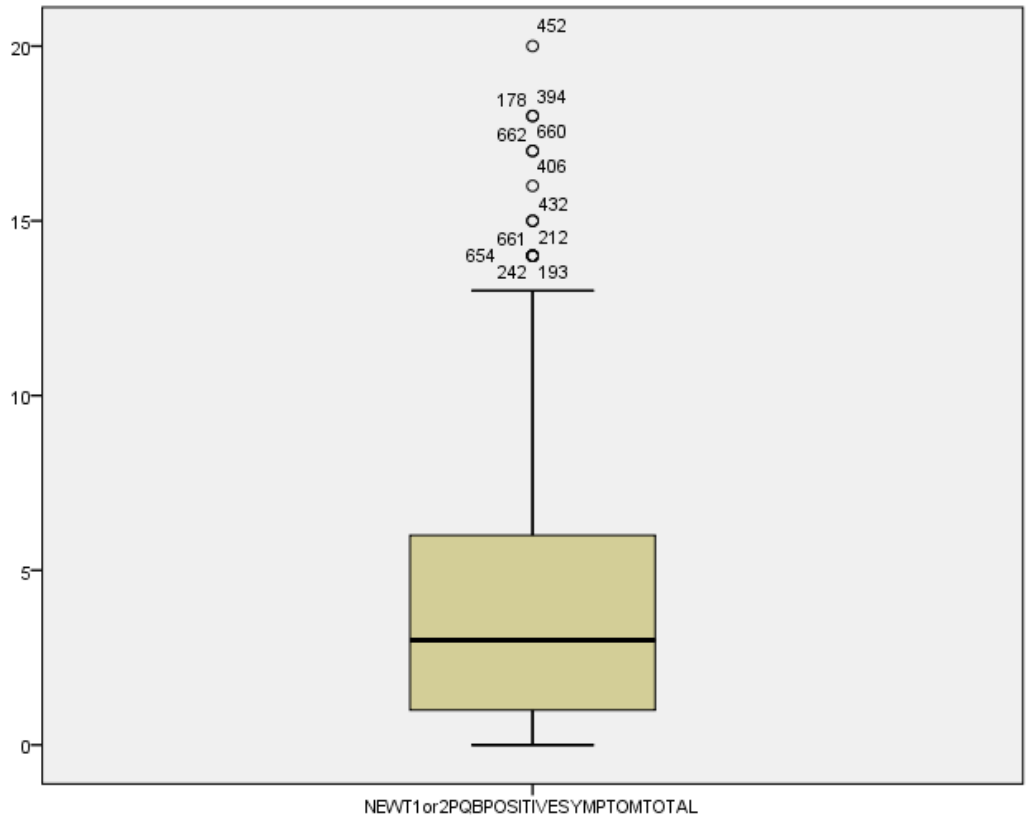
GAD-7


25
20
15
10
5
0
T1GADTOTALScore

PSS


40
30
20
10
0
T1PSSTOTALScore

PQB

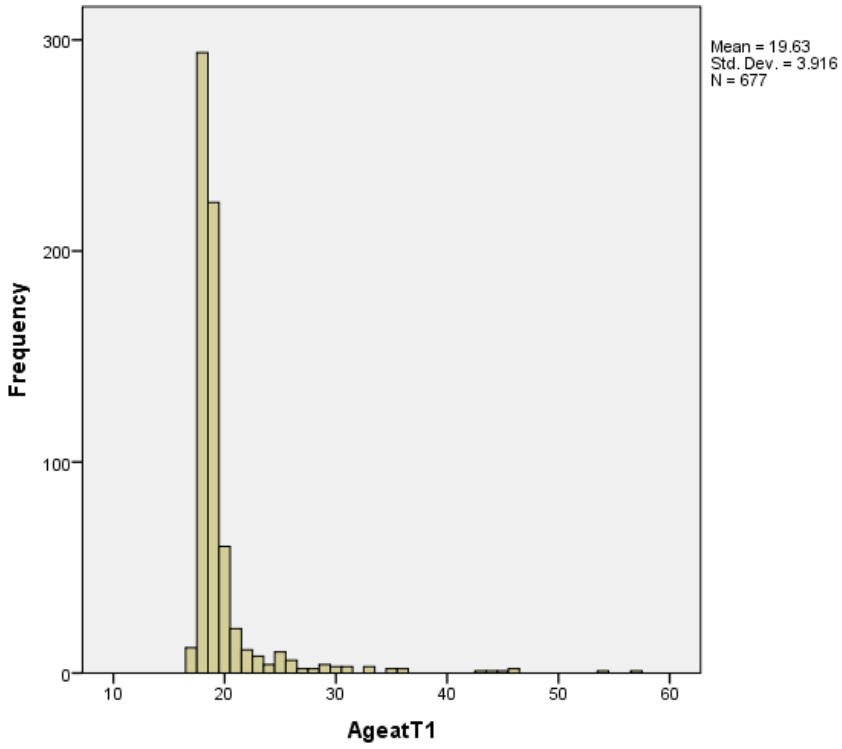

20
15
10
5
0
452
178
394
662
660
406
432
661
212
654
242
193
NEWT1or2PQBPOSITIVESYMPTOMTOTAL

Appendix 13: Skewness and Kurtosis and Time 1

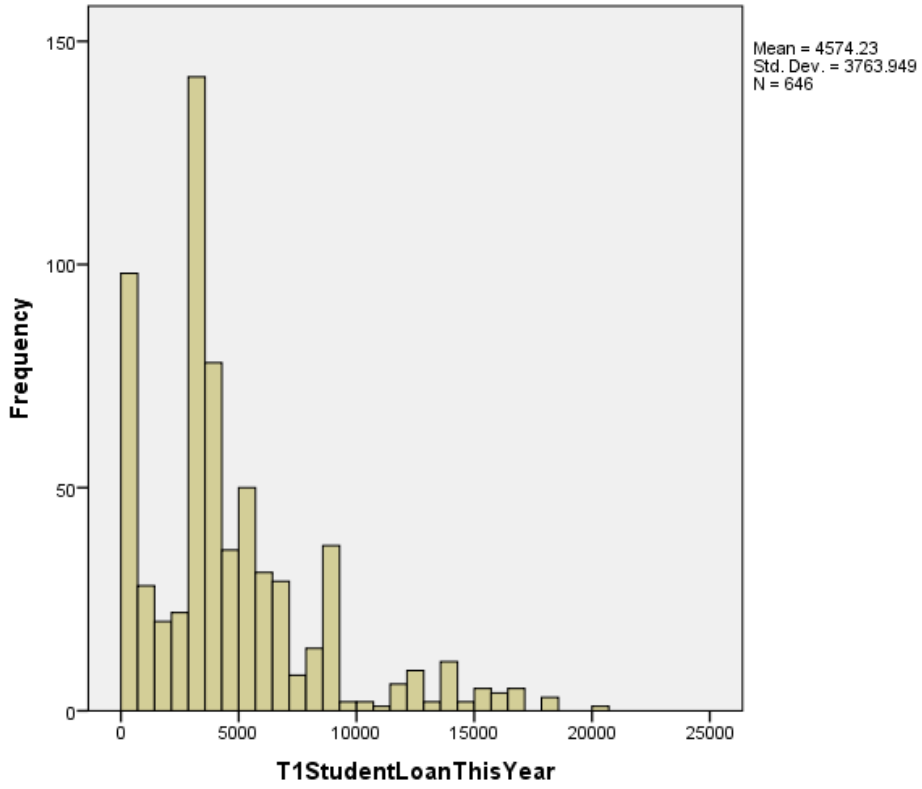
Variable	Skewness	Kurtosis
Age	5.23	34.34
Student Loan this year	1.34	2.08
How much owe apart from student loan	6.4	57.85
Anticipated total debt when graduate	7.73	99.59
Total drinks past week	2.91	11.53
FAS	-0.29	0.09
IFS	1.05	0.83
AUDIT	1.19	1.52
CES-D	0.55	-0.56
CORE-GP Total	0.29	-0.59
EAT Total	2.09	4.65
GAD-7	0.78	-0.266
PSS	0.14	-0.52
PQB (time two)	1.20	1.37

Appendix 14: Histograms for Continuous Variables at Time 1

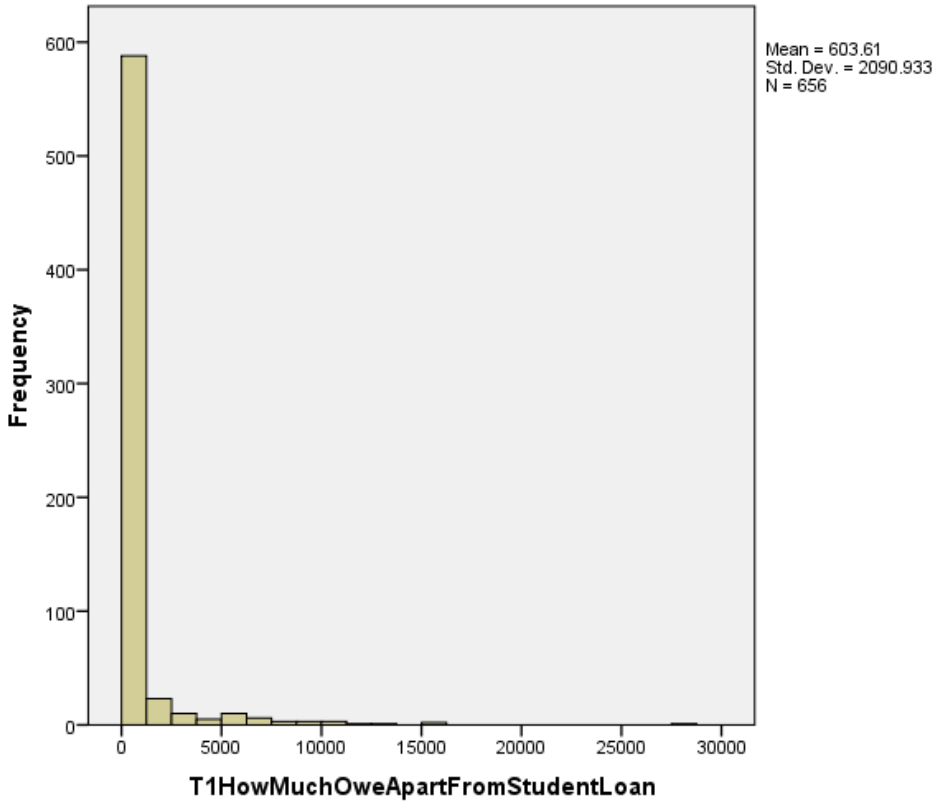
Age



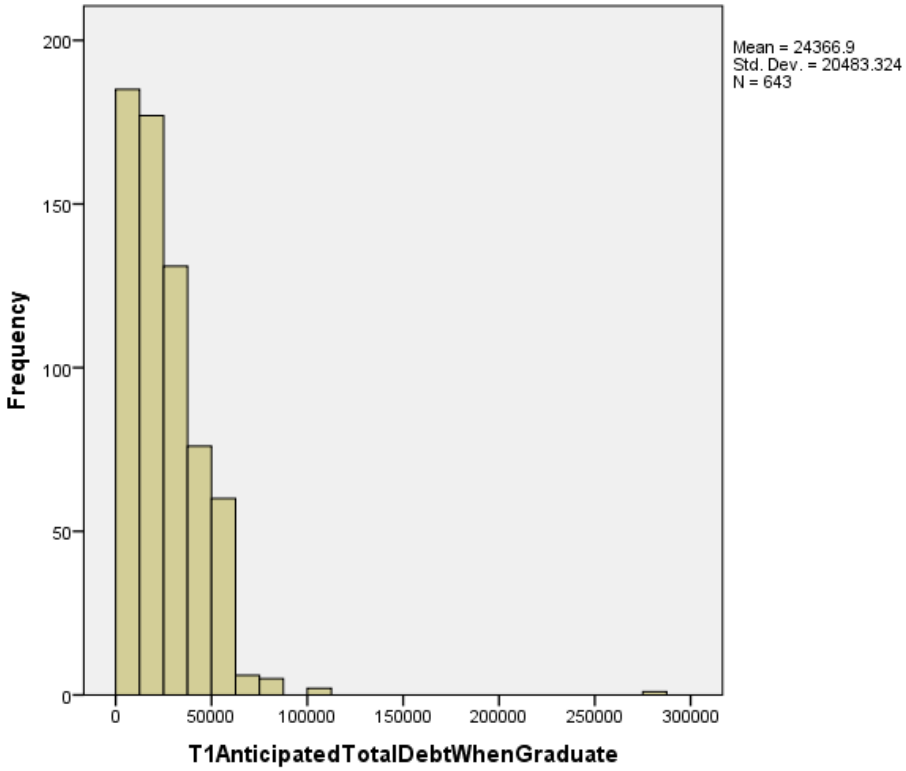
Student Loan This Year



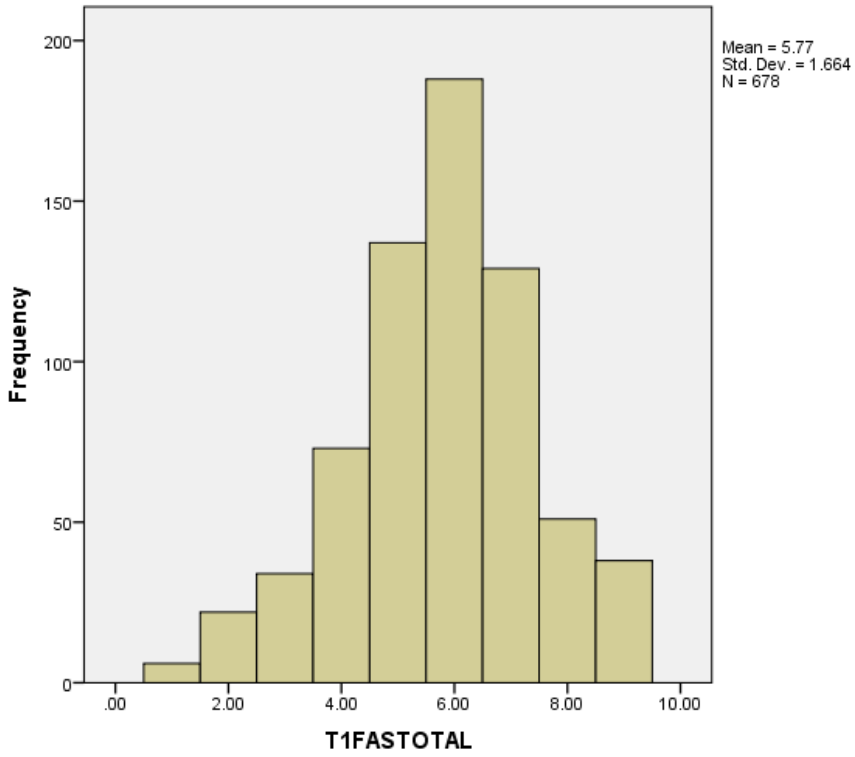
Non-student-Loan Debt



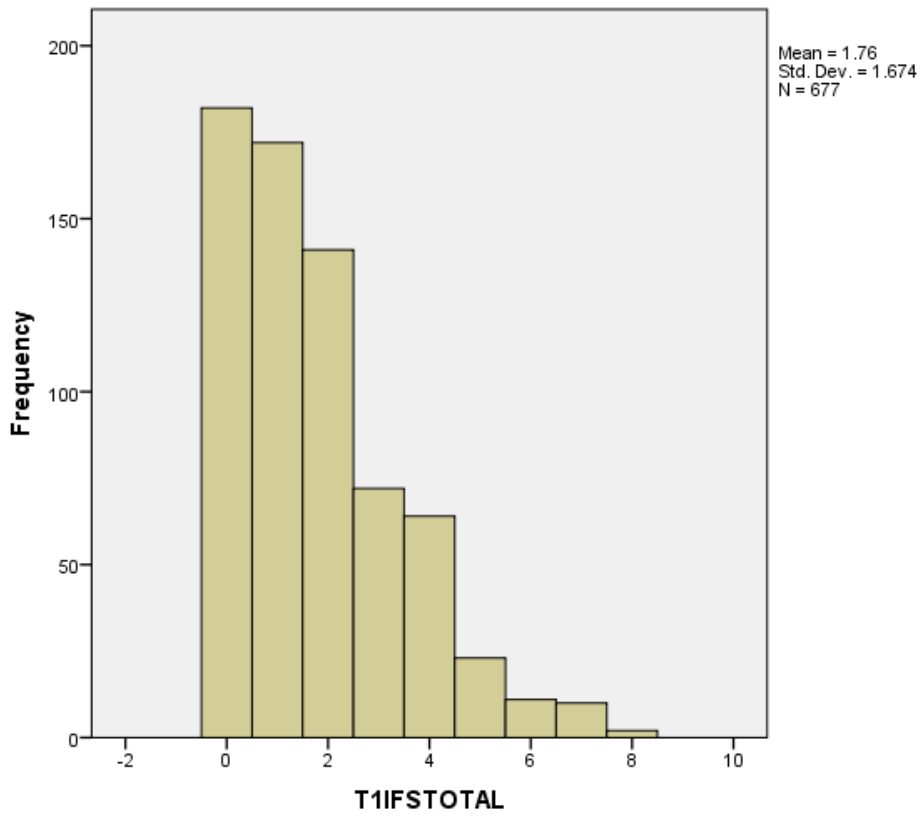
Anticipated Total Debt upon Graduation



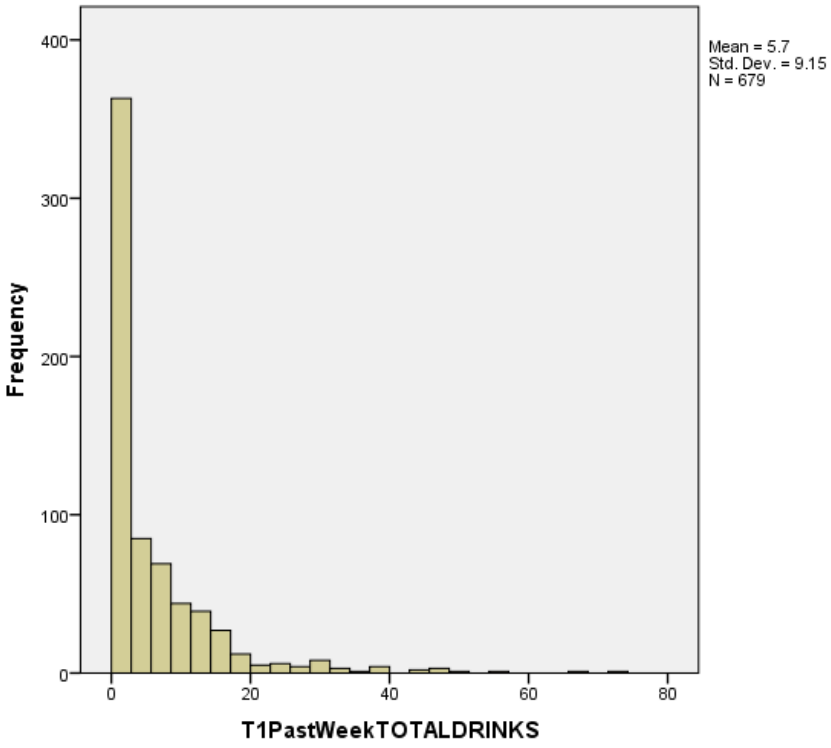
FAS


Mean = 5.77
Std. Dev. = 1.664
N = 678
Frequency
200
150
100
50
0
.00
2.00
4.00
6.00
8.00
10.00
T1FASTOTAL

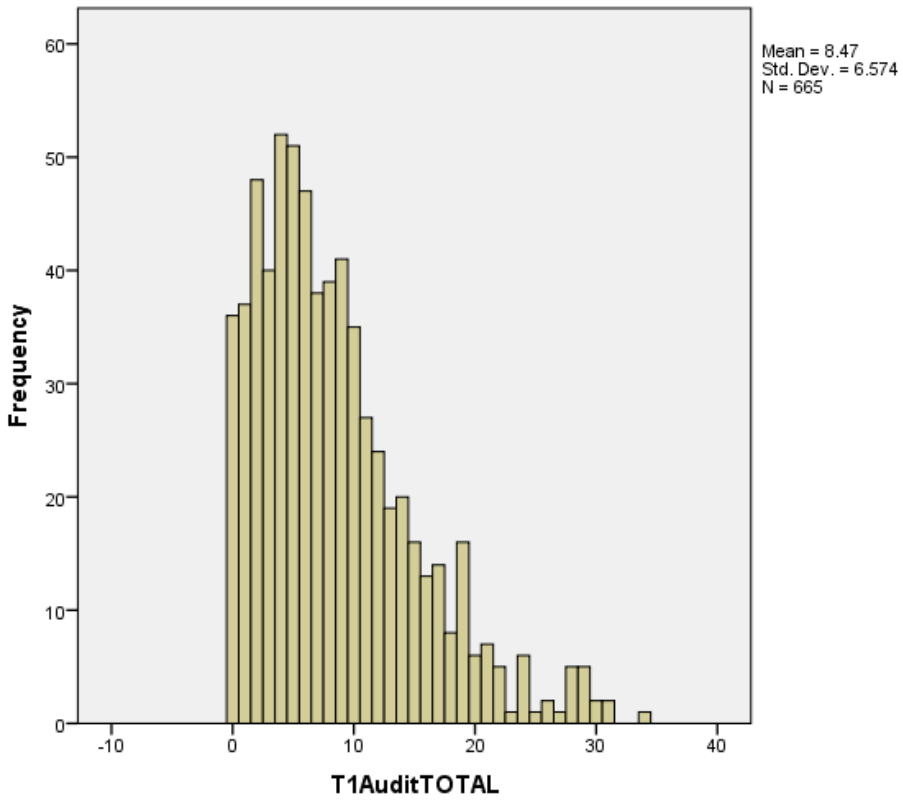
IFS


Mean = 1.76
Std. Dev. = 1.674
N = 677
Frequency
200
150
100
50
0
-2
0
2
4
6
8
10
T1IFSTOTAL

