

This is a repository copy of Longitudinal relationships between financial difficulties and eating attitudes in undergraduate students.

White Rose Research Online URL for this paper: http://eprints.whiterose.ac.uk/85468/

Version: Accepted Version

Article:

Richardson, T., Elliott, P., Waller, G. et al. (1 more author) (2015) Longitudinal relationships between financial difficulties and eating attitudes in undergraduate students. International Journal of Eating Disorders. ISSN 0276-3478

https://doi.org/10.1002/eat.22392

Reuse

Unless indicated otherwise, fulltext items are protected by copyright with all rights reserved. The copyright exception in section 29 of the Copyright, Designs and Patents Act 1988 allows the making of a single copy solely for the purpose of non-commercial research or private study within the limits of fair dealing. The publisher or other rights-holder may allow further reproduction and re-use of this version - refer to the White Rose Research Online record for this item. Where records identify the publisher as the copyright holder, users can verify any specific terms of use on the publisher's website.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



Brief Report

Longitudinal Relationships between Financial Difficulties and Eating Attitudes in Undergraduate Students

Thomas Richardson

Professional Training Unit, School of Psychology, University of Southampton, UK

Mental Health Recovery Teams, St. Mary's Community Health Campus, Solent NHS

Trust, Portsmouth, UK

Peter Elliott

Professional Training Unit, School of Psychology, University of Southampton, UK

Glenn Waller

Department of Psychology, University of Sheffield, UK

Lorraine Bell

Mental Health Recovery Teams, St. Mary's Community Health Campus, Solent NHS Trust,

Portsmouth, UK

Address for correspondence

Dr. Thomas Richardson, Building 44a, University of Southampton, Highfield Campus, SO17

1BJ, UK. Email: thr1g10@soton.ac.uk

Word count

Abstract: 163 words

Main Text: 2236 words

1

Longitudinal Relationships between Financial Difficulties and Eating Attitudes in Undergraduate Students

Abstract

<u>Objective</u>: Previous research has shown a relationship between financial difficulties and poor mental health in students, but there has been no research examining such a relationship for eating attitudes.

Method: A group of 444 British undergraduate students completed the Index of Financial Stress and Eating Attitudes Test 26 item version at up to four time points across a year at university.

Results: Higher baseline financial difficulties significantly predicted higher eating attitudes scores at times 3 and 4 (up to a year), after adjusting for demographic variables and baseline eating attitudes score. Lower family affluence also predicted higher eating attitudes scores at time 4 (up to a year). A higher eating attitudes score at baseline also significantly predicted greater financial difficulties at time 2 (3-4 months). When considering these relationships by gender, they were significant for women only.

<u>Discussion:</u> Greater financial difficulties and lower family affluence predict a worsening in eating attitudes over time in female students. The relationship appears to be partially bidirectional.

<u>Keywords:</u> eating disorders; eating attitudes; financial difficulties; poverty; socio-economic status.

Longitudinal Relationships between Financial Difficulties and Eating Attitudes in Undergraduate Students

Socio-economic status (SES) has long been related to mental health problems, with early research suggesting that poverty increases the risk of emotional problems in children and adolescents¹. Depression is linked to lower family affluence², poor living standards³ and financial difficulties⁴. A number of studies have also found a relationship between debt and an elevated risk of a range of mental health problems⁵. However the relationship appears somewhat different for eating disorders, with higher SES and living in more affluent areas increasing risk⁶. Those with anorexia nervosa are more likely to come from affluent families⁷ and have parents with higher education⁸.

University students have high levels of eating disorder symptoms. One US college study⁹ found that 13.5% of women and 3.6% of men screened positive for an eating disorder, while 11.2% of a German female college population developed a full or partial eating disorder over a three-year period¹⁰. A number of studies have shown a relationship between debt and financial difficulties and poor mental in students⁵, however there has been no research on financial difficulties and risk for eating disorders in this population. This study therefore used a longitudinal design to examine the between financial difficulties and eating attitudes in a sample of British undergraduates, hypothesising that increased financial difficulties will predict more severe eating attitudes and vice versa. This study also aimed to explore whether the effects of financial difficulties were independent of broader socio-economic status.

Method

Participants

Participants were all first-year undergraduate students at the point of recruitment. All participants who completed the baseline survey were then invited to complete the survey at three follow-up points. Those who completed only the baseline measures were excluded. A total of 444 participants completed the survey at baseline and at least one other time point, and were therefore included in the data analysis. The three follow-up time points were across

Comment [RT1]: Im going to leave this description as it is if that's ok: Reviewers have not asked for a change and I don't want to generate lots more questions for them to ask!

just over a year during their first two years at university, 3-4 months apart each time point. Participants were 77.5% (N = 344) female and 89.6% (N = 396) of white ethnicity. Their mean age was 19.9 years (range = 17-57). Figure 1 displays a recruitment flow diagram.