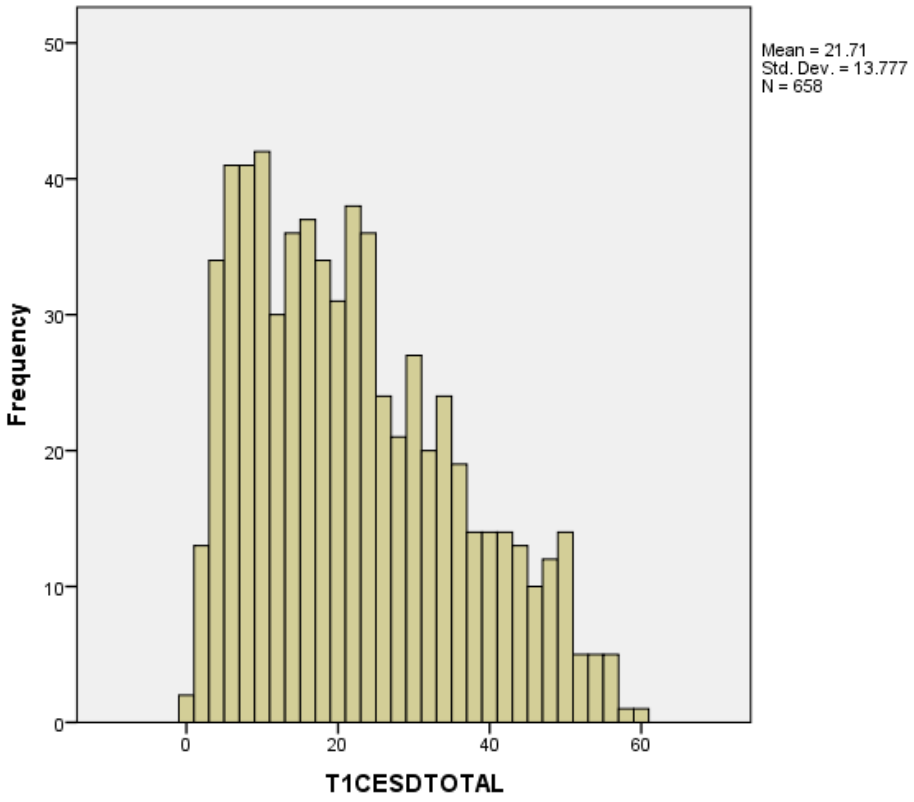
Past Week Number of Alcoholic Drinks



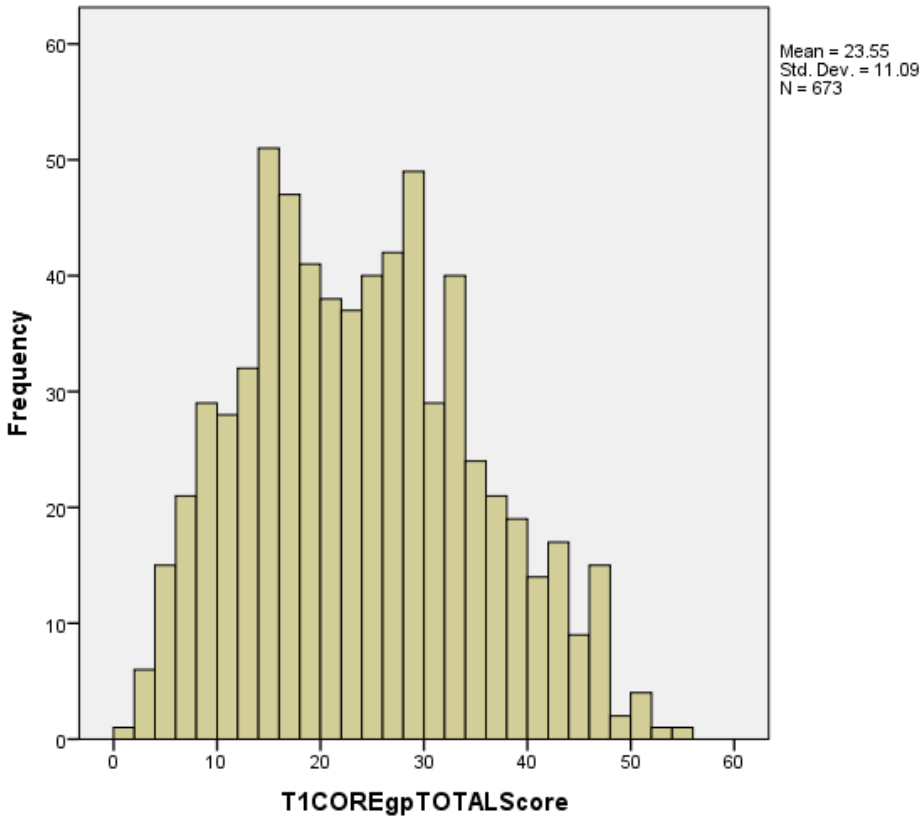
AUDIT



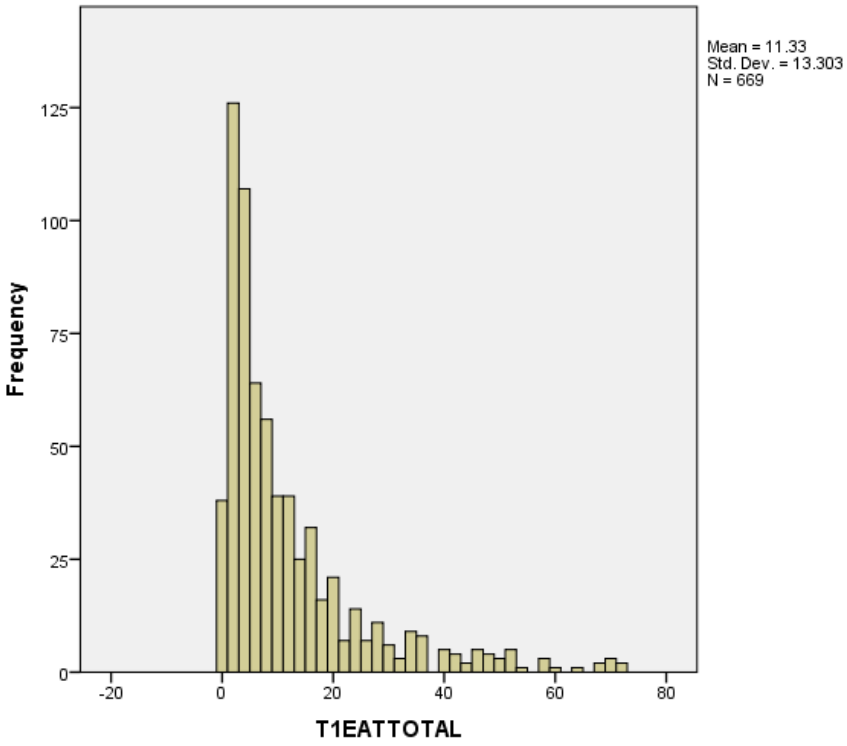
CES-D


Mean = 21.71
Std. Dev. = 13.777
N = 658
Frequency
T1CESDTOTAL

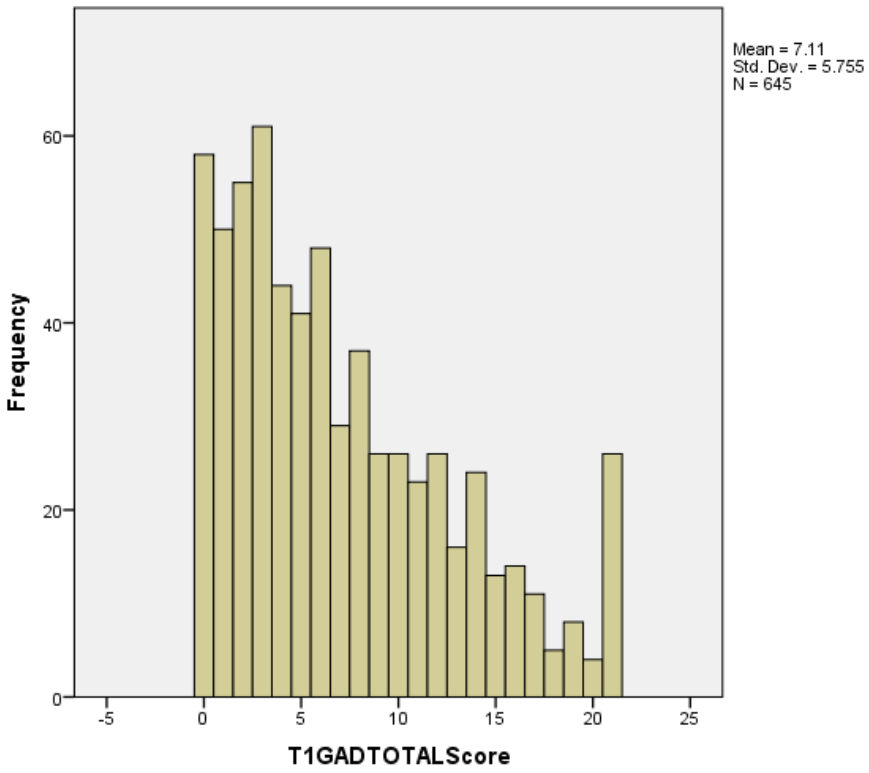
CORE-GP


Mean = 23.55
Std. Dev. = 11.09
N = 673
Frequency
T1COREgpTOTALScore

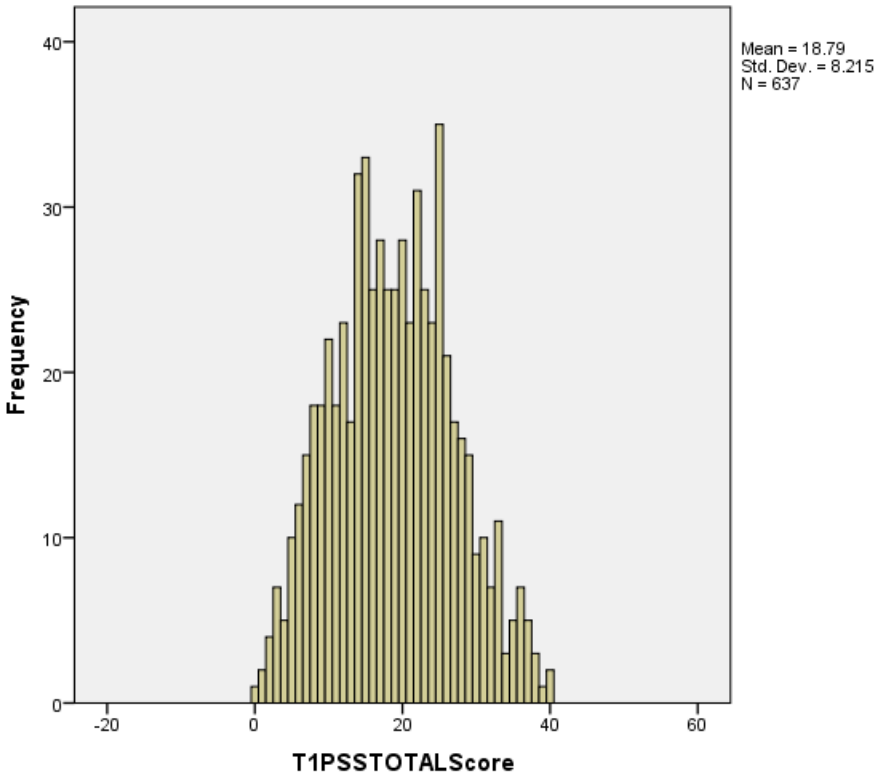
EAT


Mean = 11.33
Std. Dev. = 13.303
N = 669
Frequency
125
100
75
50
25
0
-20
0
20
40
60
80
T1EATTOTAL

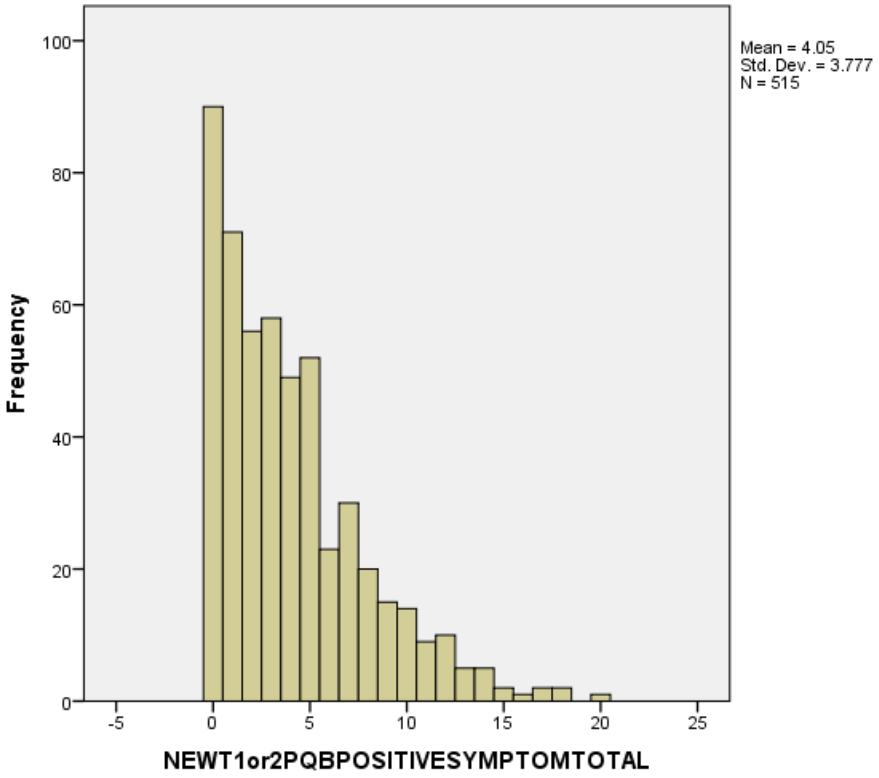
GAD


Mean = 7.11
Std. Dev. = 5.755
N = 645
Frequency
60
40
20
0
-5
0
5
10
15
20
25
T1GADTOTALScore

PSS


Mean = 18.79
Std. Dev. = 8.215
N = 637
Frequency
T1PSSTOTALScore

PQB


Mean = 4.05
Std. Dev. = 3.777
N = 515
Frequency
NEWT1or2PQBPOSITIVESYMPTOMTOTAL

Appendix 15: Linear Regression Formula: Time 1

Block 1: Cohort
Cohort

Block 2: Fees- difference in cohorts due to fees?
Tuition Fees (Dummy). Reference category= £8-9k (most common)

Block 3: Control for confounds: Demographic
Gender
Mature student
Disability
Family Affluence Scale

Block 4: Control for confound: Age
Age (Dummy). Reference category= 17-19 (most common).

Block 5: Control for confound: Ethnicity
Ethnicity (dummy). Reference category= White (most common).

Block 6: Control for confounds: Demographic
Where live in term time (dummy). Reference category= Uni halls (most common).

Block 7: Control for confounds: Type of degree
Type of degree (dummy). Reference category= Humanities (most common)

Block 8: Control for confounds: Month completed
Month completed (dummy). Reference category= March (most common)

Block 9: Mediating analysis: Part of UK
Part of UK lived in (Dummy). Reference category= England (most common)

Block 10: Mediating analysis: Student Loan
Loan this year (Dummy) Reference category= £3-5k (most common)

Block 11: Mediating analysis: Other Debt
Other debt overall (Dummy). Reference category= £0 (most common)

Block 12: Mediating analysis: Predicted debt
Predicted debt on graduation (dummy). Reference category= 20-45k (most common)

Block 13: Mediating analysis: Financial Stress
Index of Financial Stress

Block 14: Mediating analysis: Financial Stress
Difficult paying bills (dummy). Reference category= None.

Block 15: Mediating analysis: Grant
Receive a grant (dummy).

Block 16: Mediating analysis: Financial Concern

How stressed about debt (dummy). Reference category= Not stressed (most common)

Block 17: Mediating analysis: Financial Concern
How long think take to pay back (dummy). Reference category= 16-20 years (most common)

Block 18: Mediating analysis: Financial Concern
Considered abandoning due to financial
Considered not coming to uni due to financial

Block 19: Mediating analysis: How see loan
How see loan (dummy). Reference category= Debt have to pay back (most common)

Block 20: Mediating analysis: Work
Have term time job

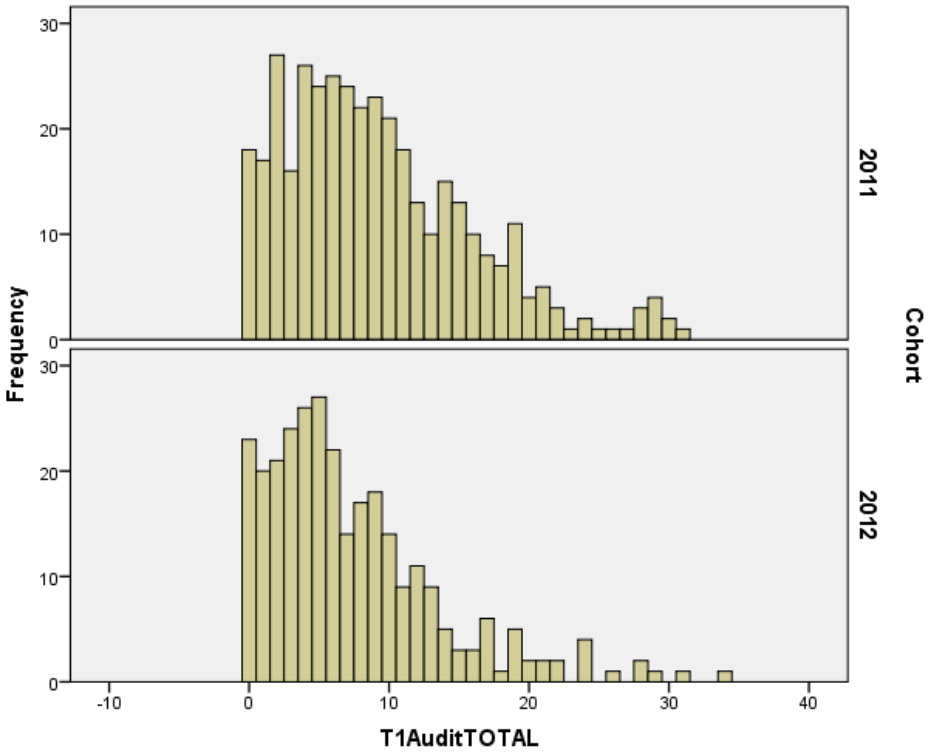
Block 21: Mediating analysis: First Choice
Uni first choice? (Dummy) Reference category= first choice (most common)

Block 22: Mediating analysis: Drink
Drink in past week (Dummy) Reference category= No drinks (most common) **not included for AUDIT**

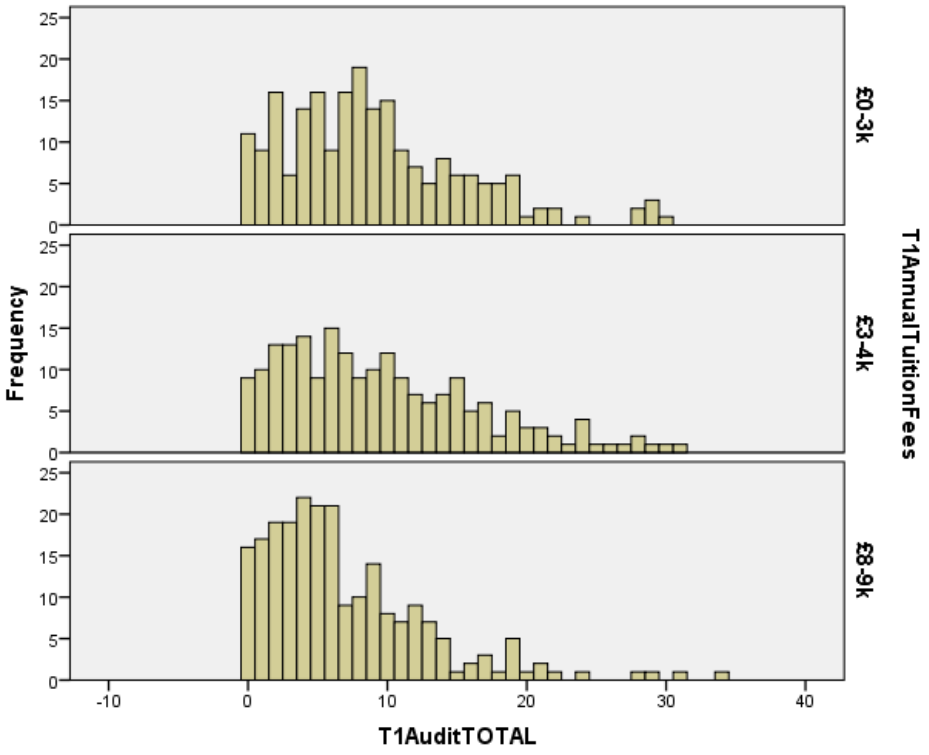
Block 23: Mediating analysis: Substance Use
Cannabis use past 6 months

Appendix 16: Bivariate distribution for Cohort and Fees at time 1

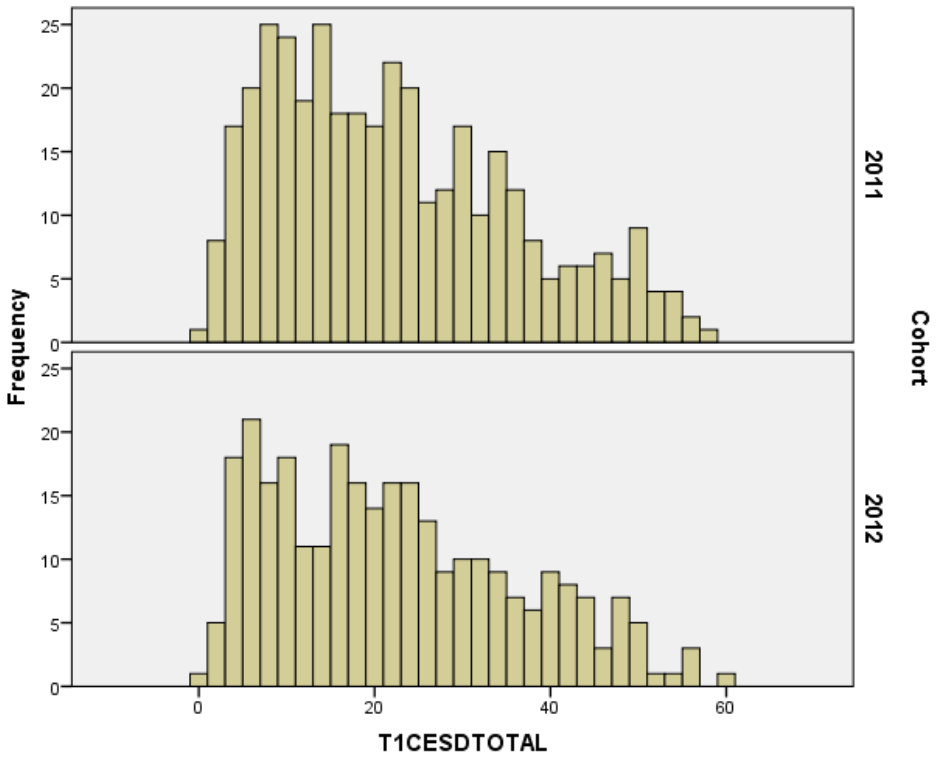
AUDIT: Cohort



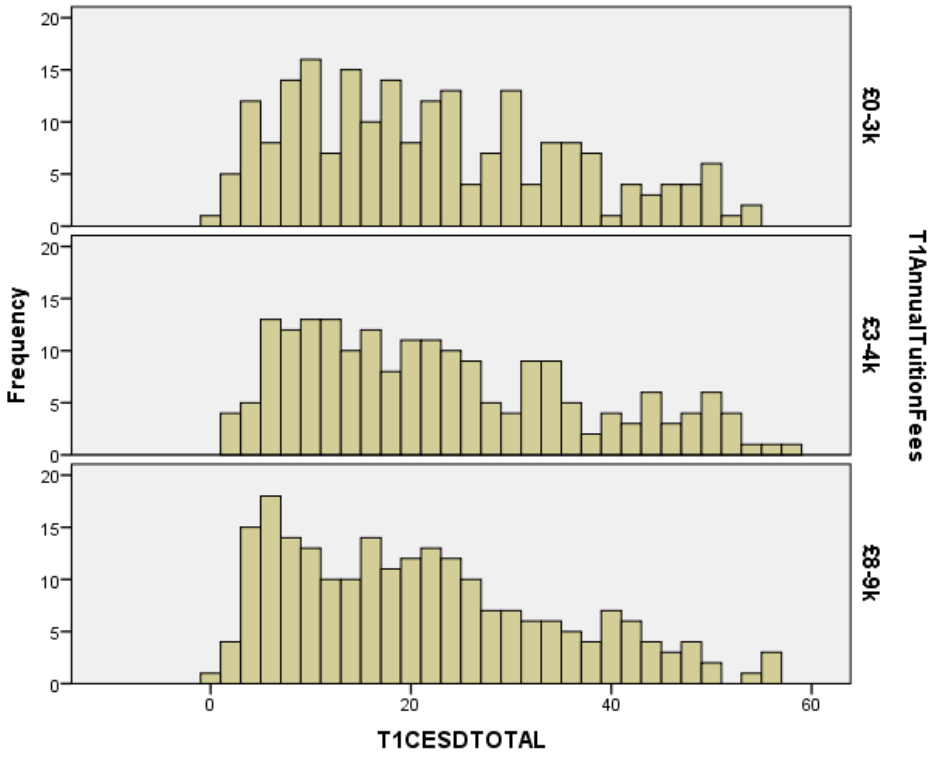
AUDIT: Fees



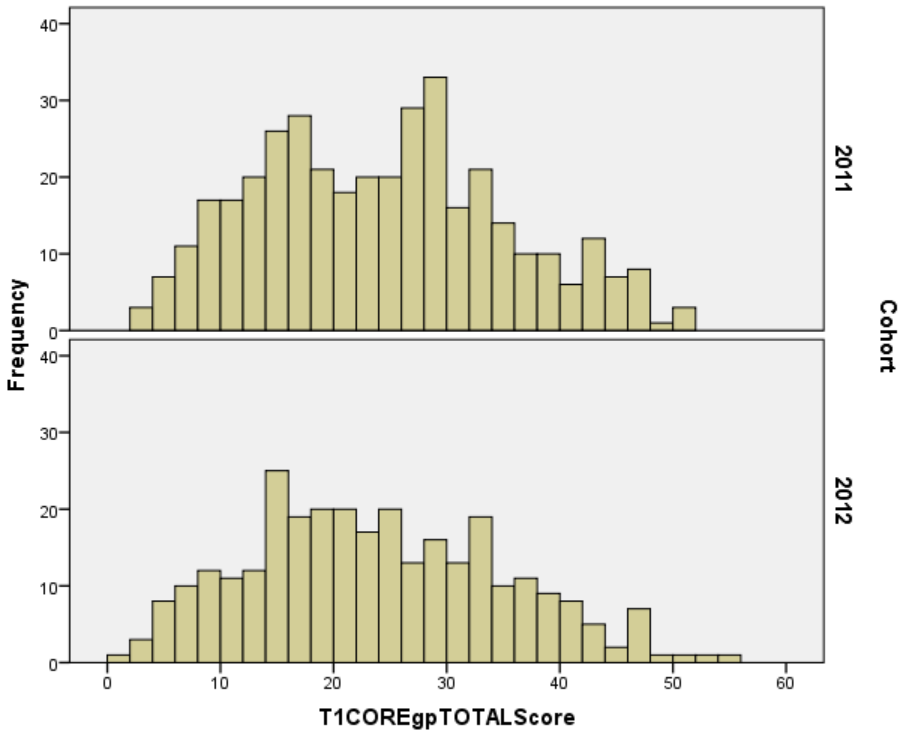
CES-D: Cohort



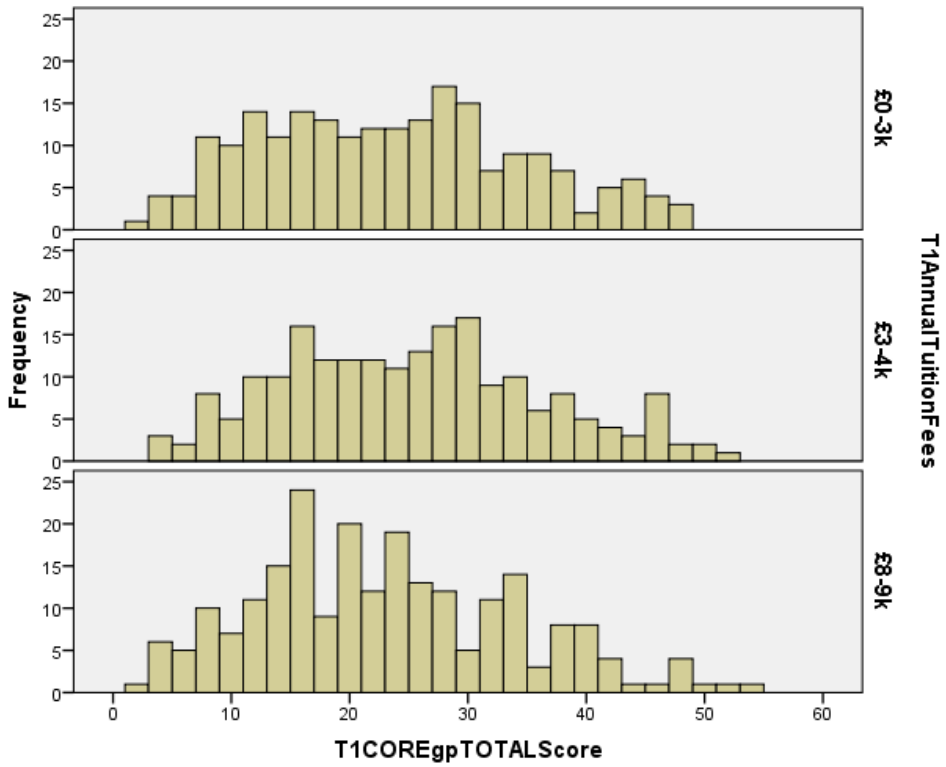
CES-D: Fees



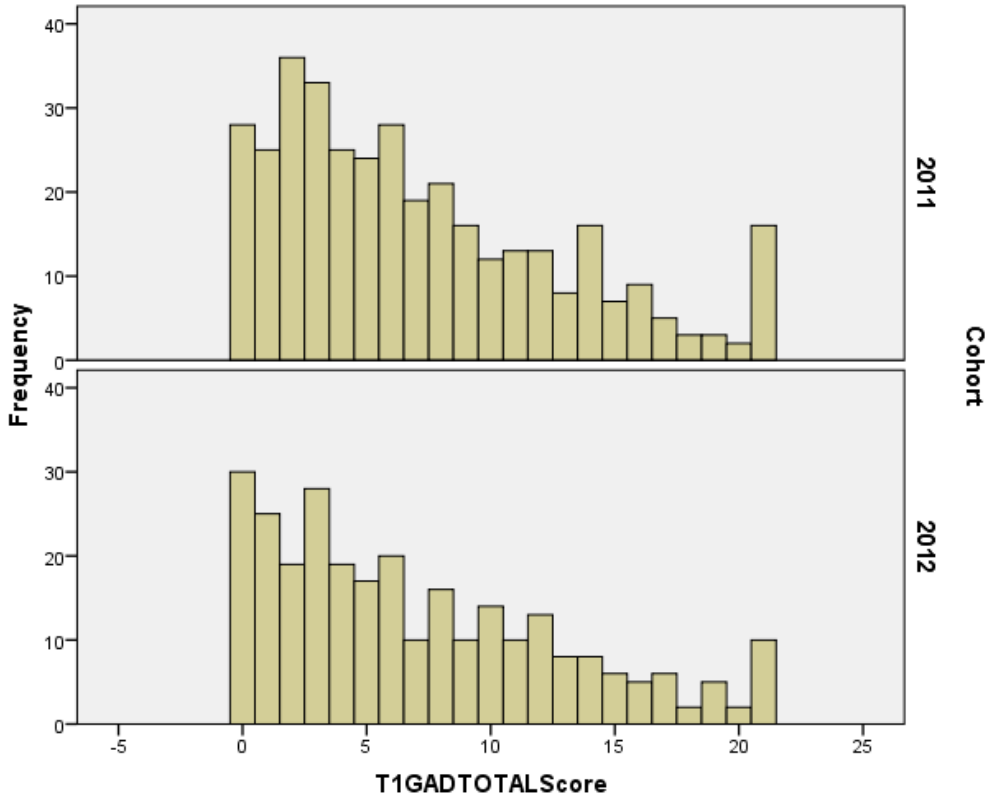
CORE-GP: Cohort



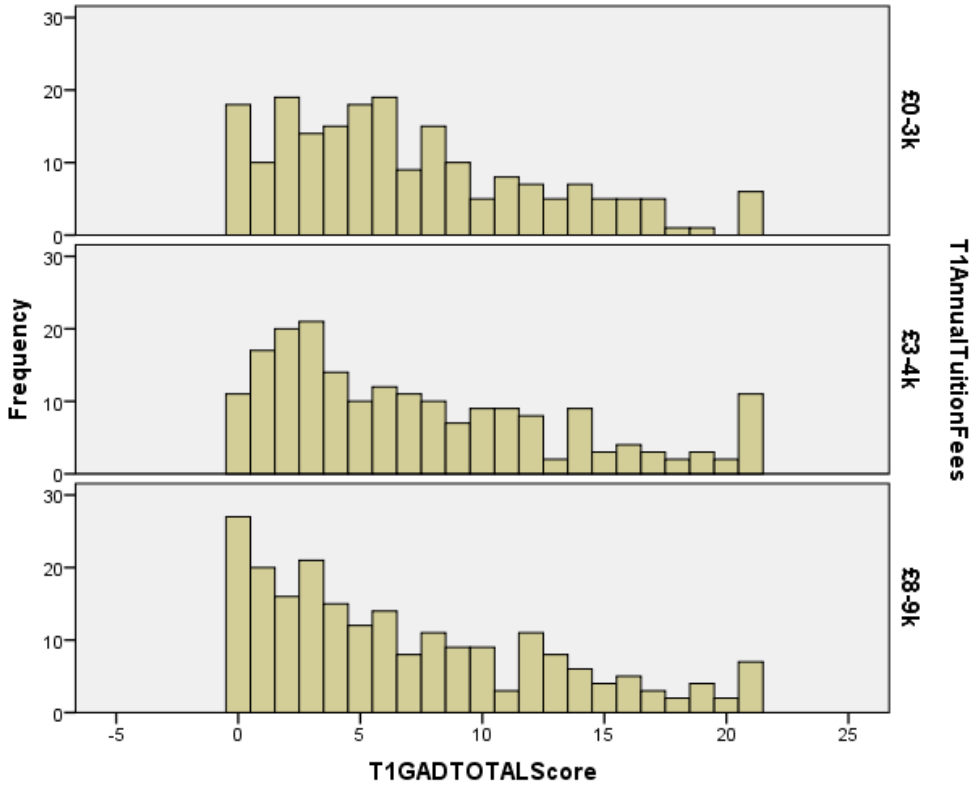
CORE-GP: Fees



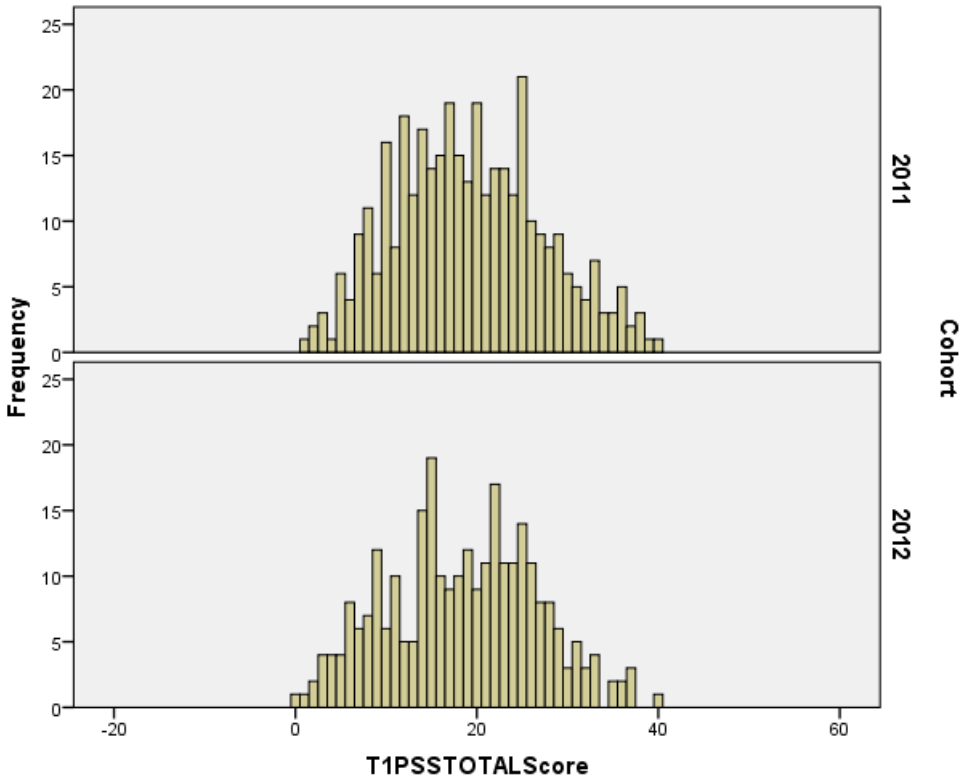
GAD-7: Cohort



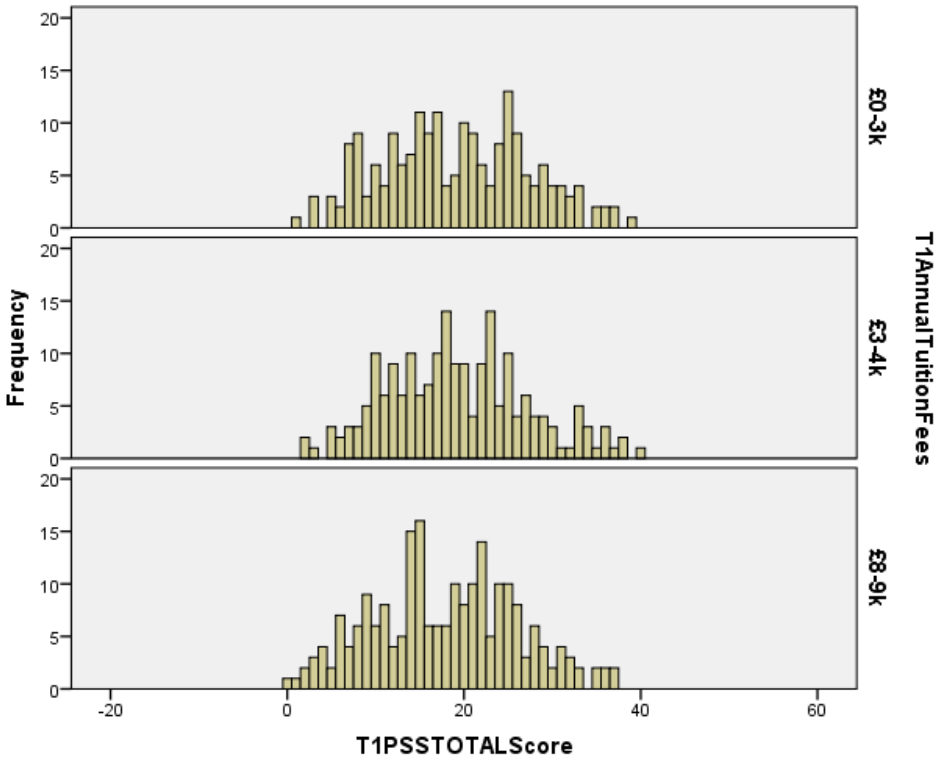
GAD-7: Fees



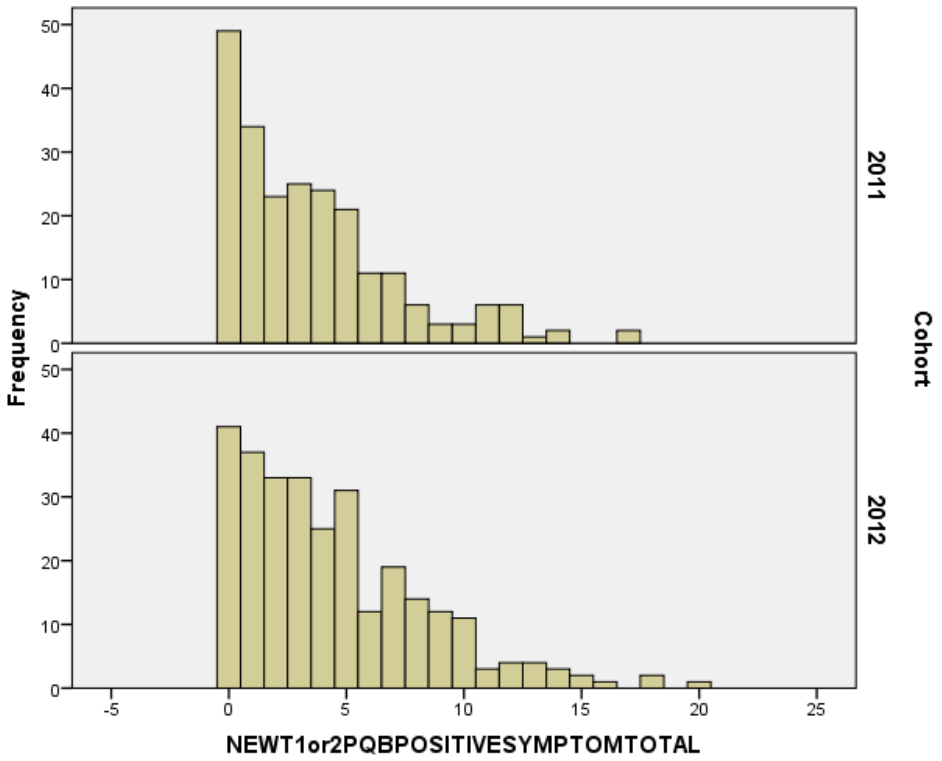
PSS: Cohort



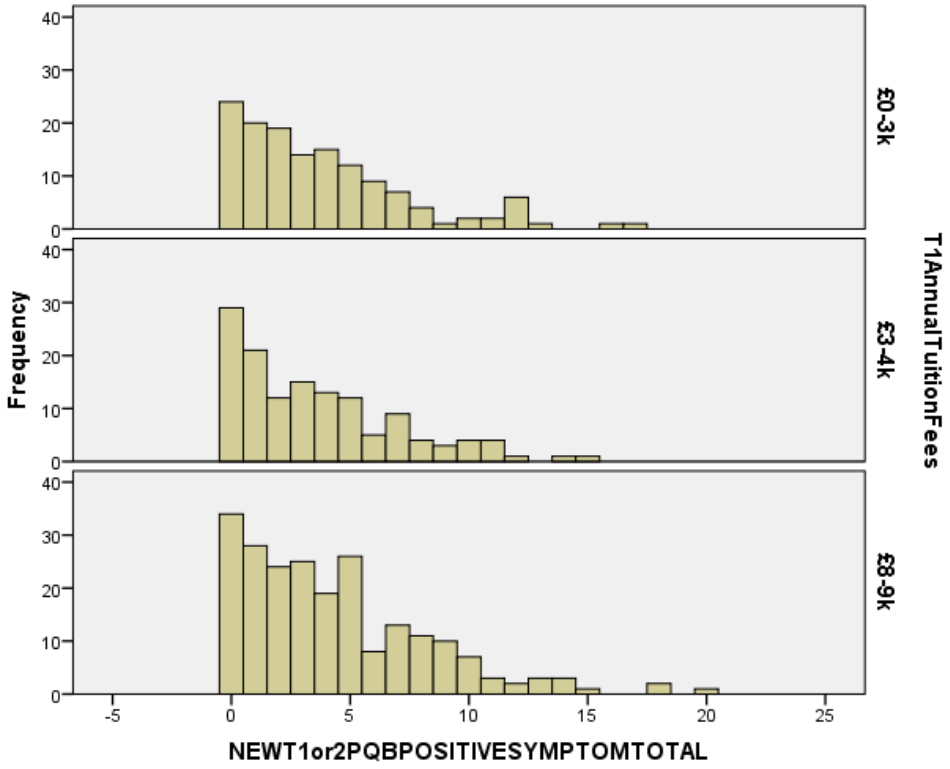