Insert Figure 1 here

Procedure

The data were collected as part of a wider study into student finances and mental health. Every university Students' Union in the UK was emailed and invited to advertise the research via email, websites or social media. Forty-six out of 114 universities agreed to do so. The survey was advertised as examining whether factors such as 'finances, demographics and alcohol use' were related to mental health in students. Due to the recruitment method, it is not possible to determine the response rate.

Measures

The participants completed three self-report questionnaires. The measures of eating attitudes and financial stress were completed at all time points, while the measure of family socio-economic status was completed only at the baseline.

<u>Family Affluence Scale (FAS)¹¹.</u> This questionnaire measures familial socioeconomic status, using questions such as 'Do you have a bedroom to yourself?'. Higher scores represent greater family affluence. The mean score for the current sample was 5.7 (SD = 1.6), which is similar to the norm of 5.3 for England¹¹.

Eating Attitudes Test-26 (EAT-26)¹². This 26-item self-report questionnaire measures attitudes towards food and eating (e.g., 'I feel that food controls my life'). The total score was used in this study, with higher scores representing more severe attitudes and a score of 20+ suggests a possible eating disorder¹². In the current sample, 5.1% (n=5) of men and 19.4% (n=67) of women scored 20+. Cronbach's alpha was .93 in this sample at time 1 and mean score was 12.6 (SD = 14, median = 8, range= 0-69) for women, and 6.1 (SD = 7, median=

Comment [RT2]: Yes definitely England!

3.5, range= 0-39) for men. The original validation paper showed a mean of 9.9 in female students in Canada¹⁵.

Index of Financial Stress (IFS)¹³. The IFS measures financial difficulties over the past six months (e.g., 'Was unable to heat home'). Higher total scores represent greater financial difficulty. Cronbach's alpha was .70 and the mean score was 1.7 (SD = 1.7) in this sample at time 1. There are no norms to compare this score to.

Data analysis

Data were analysed using SPSS version 21. Any participants who completed fewer than 50% of EAT-26 items were excluded. Individual missing items were replaced with the mode. The IFS was normally distributed. However, a Kolmogorov-Smirnov test demonstrated that the EAT-26 score was non-normally distributed (D(444) = 0.19, P < .001). Skewness was just within normal range (2.0), but kurtosis was out of normal range (4.7). The data could not be satisfactorily transformed as this is appropriate for skewness but not kurtosis. A ZREDIS*ZPRED plot suggested there was not any clear heteroscedasticity or non-linearity^a. Hierarchical linear multiple regression was used, though it is important to acknowledge the limitations imposed by non-normal distribution. Listwise deletion was used for missing data The first set of regressions tested whether financial difficulties (IFS) at baseline predicted eating attitudes (EAT) at later time points, after adjusting for socioeconomic status (FAS score), baseline EAT score, gender, ethnicity and age. The same analysis was then used to see whether EAT at baseline predicted IFS at later time points. Thus, six analyses in total were conducted. Significant findings were also repeated by gender to see whether the findings held for both male and female participants.

Results

Baseline scores and predictors of non-completion

Higher baseline EAT scores were significantly associated only with female gender: β =-.19, p<.001. Higher baseline IFS was significantly associated with lower baseline FAS (β =-.26, P<.001), female gender (β =-.14, P<.001), and older age (17-19 vs. 20-29 β = .15, P

Comment [RT3]: I've deleted reliability over time stats: put them in as I think reviewer suggested including in previous round of revisions but you're right they're not relevant

Comment [RT4]: I am saying multiple regression is therefore used as despite non normal distribution there is no heteroscedasticity so it is appropriate. I've removed therefore though so it's not confusing

^a Plot available upon request.

<. 001; 17-19 vs. 30+ β = .22, P <. 001). Higher baseline FAS was associated with lower baseline IFS (β = -.27, P < .001), older age (17-19 vs. 20-29 β = -.15, P <. 001; 17-19 vs. 30+ β = -.18, P <. 001), and white compared to 'Other' ethnicity (β = -.12, P < .01).

A binary logistic regression was conducted to determine predictors of non-completion at time 3. This included age, gender, ethnicity, baseline and time 2 EAT, baseline IFS and baseline FAS. The overall model significantly predicted drop-out: $\chi 2 = 11.61$, df = 5, P < .05, 3.8%-5.1% variance explained. However no variables were significant predictors individually. The same formula was used for non-completion at time 4 with demographics, baseline EAT, time 2 EAT, time 3 EAT, baseline IFS and baseline FAS. The overall model did not significantly predict drop-out: $\chi^2 = 2.87$, df = 5, P > .05, 2.6-3.7% variance explained. No variables were significant predictors individually.