PSS: Fees



PQB: Cohort

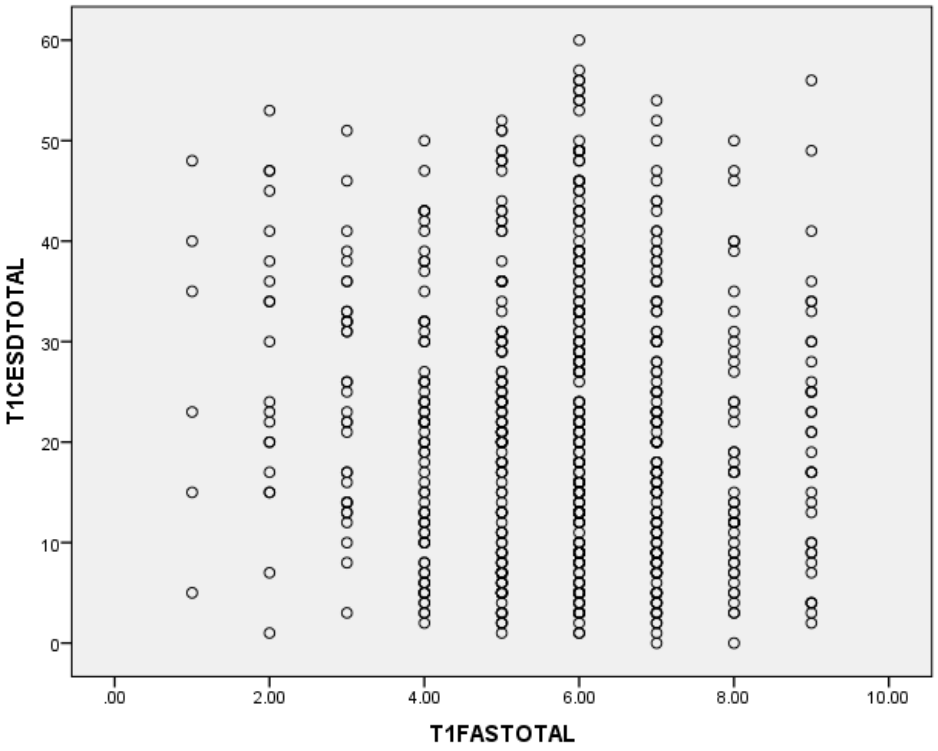


PQB: Fees

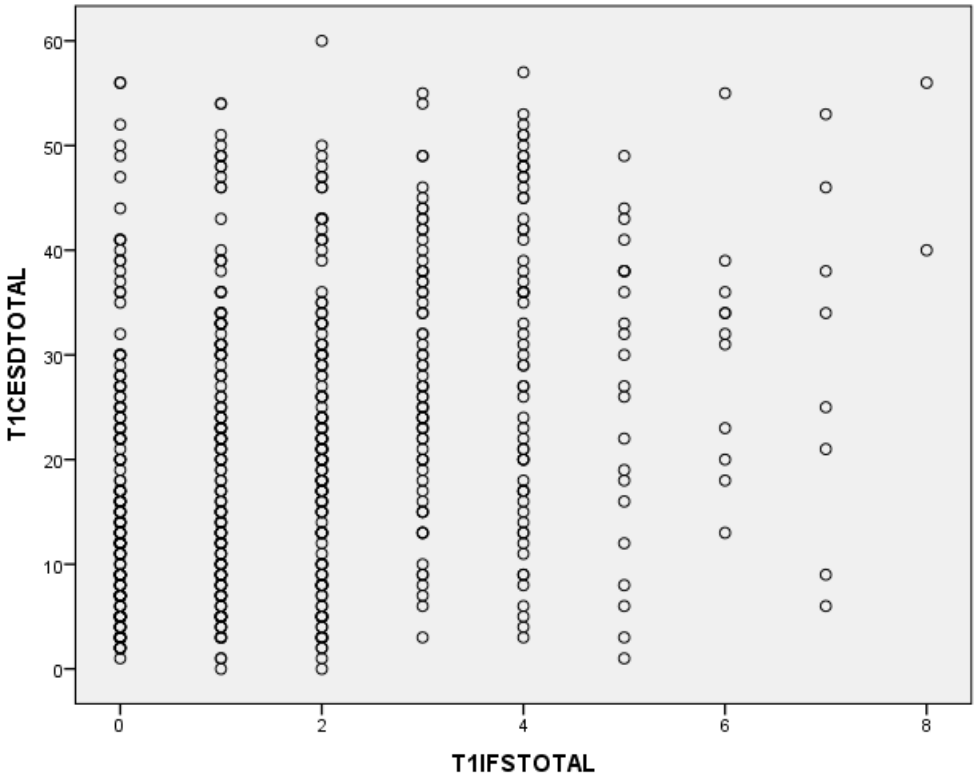


Appendix 17: Bivariate distribution for IFS and FAS at time 1

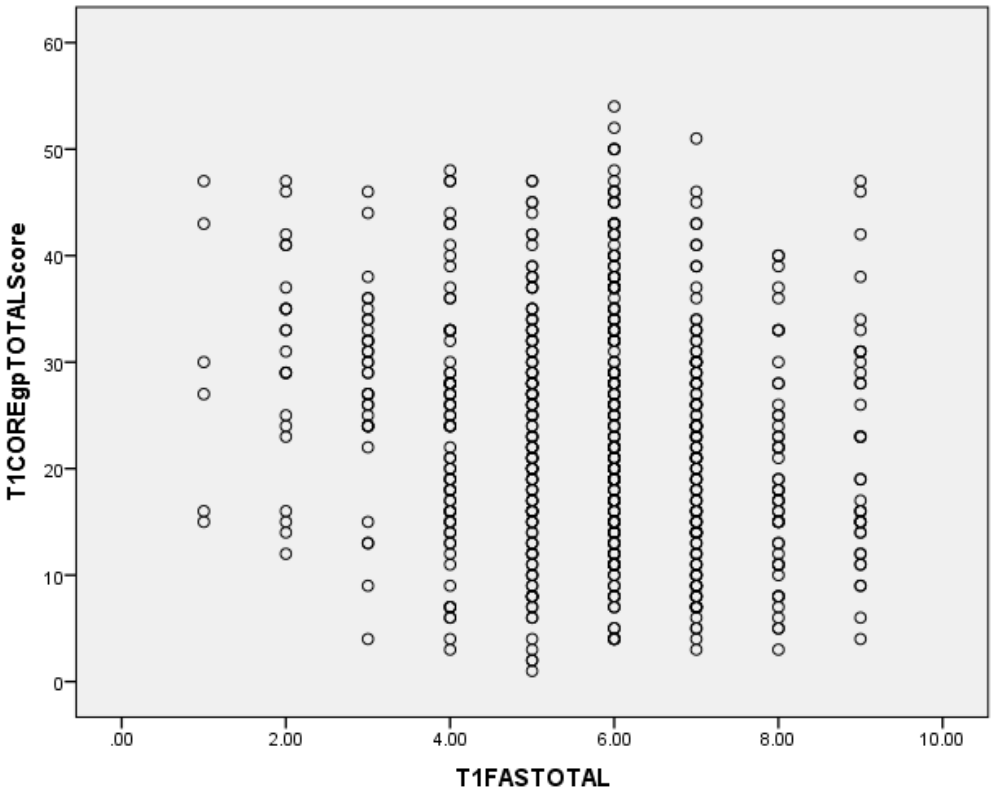
CES-D-FAS



CES-D-IFS



CORE-GP-FAS



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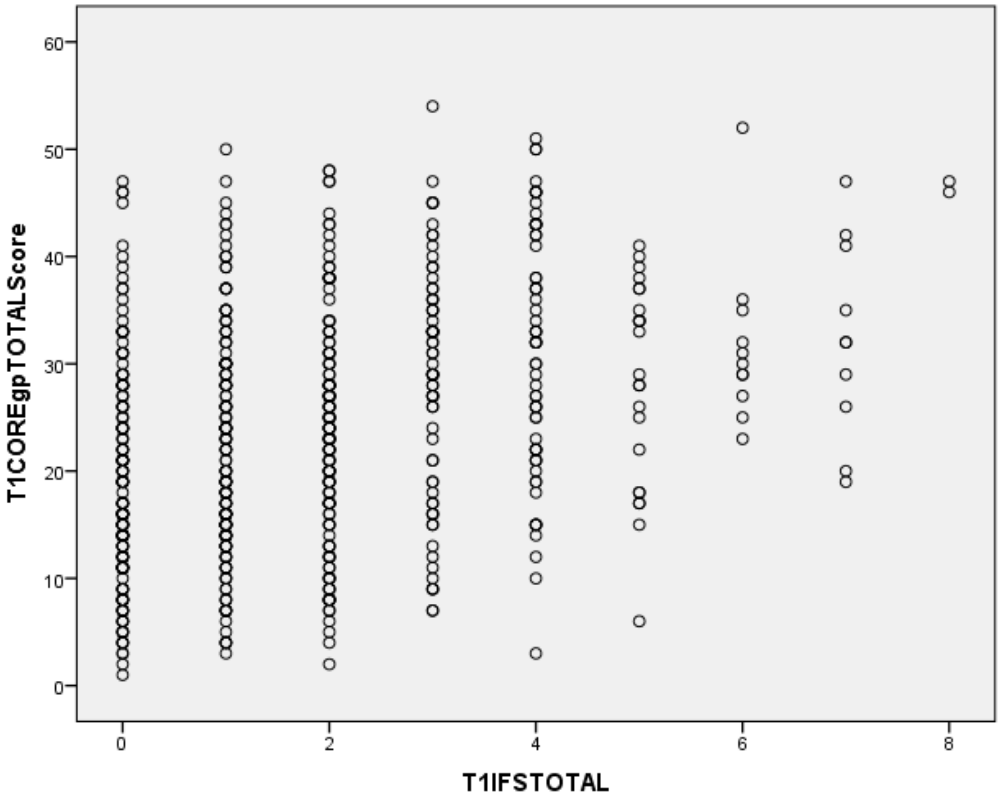
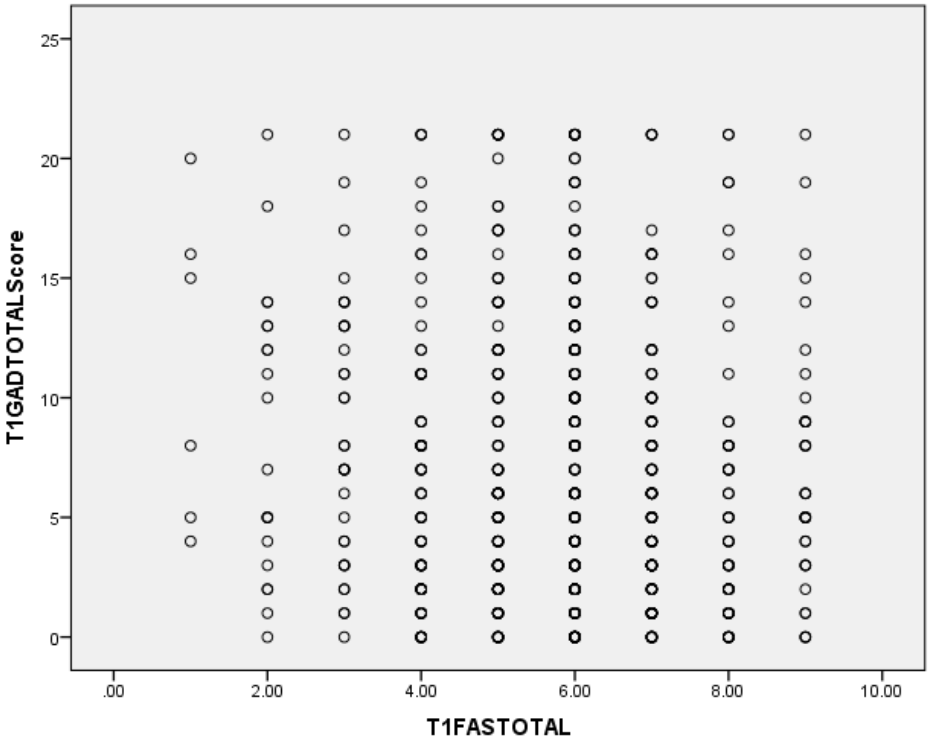


GAD-7-FAS



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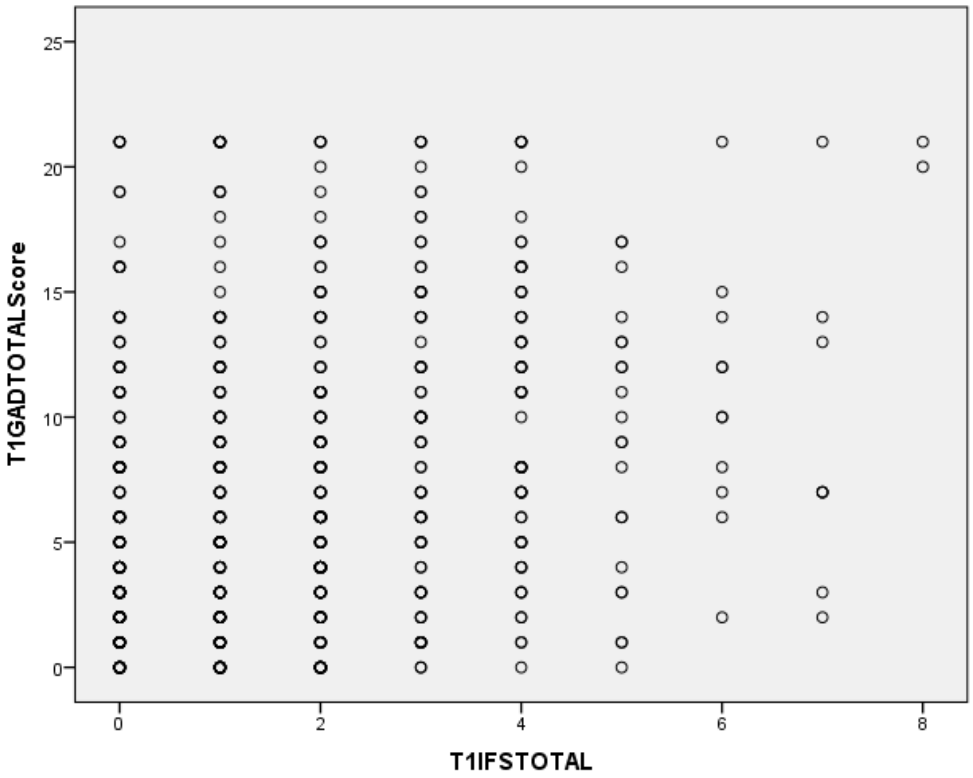
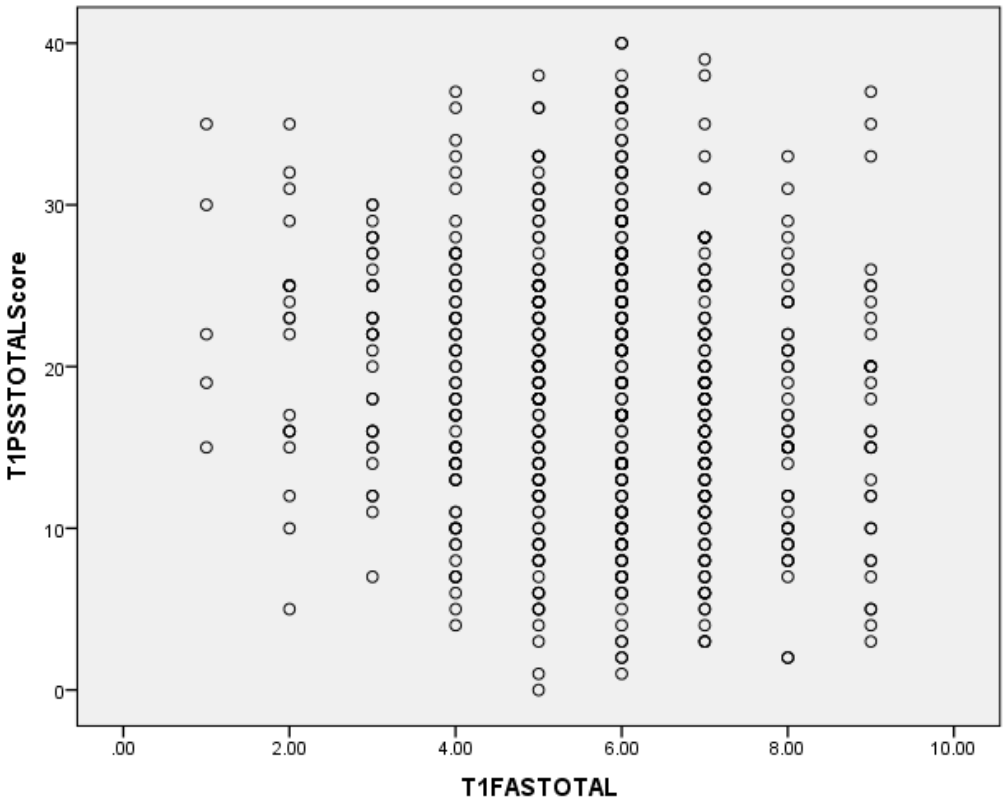
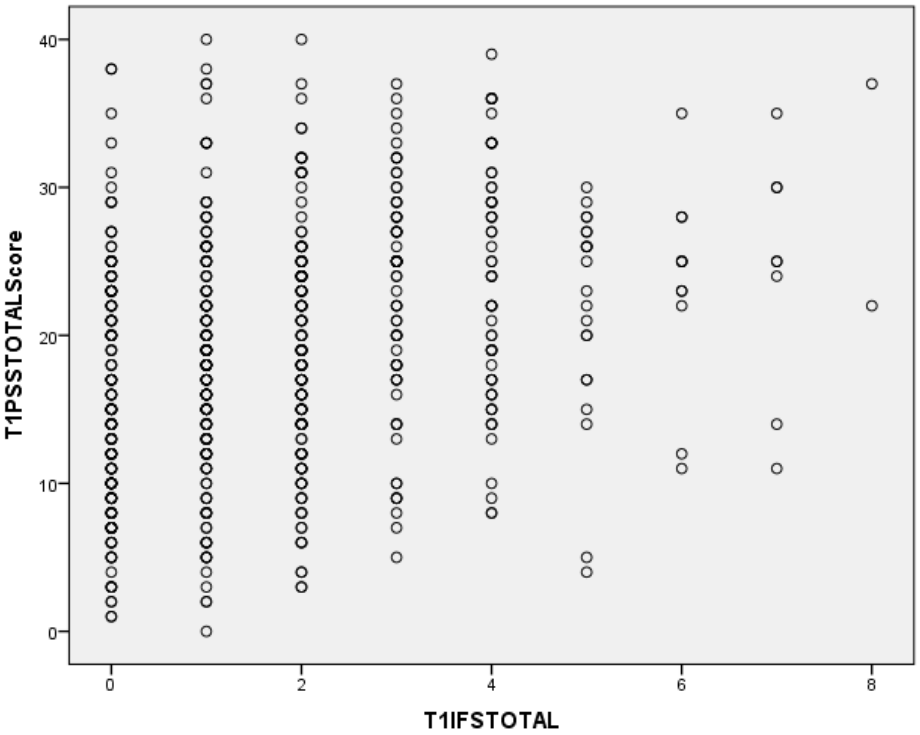


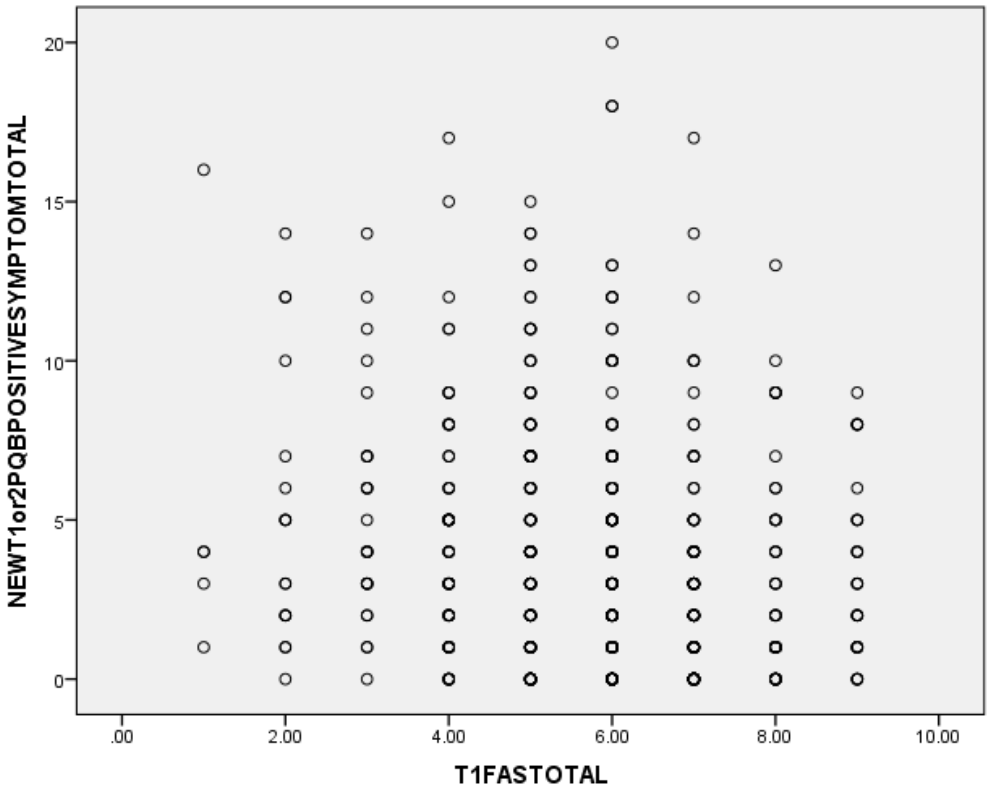
PSS-FAS



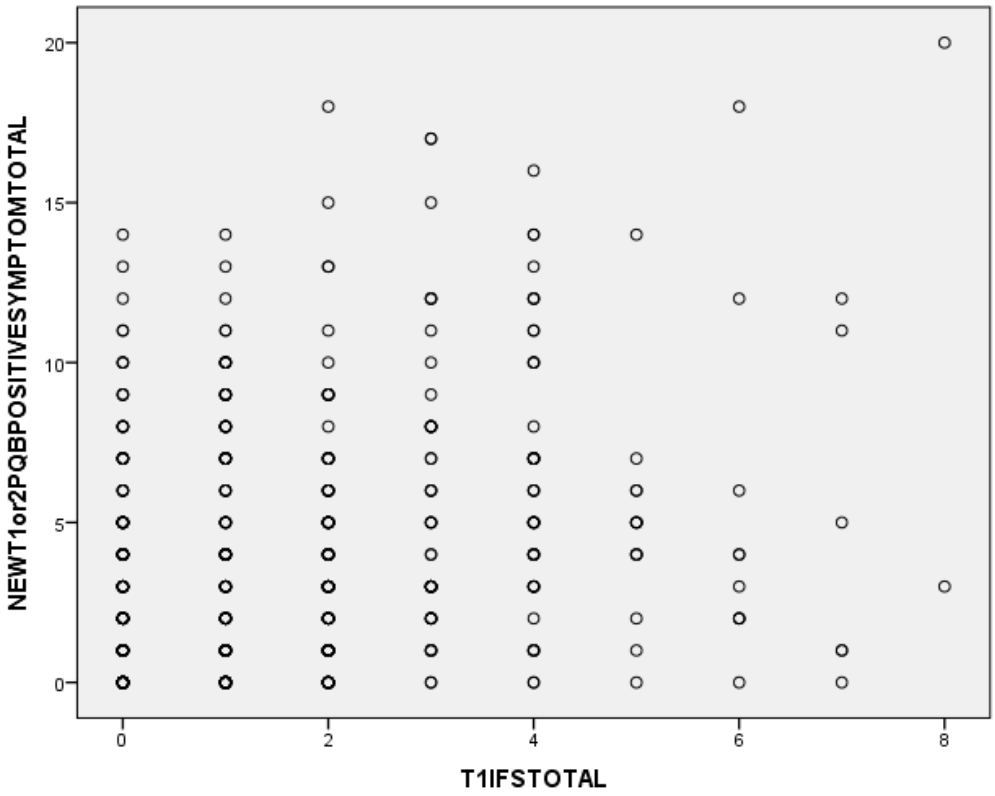
PSS-IFS



PQB-FAS

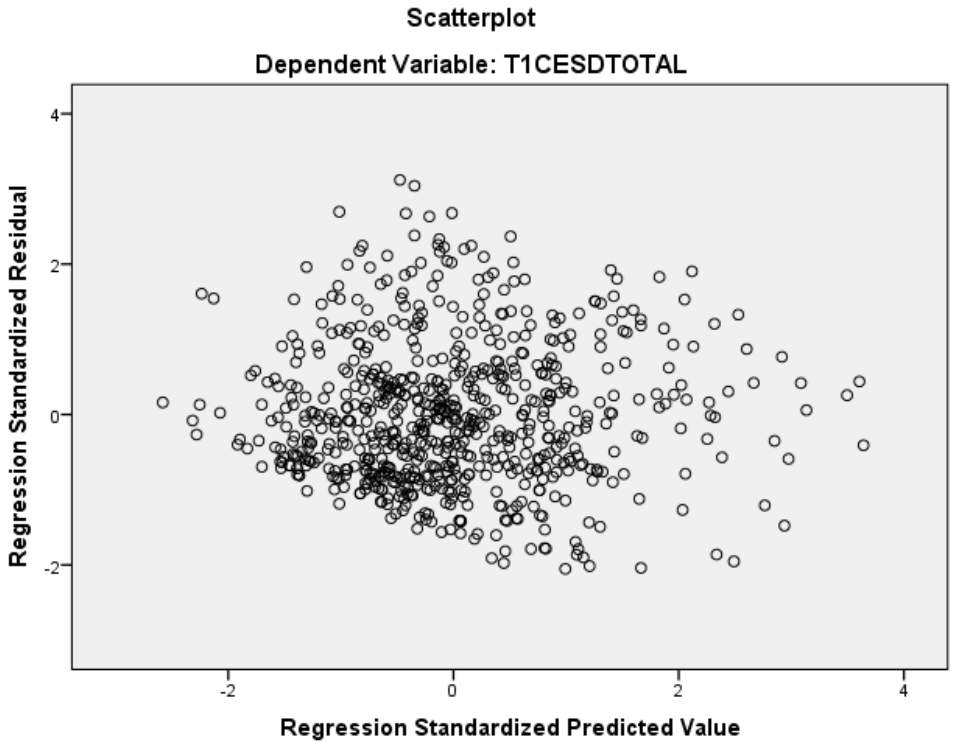


PQB-IFS

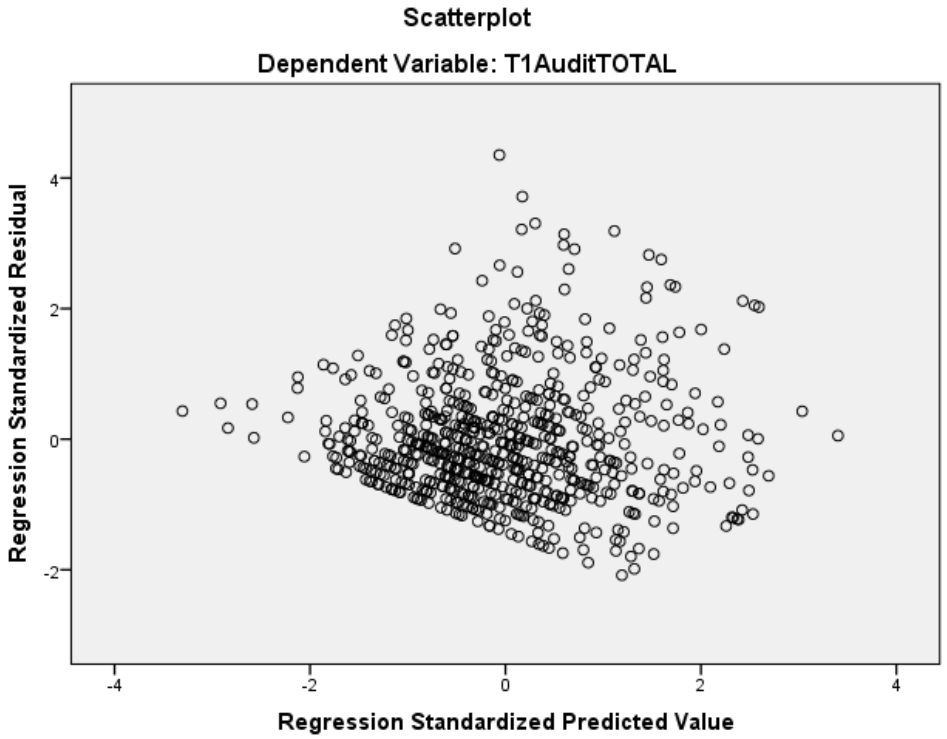


Appendix 18: ZRESID and ZPRED Plots: Time 1

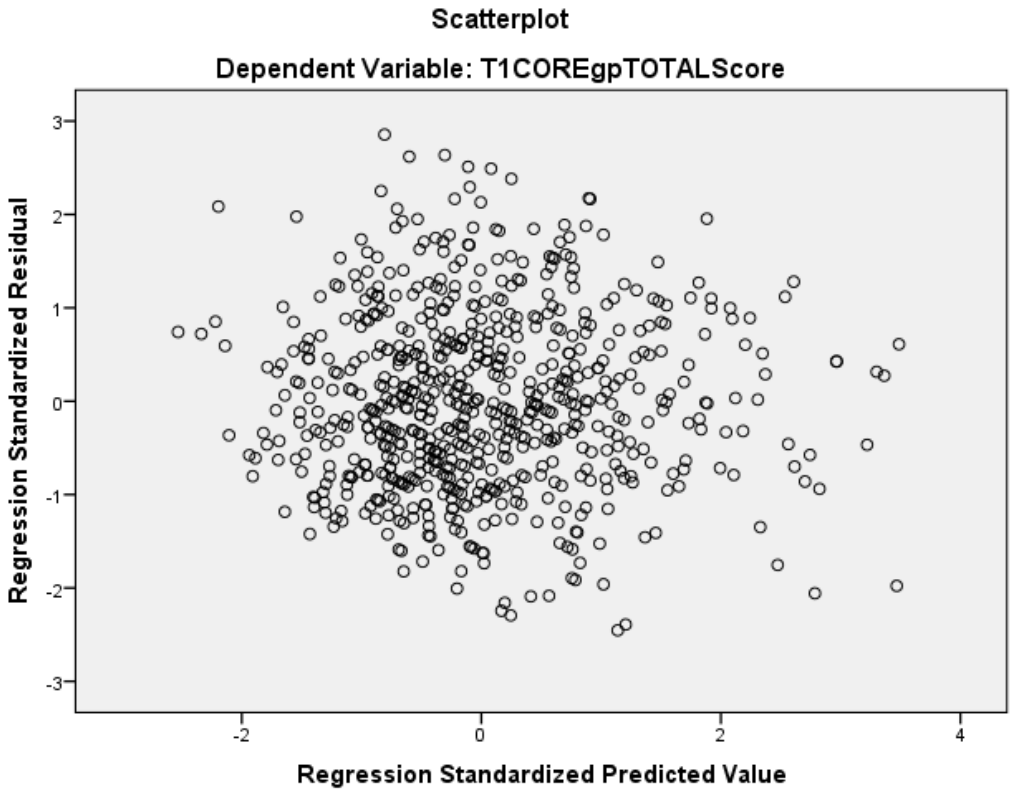
CES-D



AUDIT



CORE-GP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Regression Standardized Predicted Value
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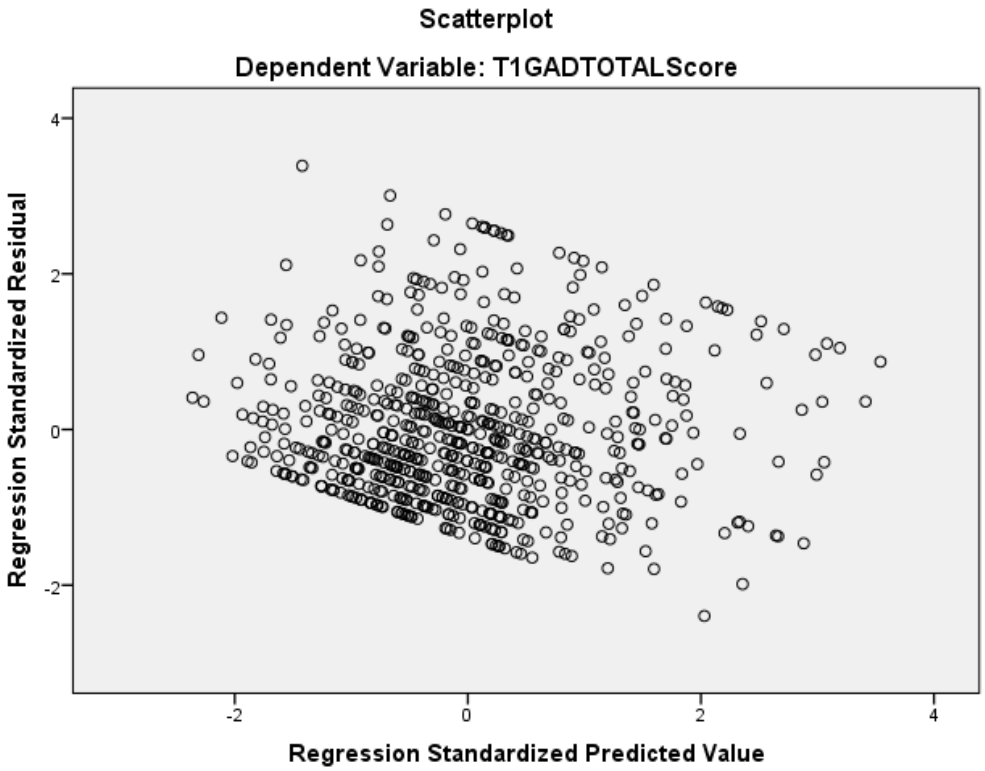
-2
0
2
4

GAD-7


Scatterplot
Dependent Variable: T1GADTOTALScore
Regression Standardized Residual
Regression Standardized Predicted Value
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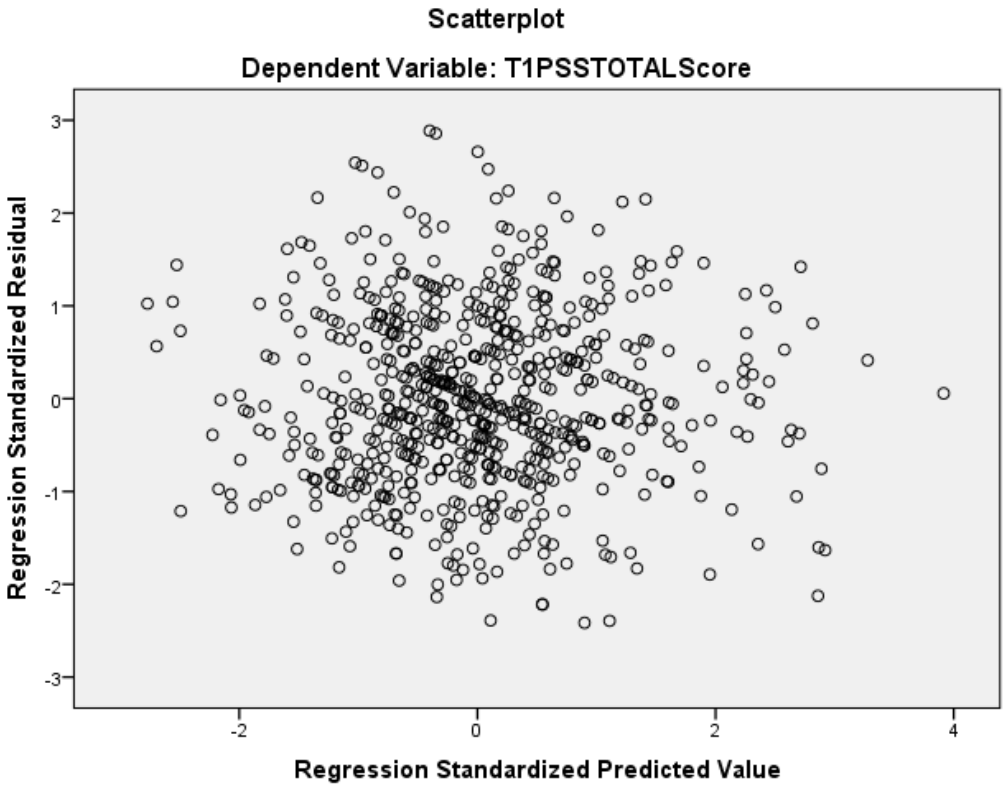
-2
-2
0
2
4

PSS


Scatterplot
Dependent Variable: T1PSSTOTALScore
Regression Standardized Residual
Regression Standardized Predicted Value
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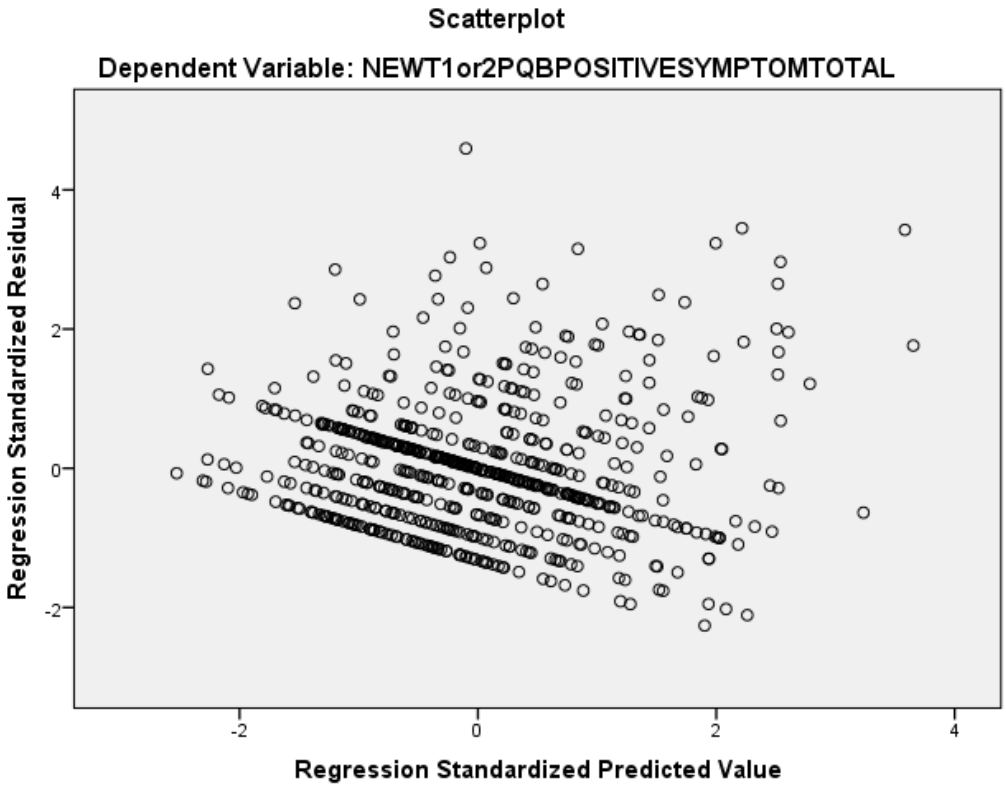
0
-1
-2
-3
-2
0
2
4

PQB


Scatterplot
Dependent Variable: NEWT1or2PQBPOSITIVESYMPTOMTOTAL
Regression Standardized Residual
Regression Standardized Predicted Value
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2
0
-2
-2
0
2
4

Appendix 19: Logistic Regression Formula

Block 1: Cohort
Cohort

Block 2: Fees- difference in cohorts due to fees?
Tuition Fees (Dummy). Reference category= £8-9k (most common)

Block 3: Control for confounds: Demographic
Gender
Family Affluence Scale

Block 4: Mediating analysis: Debt
Loan this year (Dummy) Reference category= £3-5k (most common)
Predicted debt on graduation (dummy).
Other debt overall (Dummy). Reference category= £0 (most common)

Block 5: Mediating analysis: Financial Stress
Index of Financial Stress
Difficult paying bills (dummy). Reference category= None

Block 6: Mediating analysis: Financial Concern
How stressed about debt (dummy). Reference category= Not stressed (most common)
How long think take to pay back (dummy). Reference category= 16-20 years (most common)
How see loan (dummy). Reference category= Debt have to pay back (most common)

Block 7: Mediating analysis: Financial Concern
Considered abandoning due to financial
Considered not coming to uni due to financial

Block 8: Mediating analysis: Work and First choice
Have term time job
Uni first choice? (Dummy) Reference category= first choice (most common)

Block 9: Mediating analysis: Drink
Drink in past week (Dummy) Reference category= No drinks (most common)

Appendix 20: Linear Regression Formula: Time 2

Block 1: Cohort
Cohort

Block 2: Fees- difference in cohorts due to fees?
Tuition Fees (Dummy). Reference category= £8-9k (most common)

Block 3: Control for confounds: Demographic
Gender
Mature student
Disability
Family Affluence Scale

Block 4: Control for confound: Age
Age (Dummy). Reference category= 17-19 (most common).

Block 5: Control for confound: Ethnicity
Ethnicity (dummy). Reference category= White (most common).

Block 6: Control for confounds: Demographic
Where live in term time (dummy). Reference category= Uni halls (most common).

Block 7: Control for confounds: Type of degree
Type of degree (dummy). Reference category= Humanities (most common)

Block 8: Control for confounds: Month completed
Month completed (dummy). Reference category= March (most common)

Block 9: Mediating analysis: Part of UK
Part of UK lived in (Dummy). Reference category= England (most common)

Block 10: Mediating analysis: Student Loan
Loan this year (Dummy) Reference category= £3-5k (most common)

Block 11: Mediating analysis: Other Debt
Other debt overall (Dummy). Reference category= £0 (most common)

Block 12: Mediating analysis: Predicted debt
Predicted debt on graduation (dummy). Reference category= 20-45k (most common)

Block 13: Mediating analysis: Financial Stress
Index of Financial Stress

Block 14: Mediating analysis: Financial Stress
Difficult paying bills (dummy). Reference category= None.

Block 15: Mediating analysis: Grant
Receive a grant (dummy).