Impact of financial difficulties on later eating attitudes

Table 1 shows the association of time 1 variables with EAT scores at times 2-4. In all cases, the baseline EAT scores significantly predicted subsequent EAT scores (time 2 - F [10,382] = 146.44, P < .001, adjusted R^2 = .79;, time 3 - F [10,243] = 39.54, P < .001, adjusted R^2 = .60; time 4 - F [10,217] = 54.73, P < .001, adjusted R^2 = .70). When those associations were controlled for, there were still effects of financial variables. Higher baseline IFS scores predicted significantly higher EAT at time 3 and time 4, and lower FAS scores at baseline were also associated with significantly higher EAT at time 4.

Comment [RT5]: I've changed T2 to Time 2 etc throughout

Insert Table 1 here

Impact of eating attitudes on later financial difficulties

Table 2 shows the association of baseline variables with subsequent financial stress (IFS scores). The combination of demographics, baseline IFS and baseline EAT significantly

predicted IFS scores at all three time points (time 2 - F [10,383] = 76.1, P < .001, adjusted R^2 = .66;, time 3 - F [10,254] = 30.83, P < .001, adjusted R^2 = .53; time 4 - F [10,225] = 18.27, P < .001, adjusted R^2 = .42).. Baseline IFS scores were the strongest predictor in each case, though non-white ('Other') ethnicity was also a predictor of higher financial stress at all time points. Higher baseline EAT scores predicted significantly higher IFS scores at time two only.

Insert Table 2 here

Comment [RT6]: Yes this is right

Differences by gender

In order to determine whether the relationships between IFS and EAT held for both men and women, the data were split by gender and the above analyses repeated. There was no association between baseline IFS and EAT at time 3 for men (β = -.01, P > .05, N= 84) or women (β = .05, P > .05, N= 309) , Baseline IFS significantly predicted EAT at time 3 for women (β = .17, P < .01, N= 201, but not men (β = .19, P > .05, N= 53), and significantly predicted EAT at time 4 for women (β = .10, P < .05, N= 178), but not men (β = .01, P > .05, N= 50). Baseline FAS significantly predicted EAT at time 4 for women (β = -.11, P < .05, N= 178), but not men (β = -.11, P > .05, N= 50). Baseline EAT significantly predicted IFS at time 2 for women (β = .09, P < .05, N= 307), but not men (β = .02, P > .05, N= 87). There were no associations between baseline EAT and IFS at time 3 for men (β = .09, P > .05, N= 59) or women (β = .04, P > .05, N= 206), and no associations with IFS at time 4 for men (β = -.06, P > .05, N= 52) or women (β = .05, P > .05, N= 184).

Discussion

This study examined the longitudinal relationship between financial difficulties and eating attitudes in university students. Greater financial difficulties predicted more severe eating attitudes up to a year later after controlling for baseline eating attitudes and

Comment [RT7]: I had only run by gender for the significant analyses but I see your point so have put in for females at time 2 as well

Comment [RT8]: I've added N

Comment [RT9]: I've done split by gender for EAT predicting later IFS even if not originally significant in line with your comments

demographic variables. Previous studies have shown a relationship between financial difficulties and poor mental health in students⁵. This finding appeared to be independent from the impact of family affluence, with lower family affluence also predicting higher eating attitudes a year later. There was however no effect of family affluence on baseline scores, suggesting that lower family affluence leads to greater chronicity eating attitudes over time. This goes against previous studies showing higher family affluence in those with eating disorders^{6,7}, but in line with general population studies showing a relationship between lower SES and disordered eating.^{14,15} The hypothesis of a bi-directional relationship was partly supported as more severe eating attitudes predicted greater short-term financial difficulties at 3-4 months. Thus those with more severe eating difficulties might be more vulnerable to short term financial difficulties.

However the results also indicate that there is a relationship between financial difficulties and eating attitudes in women but not men. This is in line with other findings of a link between parental education and eating disorders in women but not men⁸, though it is important to note that the low sample size for men and resulting reduced statistical power may partially explain this finding. Thus, in female students, eating attitudes predict more severe short term financial difficulties in the short-term, but financial difficulties also predict greater eating attitudes up to a year later. This suggests the possibility of a 'vicious cycle' pathway for female students whereby negative eating attitudes increase the risk of financial difficulties in the short-term, these difficulties then serve to further exacerbate negative eating attitudes in the longer-term.

These links need to be further explored to confirm the relationship and determine causal mechanisms for the relationship. The relationship between financial difficulties and eating attitudes may relate to models suggesting binge eating represents a need to escape from self-awareness¹⁶. Those at risk of an eating disorder might be acutely sensitive to failures to manage a budget or cope financially, and binge eating might be a way to escape from this awareness of personal failings and associated negative affect. It may also relate to findings of low perceived control over external events in those with eating disorders^{17,18}, with

Comment [RT10]: I have added in this paragraph discussing gender: thankyou for your thoughts.

those who are high risk for an eating disorder being prone to feeling they are not in control of their financial situation, and therefore engage in restricting behaviours as a way to exert control in other areas of their life.