Block 16: Mediating analysis: Financial Concern

How stressed about debt (dummy). Reference category= Not stressed (most common)

Block 17: Mediating analysis: Financial Concern
How long think take to pay back (dummy). Reference category= 16-20 years (most common)

Block 18: Mediating analysis: Financial Concern
Considered abandoning due to financial
Considered not coming to uni due to financial

Block 19: Mediating analysis: How see loan
How see loan (dummy). Reference category= Debt have to pay back (most common)

Block 20: Mediating analysis: Work
Have term time job

Block 21: Mediating analysis: First Choice
Uni first choice? (Dummy) Reference category= first choice (most common)

Block 22: Mediating analysis: Drink
Drink in past week (Dummy) Reference category= No drinks (most common) **not included for AUDIT**

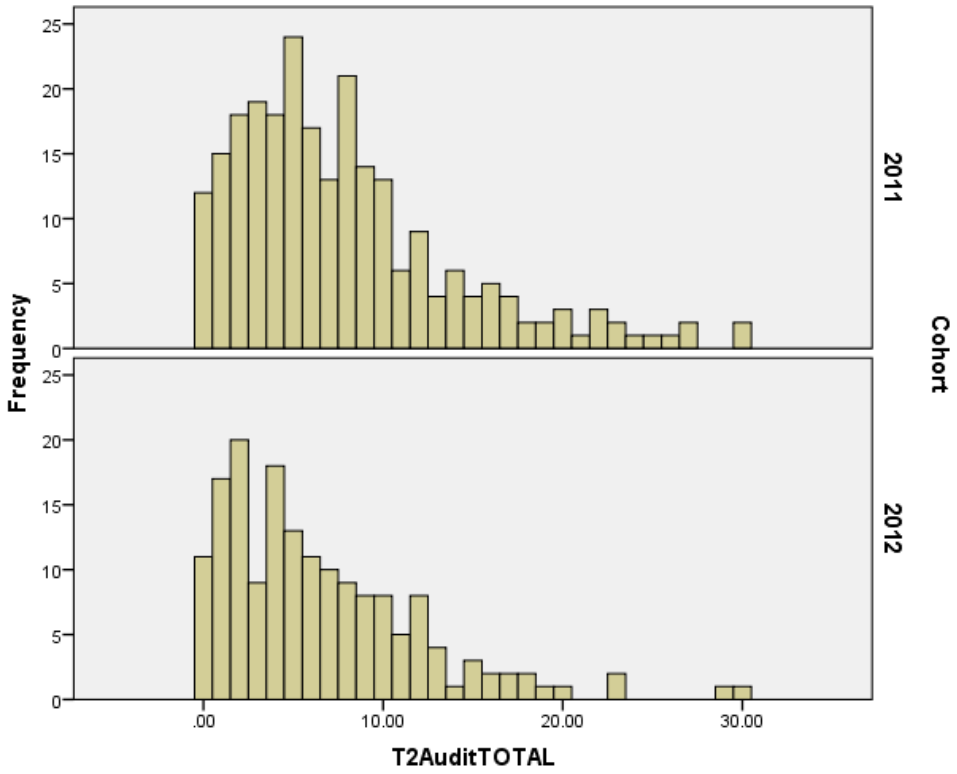
Block 23: Mediating analysis: Substance Use
Cannabis use past 6 months

Block 24: Mediating analysis: Drop Out
Whether are still at university

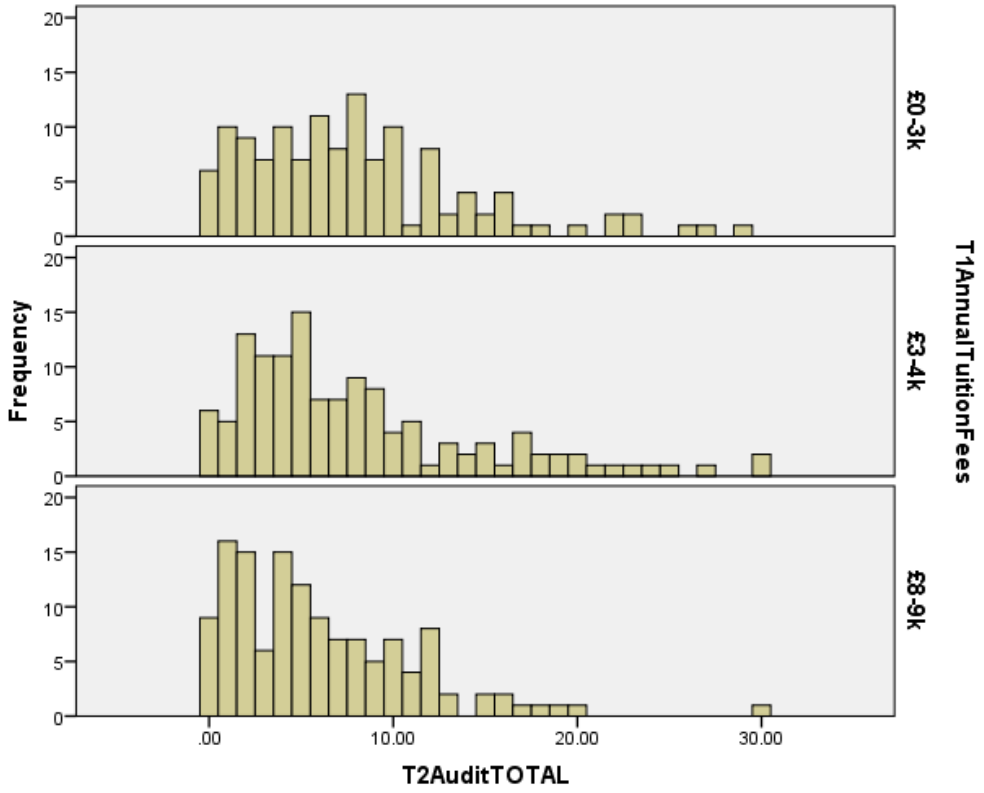
Block 25: Mediating analysis: Time 1 Score
Time 1 score on measure