This study is limited by the self-selected sample which is heavily female and its use of a measure of eating attitudes rather than eating disorder behaviours. There is also a high level of drop out though there is no evidence that drop out was influenced by the variables measured here. The Family Affluence Scale is designed for use with adolescents so is not ideal for an adult population. The Index of Financial Stress measures difficulties over a six month period so there is a possible partial overlap between time points. It is important to note the limitations of using regression with data with high levels of kurtosis, and the small sample size for regression analysis split by gender. However, the findings suggest the need for further exploration of the link between greater financial difficulties and more severe eating attitudes, including studies of clinical groups and factors that might mediate or moderate these associations.

Note: The authors have no conflict of interest.

Acknowledgements: Thanks to Christy Pitfield for her assistance with literature searches, to Ron Roberts from Kingston University for his help with the data collection stage of the research, to the universities that helped with the recruitment, and to the participants.

References

- Costello EJ, Angold A, Burns BJ, Erkanli A, Stangl DK, Tweed DL. The Great Smoky Mountains Study of Youth Functional Impairment and Serious Emotional Disturbance. Arch Gen Psychiatry 1996; 53:1137-1143.
- Ritsher JEB, Warner J, Johnson JG, Dohrenwend BP. Inter-generational longitudinal study of social class and depression: a test of social causation and social selection models. Br J Psychiatry 2001; 178: 84-90.
- Lorant L, Croux C, Weich S, Deliege D, Mackenbach J, Ansseau M. Depression and socio-economic risk factors: 7-year longitudinal population study. Br J Psychiatry 2007; 190: 293-298.
- Skapanakis P, Weich S, Lewis G, Singleton N, Araya R. Socio-economic position and common mental disorders: Longitudinal study in the general population in the UK. Br J Psychiatry 2006; 189: 109-117.
- Richardson T, Elliott PA, Roberts R. The relationship between debt and mental and physical health: A systematic review and meta-analysis. Clin Psych Review 2013; 33: 1148-1162.
- 6. Nevonen L, Norring C. Socio-economic variables and eating disorders: a comparison between patients and normal controls. Eat Weight Disord 2004; 9: 279-284.
- Hjern A, Lindberg L, Lindblad F. Outcome and prognostic factors for adolescent female in-patients with anorexia nervosa: 9- to 14-year follow-up. Br J Psychiatry 2006; 189: 428-432.
- Ahern JC, Chiesa F, af Klinteberg B, Koupil I. Psychosocial determinants and family background in anorexia nervosa: Results from the Stockholm Birth Cohort Study. Int J Eat Disord 2012; 45: 362–369.
- Eisenberg D, Nicklett EJ, Roeder K, Kirz NE. Eating disorder symptoms among college students: Prevalence, persistence, correlates, and treatment-seeking. J Am Coll Health 2011; 59:700-707.

- 10. Jacobi C, Fittig E, Bryson S, Wilfley D, Kraemer H, Taylor CB. Who is really at risk? Identifying risk factors for subthreshold and full syndrome eating disorders in a high-risk sample. Psychol Med 2011; 41:1939-1949.
- 11. Boyce W, Torsheim T, Currrie C, Zambon A. The Family Affluene Scale as a measure of national wealth: Validation of an adolescent self-report measure. Social Indicators Research, 2006; 78:473-487.
- 12. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The Eating Attitudes Test: psychometric features and clinical correlates. Psychol Med 1982; 12:871-878.
- 13. Siahpush M, Carlin JB. Financial stress, smoking cessation and relapse: results from a prospective study of an Australian national sample. Addiction 2006; 101:121-127.
- 14. Power Y, Power L, Canadas MB. Low socioeconomic status predicts abnormal eating attitudes in Latin American female adolescents. Eating Disorders 2008; 16:136-145.
- 15. Reagan P, Hersch J. Influence of race, gender, and socioeconomic status on binge eating frequency in a population-based sample. Int J Eat Disorder 2005; 38: 252-256.
- 16. Heatherton TF, Baumeister RF. Binge eating as escape from self-awareness. Psychol Bull 1991; 110:86-108.
- 17. Dalgleish T, Tchanturia K, Serpell L, Hems S, de Silva P, Treasure J. Perceived control over events in the world in patients with eating disorders: a preliminary study. Pers Indiv Differ 2001; 31:453-460.
- 18. Sassaroli S, Gallucci M, Ruggiero GM. Low perception of control as a cognitive factor of eating disorders. Its independent effects on measures of eating disorders and its interactive effects with perfectionism and self-esteem. J Behav Ther Exp Psych 2008; 39:467-488.