Appendix 21: Bivariate distribution for Cohort and Fees at time 2

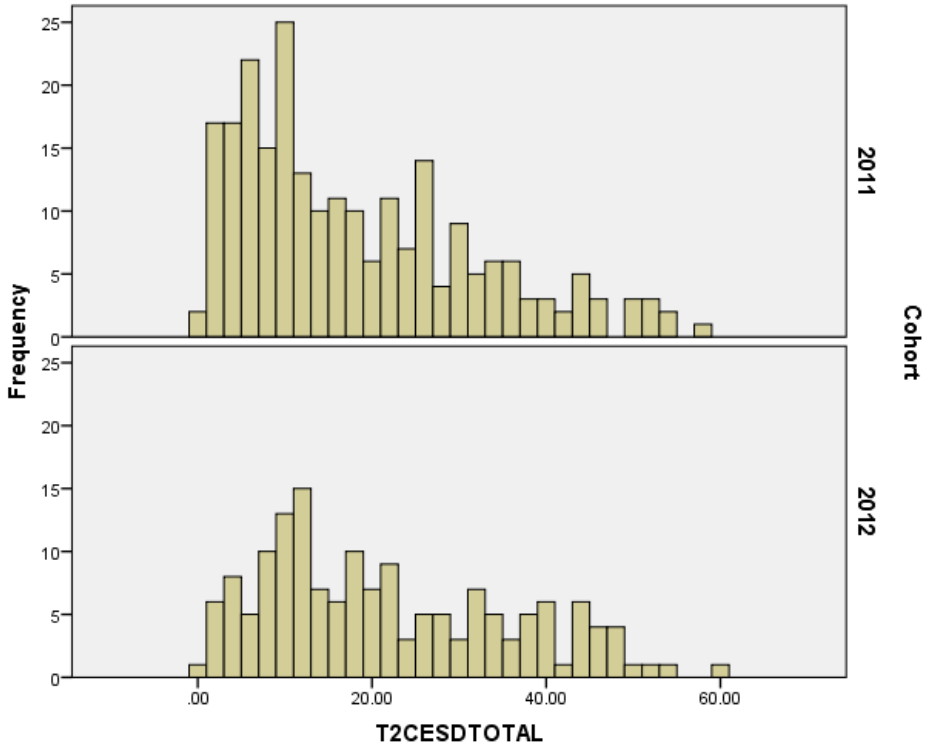
AUDIT: Cohort



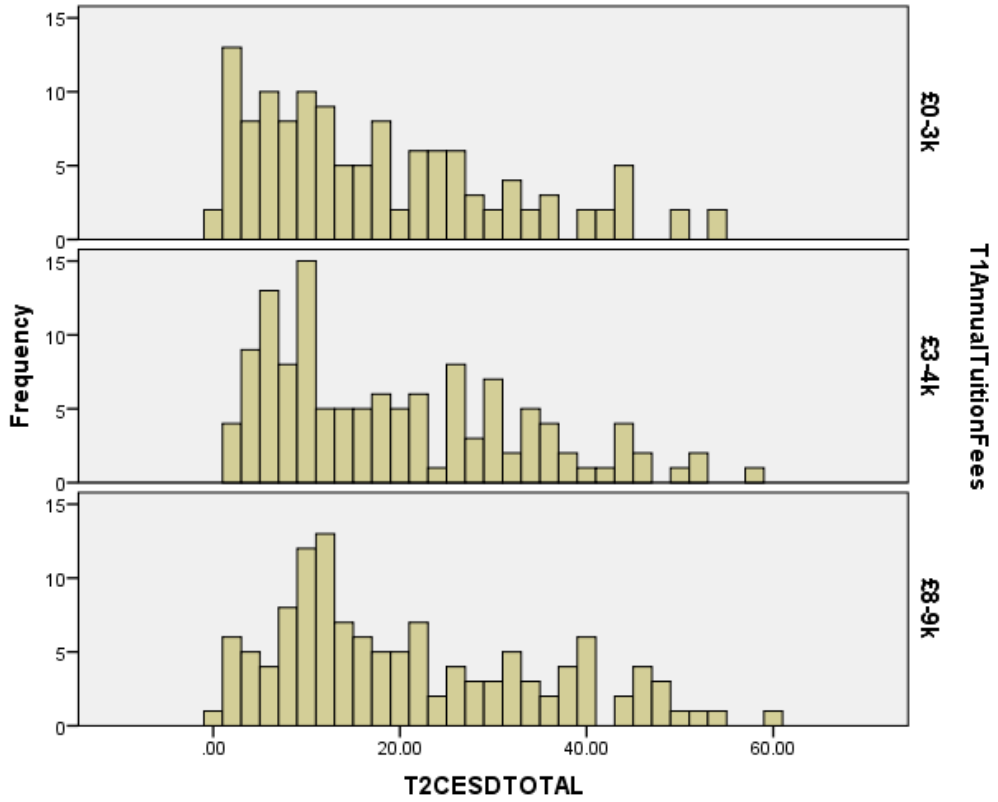
AUDIT: Fees



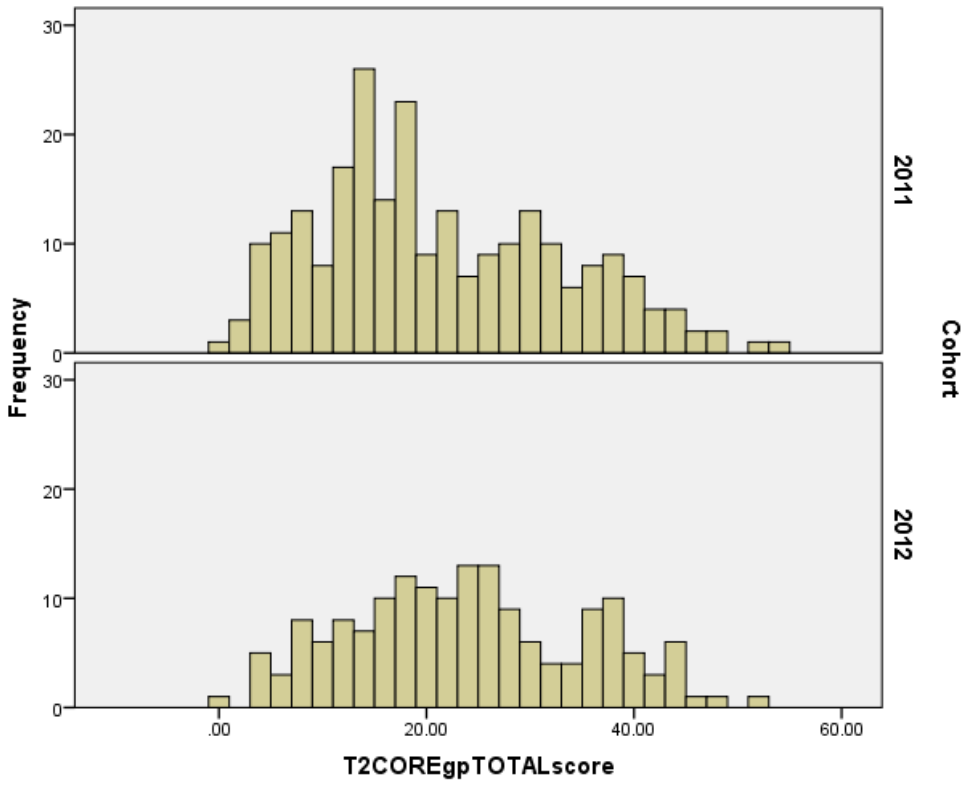
CES-D: Cohort



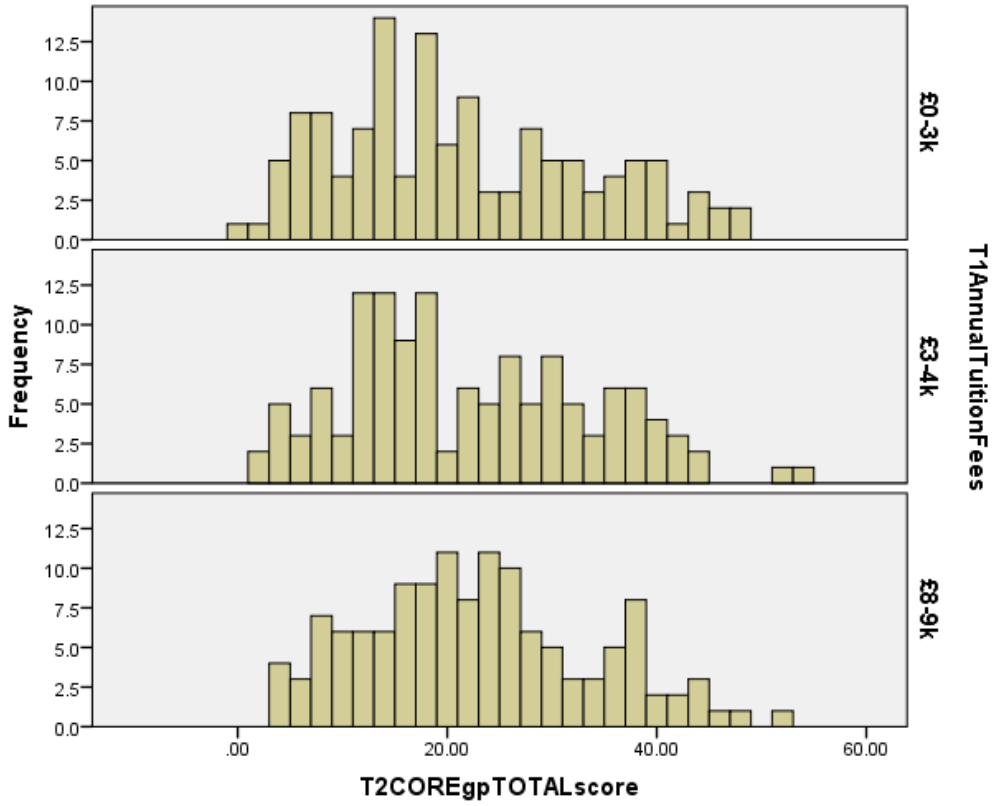
CES-D: Fees



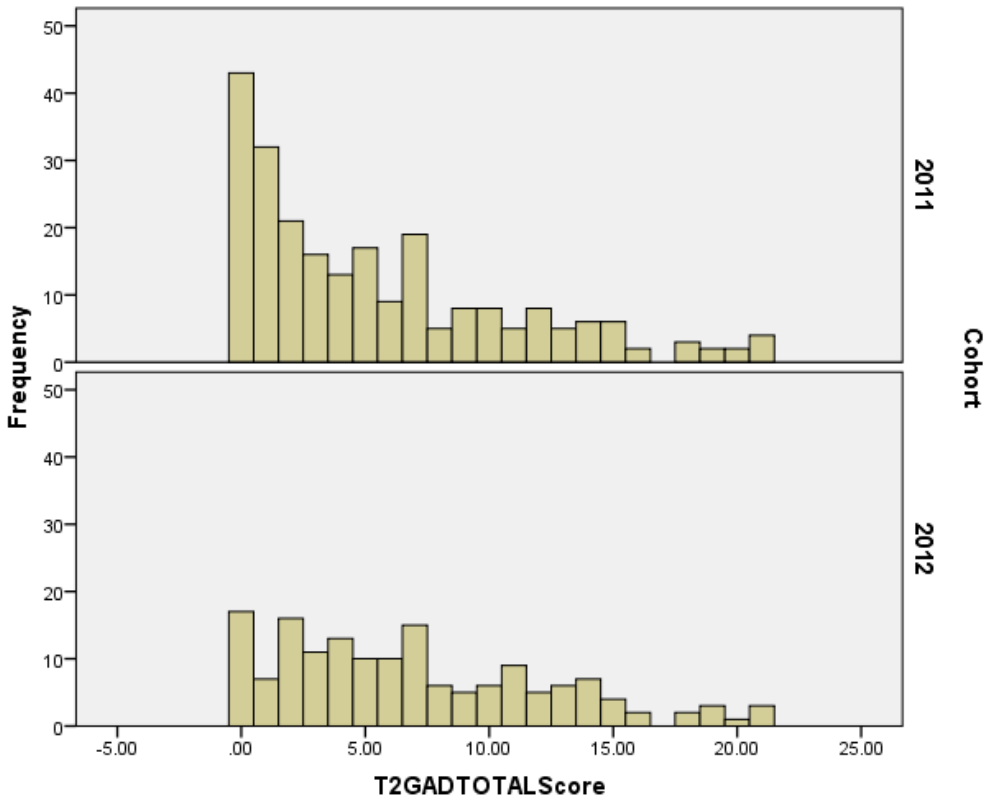
CORE-GP: Cohort



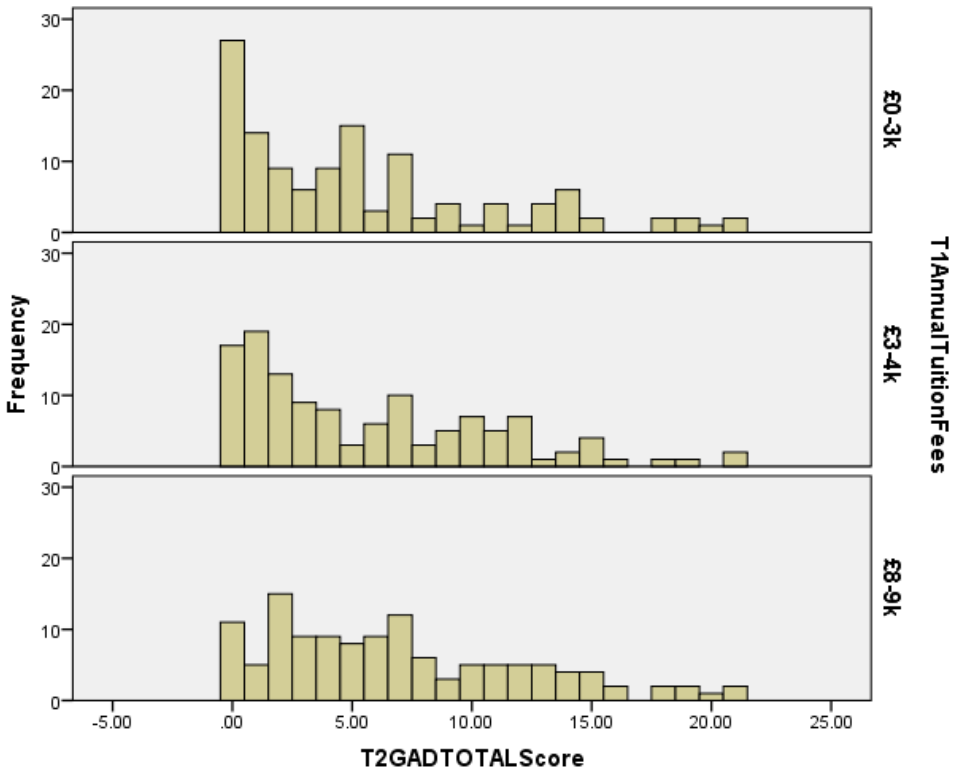
CORE-GP: Fees



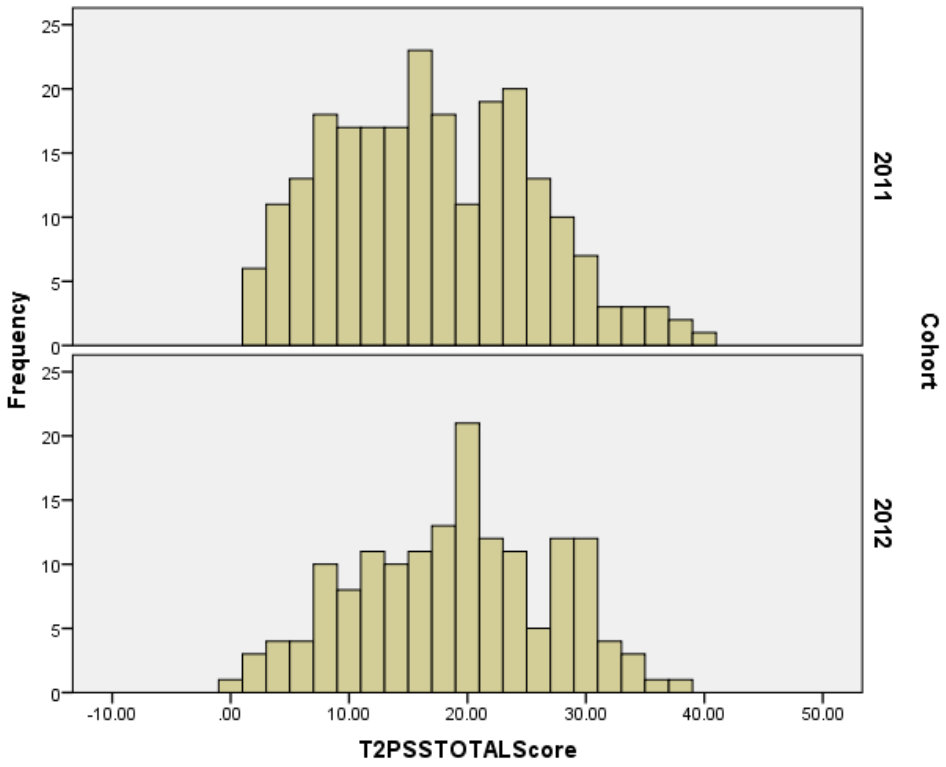
GAD-7: Cohort



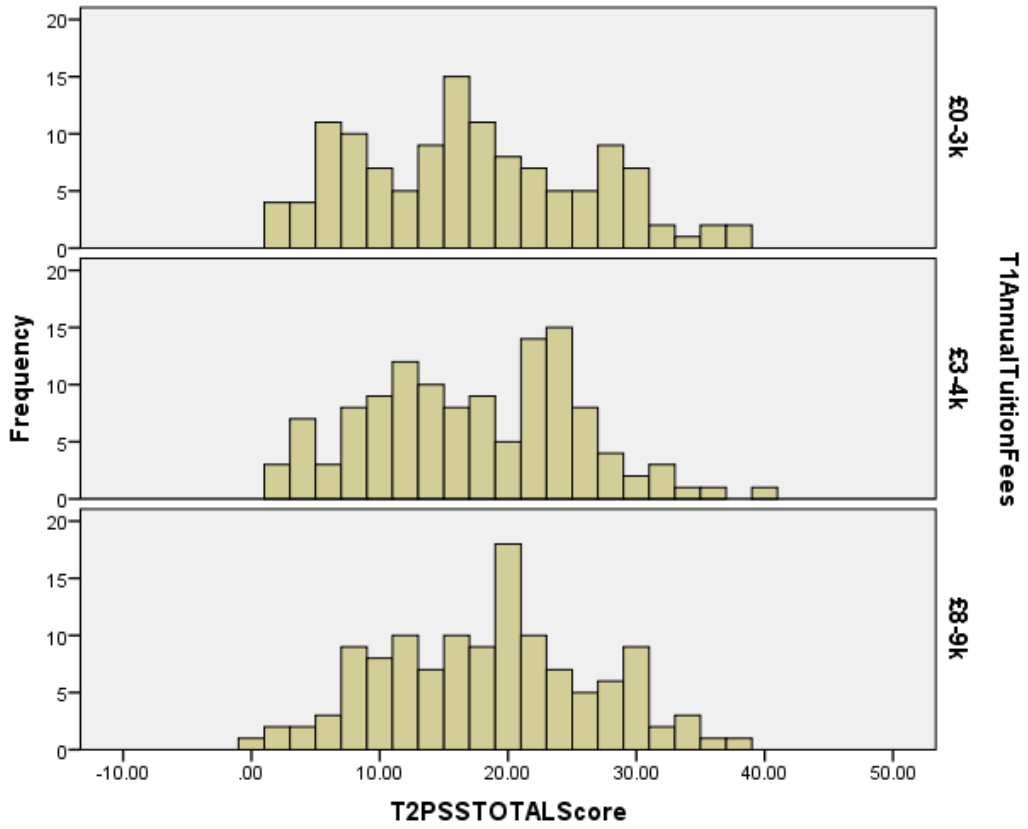
GAD-7: Fees



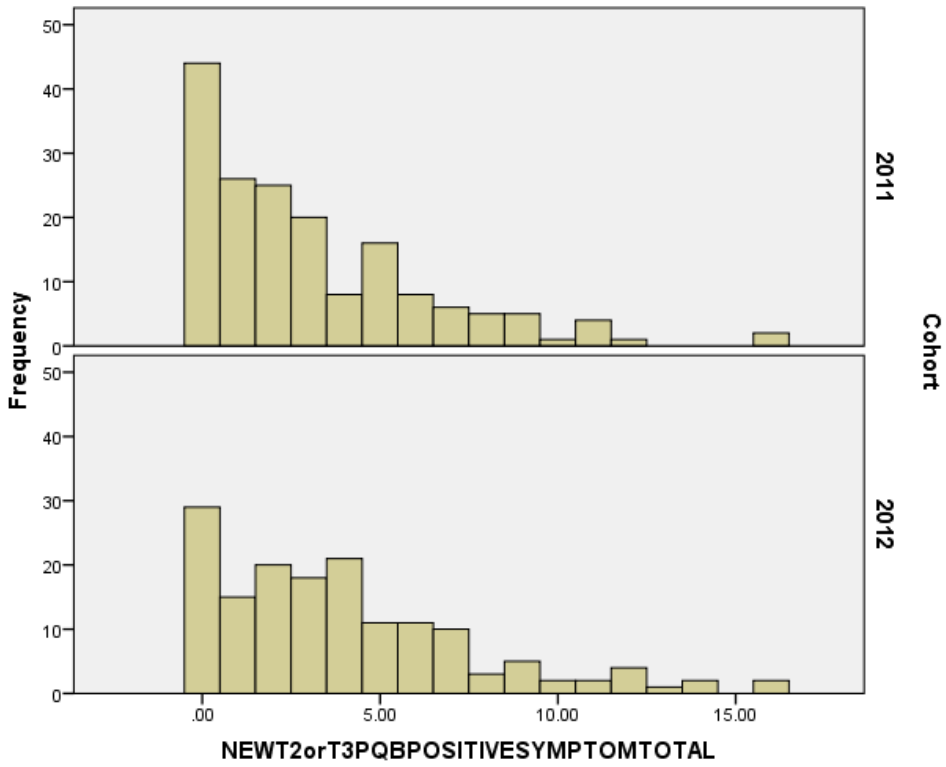
PSS: Cohort



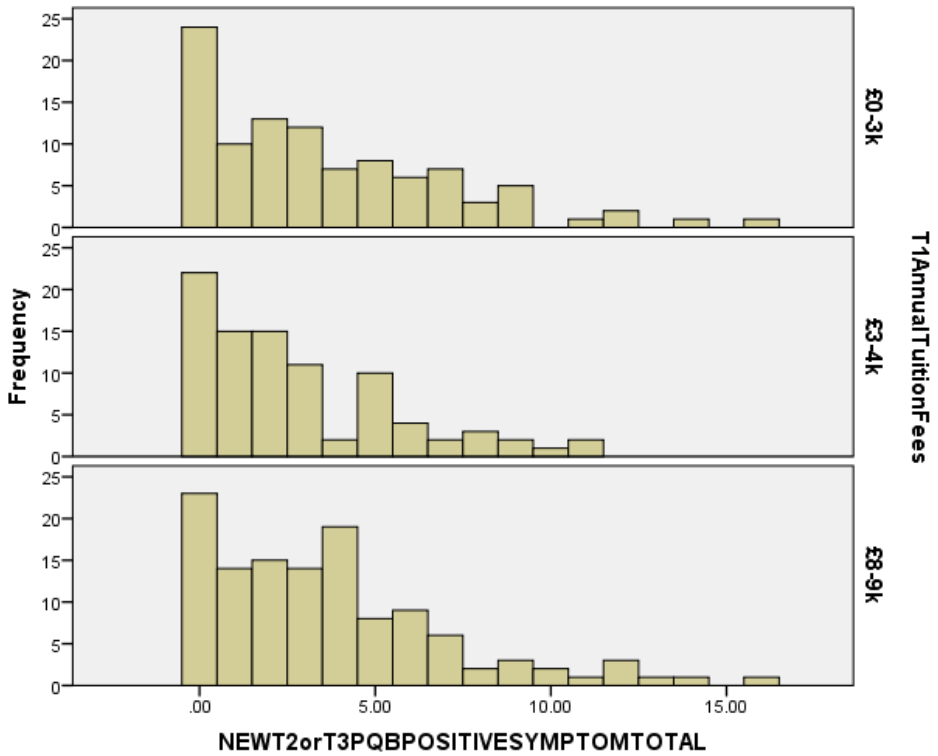
PSS: Fees



PQB: Cohort

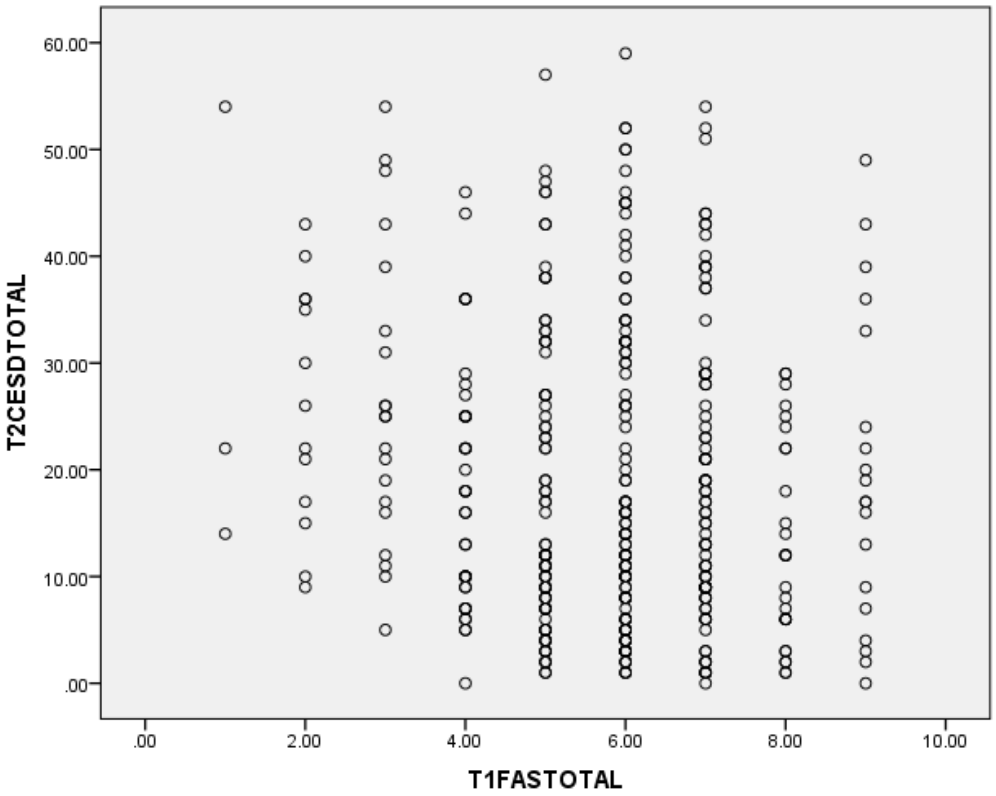


PQB: Fees

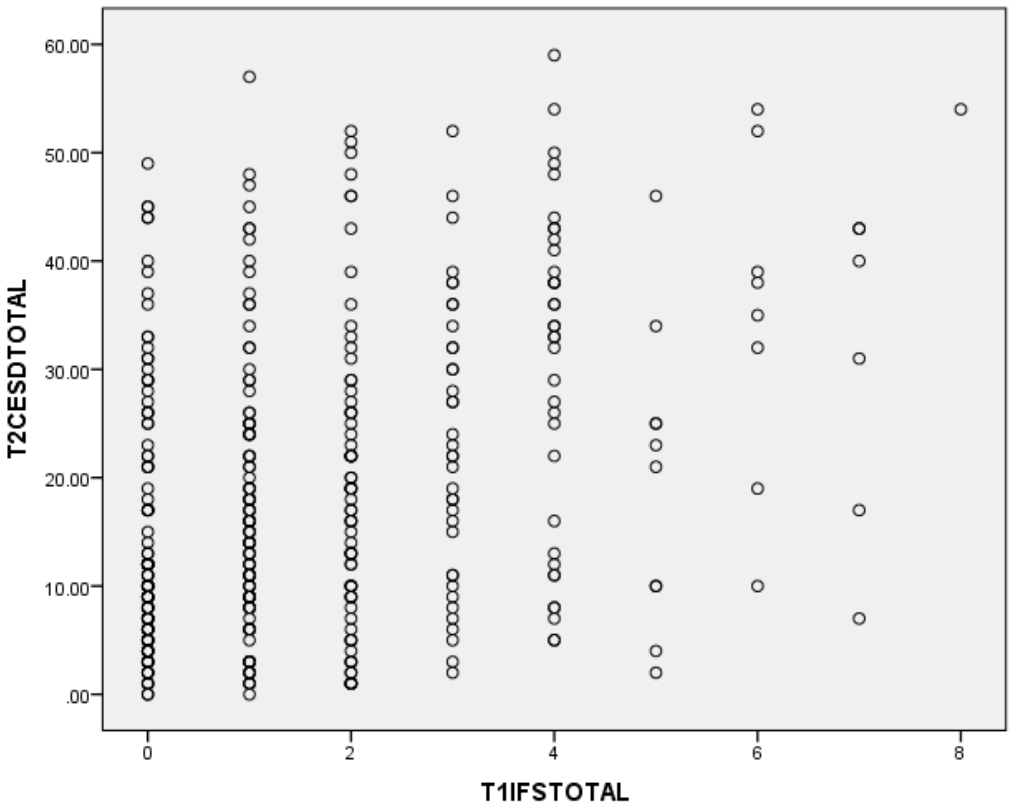


Appendix 22: Bivariate distribution for IFS and FAS at time 2

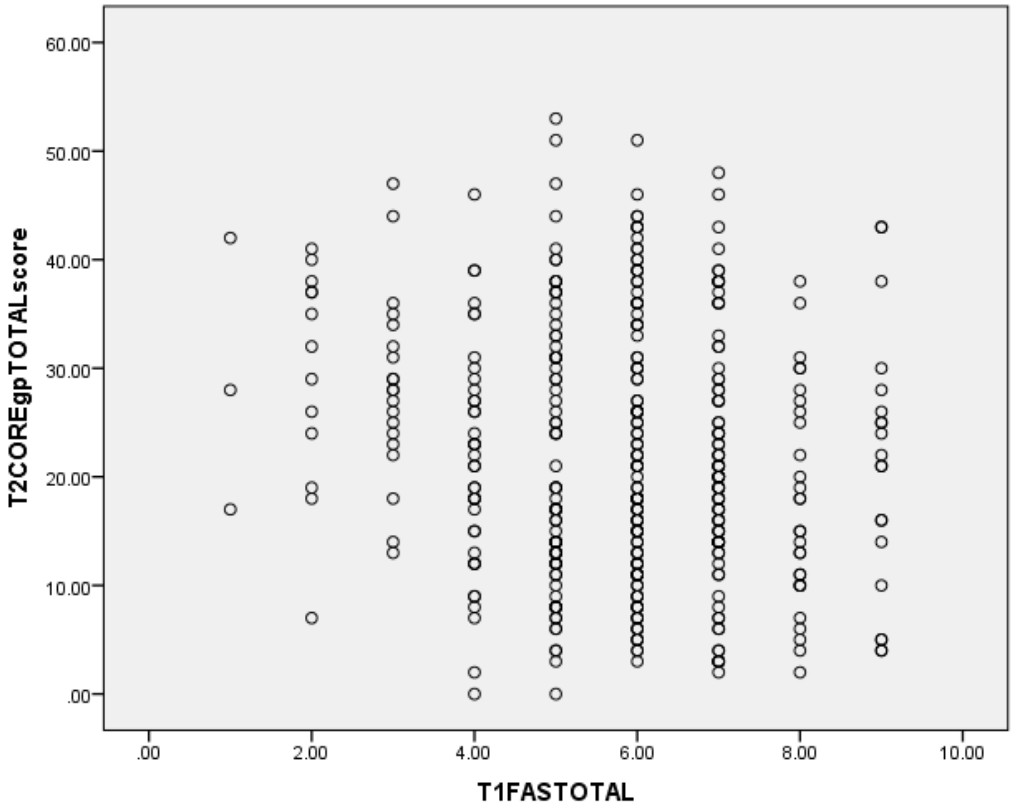
CES-D-FAS



CES-D-IFS



CORE-GP-FAS



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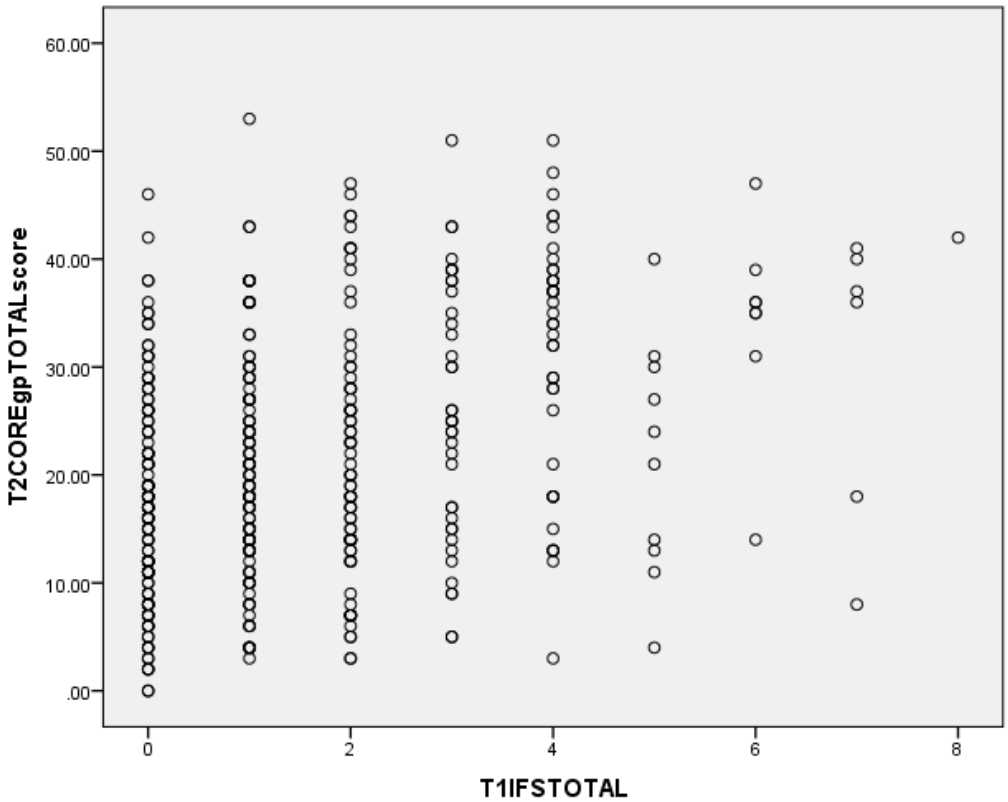
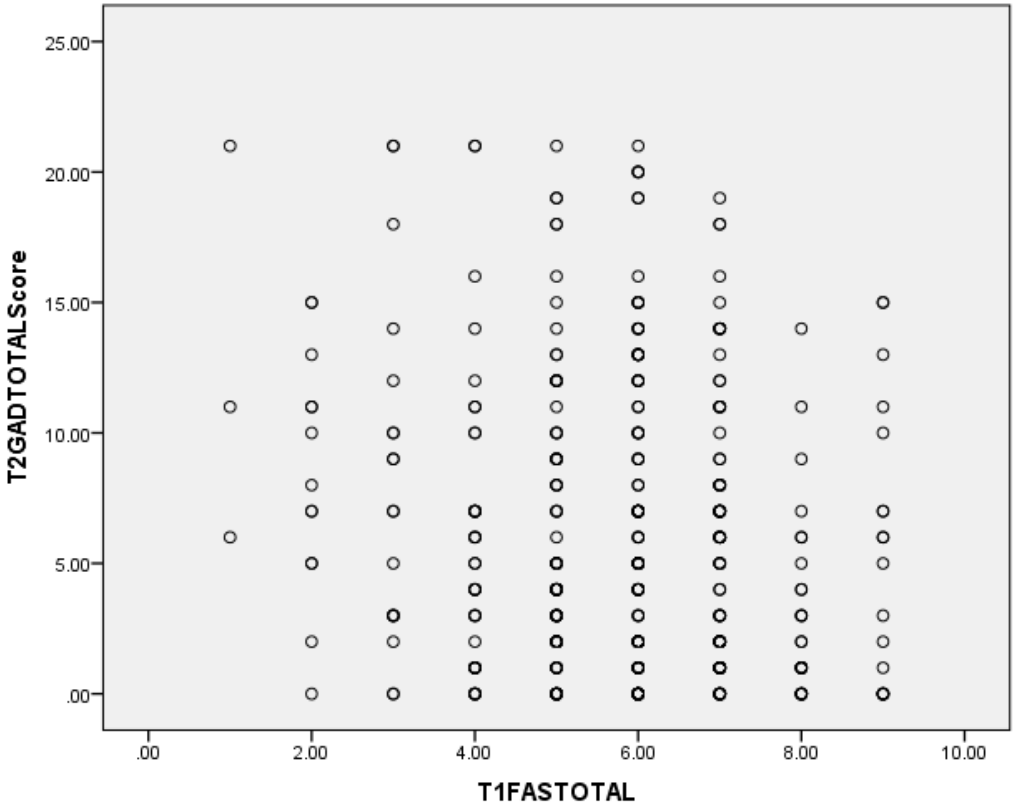


GAD-7-FAS



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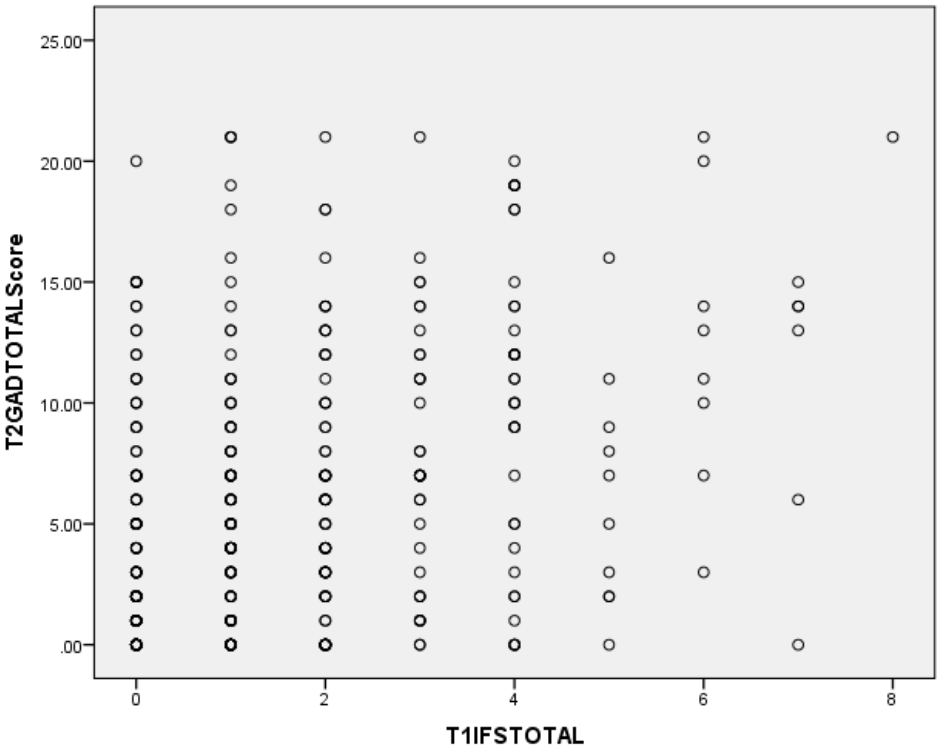
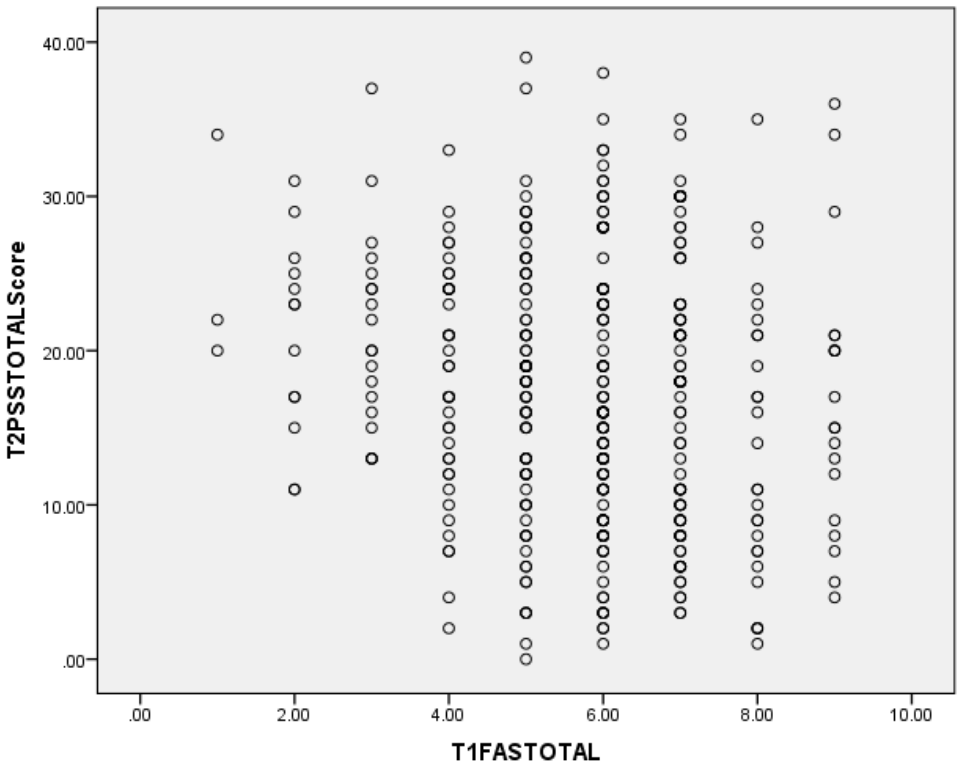


PSS-FAS



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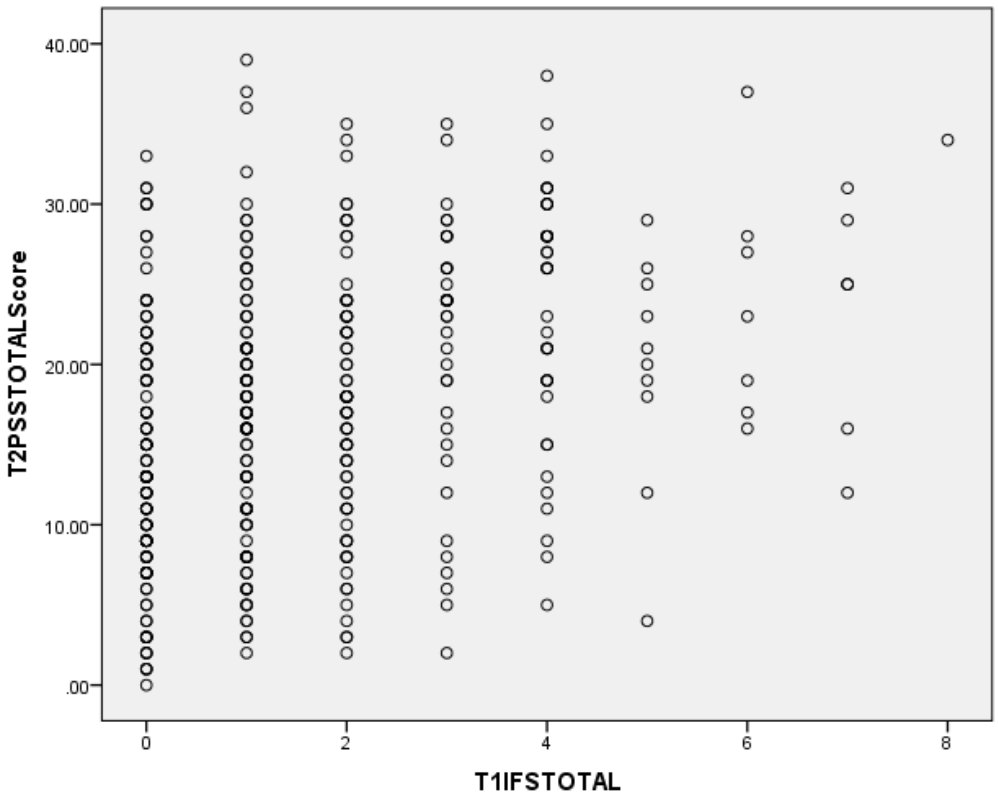
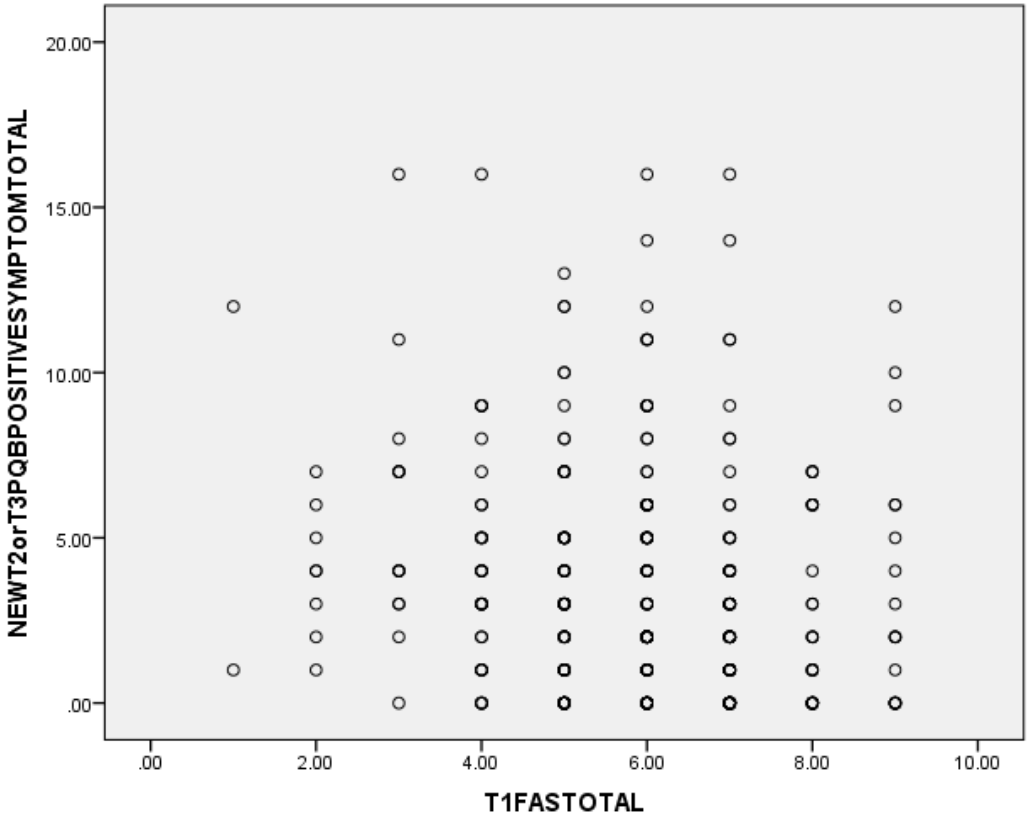
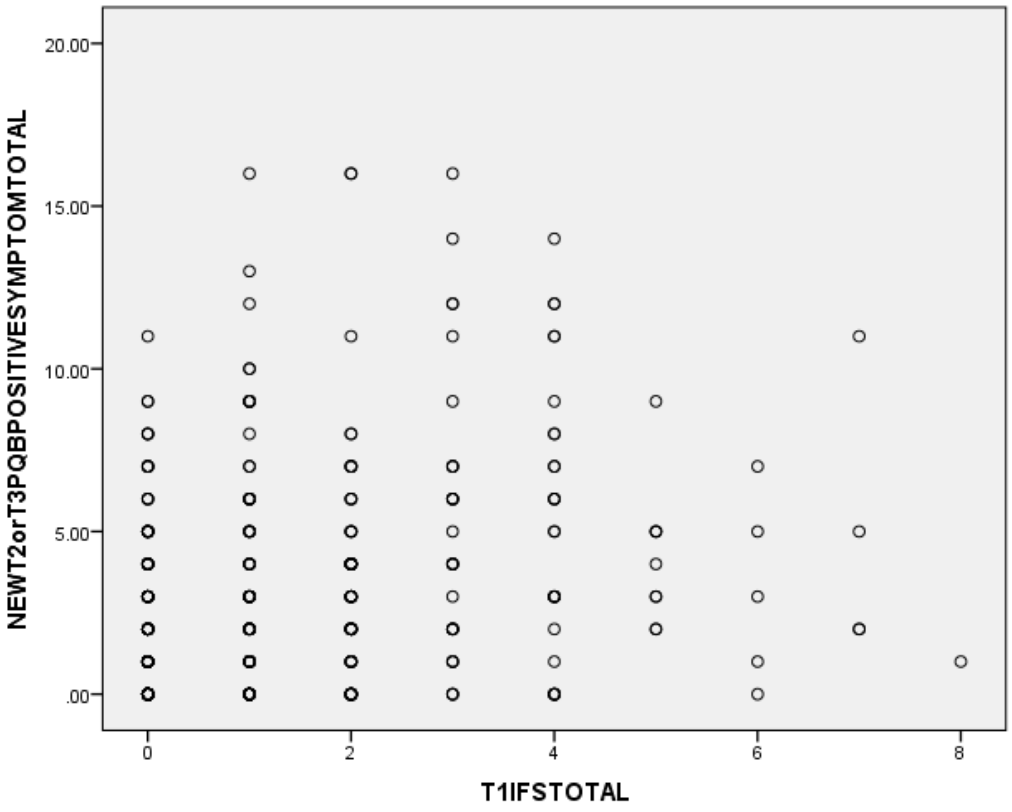


PQB-FAS

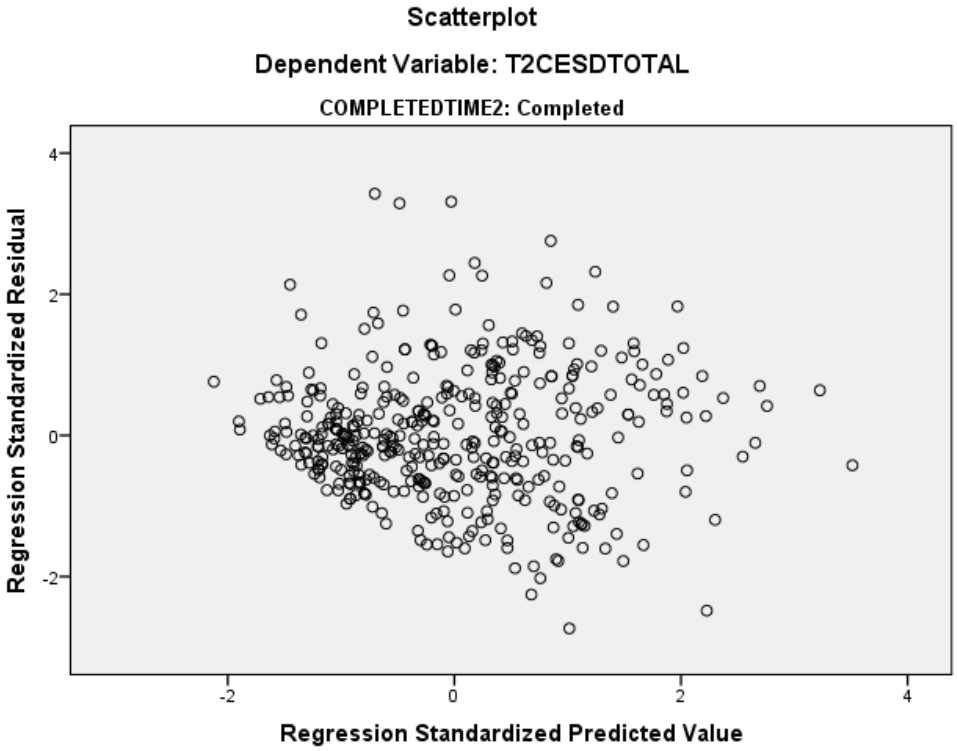


PQB-IFS

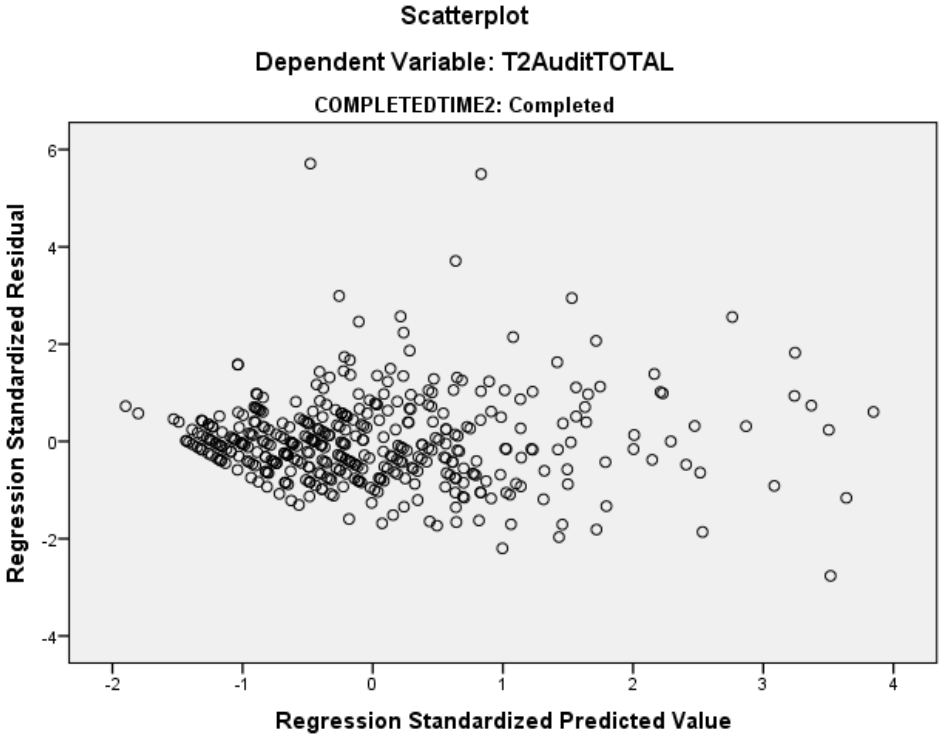


Appendix 23: ZRESID and ZPRED Plots: Time 1

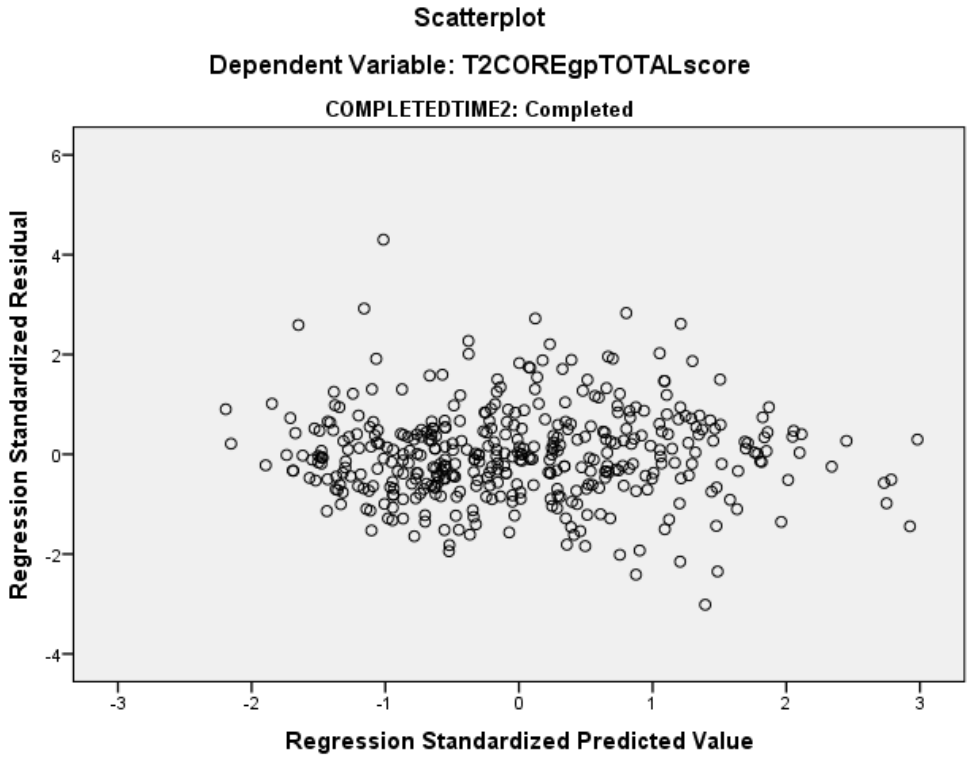
CES-D



AUDIT



CORE-GP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Regression Standardized Predicted Value
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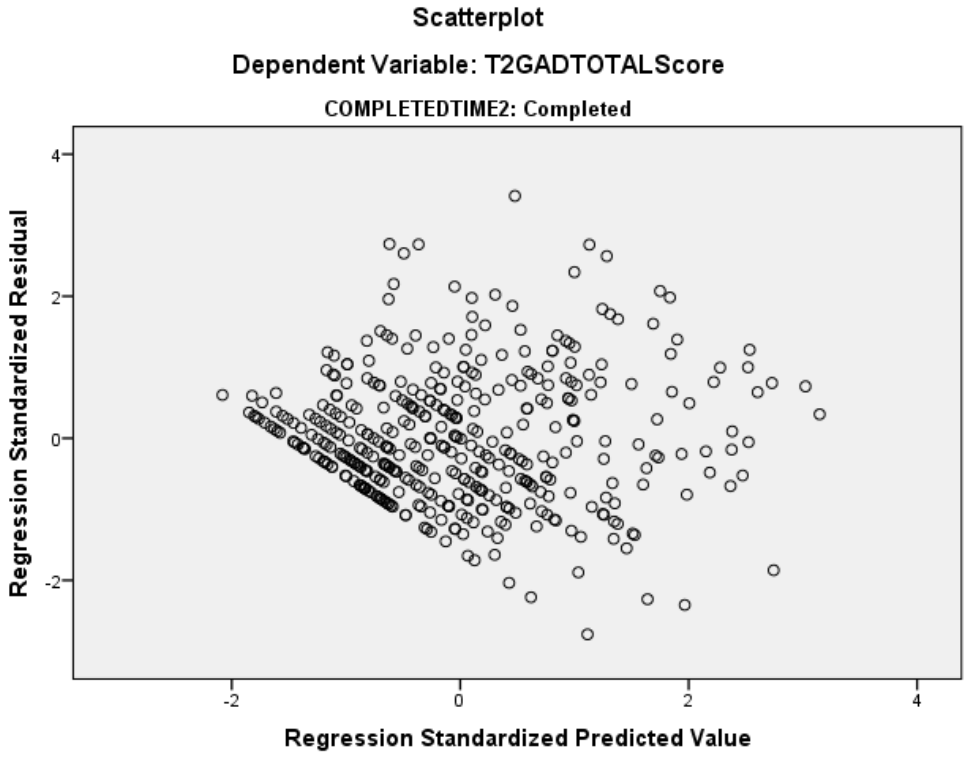
-2
-4
-3
-2
-1
0
1
2
3

GAD-7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COMPLETEDTIME2: Completed
Regression Standardized Residual
Regression Standardized Predicted Value
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0
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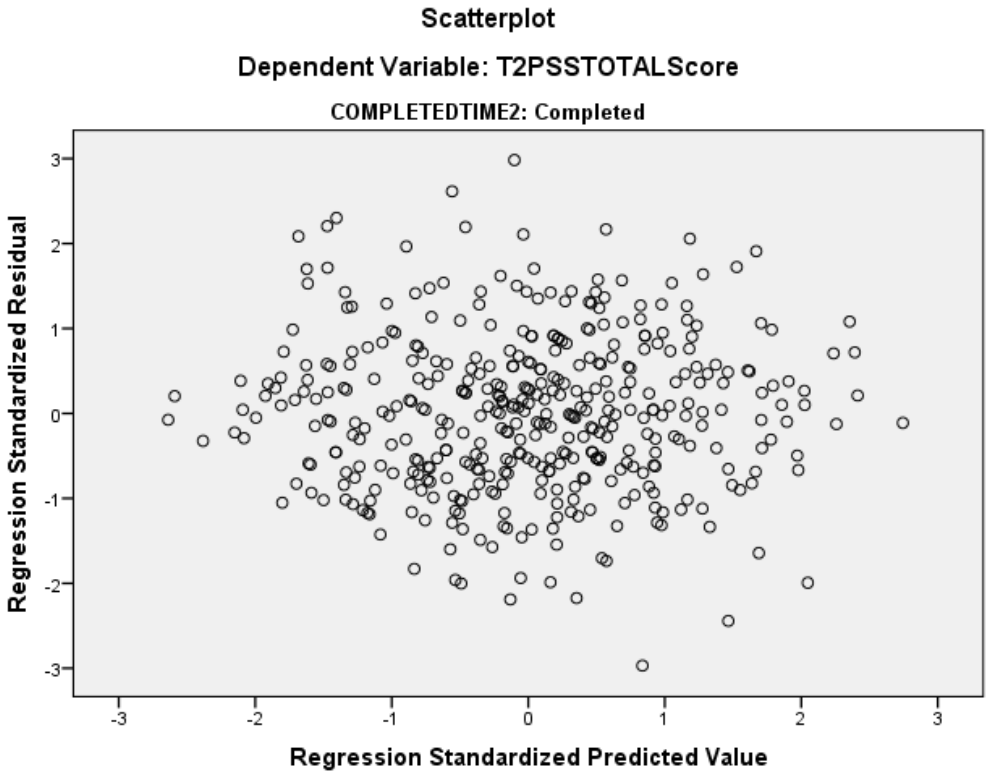
0
2
4

PSS


Scatterplot
Dependent Variable: T2PSSTOTALScore
COMPLETEDTIME2: Completed
Regression Standardized Residual
Regression Standardized Predicted Value
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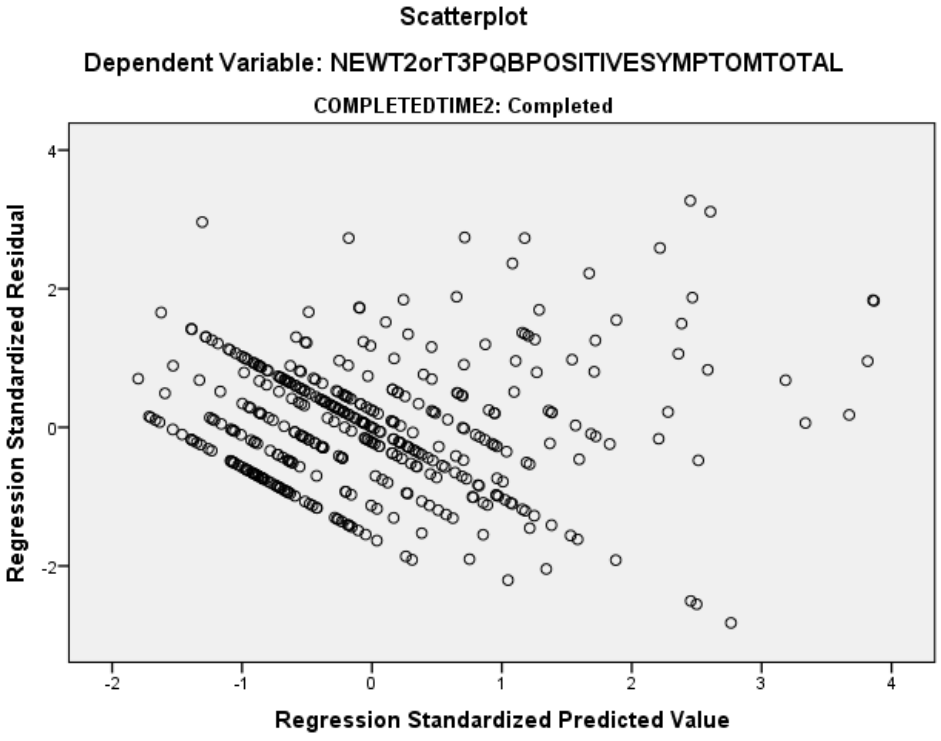
2
1
0
-1
-2
-3

PQB


Scatterplot
Dependent Variable: NEWT2orT3PQBPOSITIVESYMPTOMTOTAL
COMPLETEDTIME2: Completed
Regression Standardized Residual
Regression Standardized Predicted Value
4
2
0
-2
-2
-1
0
1
2
3
4