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Social rank and symptom change in eating disorders: A 6-month longitudinal study

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Abstract

Background: Following previous cross-sectional research adopting an evolutionary approach to social rank and eating disorders, the present study explored the predictive value of social rank for changes in eating disorder symptoms in a 6-month longitudinal study.

Methods: Seventy three women and men with a history of eating disorders were followed up over 6 months. A broad range of measures of social rank were used to determine whether social rank at baseline predicted residual changes in eating disorder symptoms.

Results: Low social rank (in terms of perceived external entrapment and submissive behaviour) predicted an increase in symptoms of anorexia but not symptoms of bulimia. The predictive value of low social rank was not mediated by changes in depressive symptoms.

Conclusion: Perceived low rank predicts an increase in anorexic symptoms. However further research is required to determine the precise nature of how social rank exerts its influence on the development of eating disorder symptoms.

Keywords: Anorexia, bulimia, social rank, involuntary subordination

Key practitioner message:

- Self-perceived low social rank predicts an increase in anorexic symptoms but not bulimic symptoms
- The effect of low social rank on changes in anorexic symptoms was not mediated by changes in depressive symptoms.
- Interventions for anorexia nervosa may need to incorporate techniques for increasing status and/or self-compassion

Introduction

Social rank is a key biosocial goal and is proposed to be an evolved system that helps to regulate social interactions in terms of competition and attraction (Gilbert, 1989, 1992). Specifically, high social rank is thought to determine greater success at securing resources as well as access to mates (both in terms of competing with others of the same sex and attracting members of the opposite sex). Social attractiveness (social attention holding power) rather than dominance by aggression (resource holding power) is thought to be the preferred strategy for humans in achieving status and rank (Gilbert, 1992, 1997) and is achieved through displays of attractiveness, competence and talent. Thus, high social status is bestowed on someone by others because he/she is valued socially rather than that individual obtaining high status by dominating, aggressive or threatening behaviour (Gilbert, 1992).

In particular, it is proposed that those with an "involuntary, subordinate self-perception" (Gilbert, 1992, p.149) are more likely to report psychological problems (Gilbert, 2006; Stevens & Price, 2000). From this perspective, an individual considers that she is of high or low social rank on the basis of how she perceives that others perceive her rather than based on any objective index of status (such as socio-economic status, professional status etc.). Thus, low social rank can be conceived as a range of interconnected perceptions, feelings, emotions, behaviours and situations including the perception that one is of lower

status than others (unfavourable social comparison), the feeling of having been put down by a dominant other (social defeat), that one is unable to escape an uncontrollable set of circumstances (entrapment) and the giving up of competing with others, including the signalling of one's intention to avoid conflict (submissive behaviour), and the associated emotion of shame (Allan & Gilbert, 1995, 1997; Gilbert, 1992; Gilbert & Allan, 1998). There is considerable evidence emerging for the role of these variables in psychopathology (e.g. Aderka, Weisman, Shahar & Gilboa-Schechtman, 2009; Sturman, 2011; Sturman & Mongrain, 2008).

While much of the work on social rank over recent years has explored its association with depression, studies are beginning to explore a possible link with eating disorders. Studies using patient samples with anorexia nervosa (Connan, Troop, Landau, Campbell & Treasure, 2007) or mixed eating disorder diagnoses (Troop, Allan, Treasure & Katzman, 2003) have shown that eating disorder patients have a more unfavourable social comparison and report more submissive behaviours than non-eating disordered controls. Furthermore, women in remission from anorexia nervosa show fewer problems with social rank than women who are still ill although levels are still not within the normative range (Connan et al., 2007).

In students samples, Bellew, Gilbert, Mills, McEwan and Gale (2006) found that unfavourable social comparison and an insecure striving to avoid inferiority were related to abnormal eating attitudes while Troop and Baker (2008) found that unfavourable social comparison, submissive behaviour and feelings of external entrapment predicted eating disorder symptoms. Furthermore, low social rank predicts eating disorder symptoms independently of their shared association with depression in both patient (Troop et al., 2003) and non-clinical (Troop & Baker, 2008) samples.

The above studies have explored the link between social rank and inferiority and eating pathology in a broad sense. A study by Faer, Hendriks, Abed and Figueredo (2005), however, tested Abed's (1998) sexual competition hypothesis and found that competing with other females for mates was related to both anorexic and bulimic symptoms (mediated by body dissatisfaction and drive for thinness) while competing with other females for status was related to only anorexic symptoms (mediated by perfectionism). However, it has not yet been established that social status in eating disorders functions specifically in relation to sexual competition rather than social competition more generally.

All the studies referred to above are cross-sectional and cannot establish whether social rank plays an etiological role in eating disorders or if it is itself affected by the development of pathology. Retrospective studies provide some

(albeit limited) support for the view that social rank plays an etiological role, at least in anorexia nervosa. Schmidt, Tiller, Andrews, Blanchard and Treasure (1997) found that so-called "pudicity" events, events of a sexual nature that are shameful or embarrassing, occur in the year before onset of anorexia nervosa more commonly than in bulimia nervosa or in non-eating disordered women. Troop and Bifulco (2002) also found that women with anorexia nervosa of the binge-purge subtype retrospectively reported greater feelings of inferiority in their adolescence (predating the eating disorder) than did non-eating disordered women. On the other hand, premorbid levels of felt inferiority in bulimia nervosa and anorexia nervosa of the restricting subtype did not differ from non-eating disordered women. The fact that Connan et al. (2007) found that low social rank perfectly mediated the association between childhood interpersonal adversity and a history of anorexia nervosa is also consistent with an etiological role though it is by no means conclusive.

Women in remission from eating disorders report less impairment in levels of rank-related constructs such as shame (Troop, Allan, Serpell & Treasure, 2008) or, as already described, submissive behaviour and unfavourable social comparison (Connan et al., 2007). However, such findings could equally well indicate either that remission is associated with a subsequent increase in social rank or that those with higher perceived social rank are simply more likely to recover. Consequently the possibility exists that low social rank may not be

causal but that it may play a role in maintaining an eating disorder (Schmidt & Treasure, 2006), for example through non-disclosure in therapy (Swan & Andrews, 2003). Therefore, while studies comparing ill and recovered women can shed some light on aetiological processes, these must be supplemented with longitudinal research.

In summary, cross-sectional and retrospective interview studies all indicate the possible role of social rank in the aetiology (either the onset or the maintenance) of eating disorder symptoms. This association has been found in both eating disordered and non-eating disordered samples and the effect is independent of a shared association with depression. Nevertheless, no longitudinal studies have been carried out. The purpose of the present study, therefore, is to identify the predictive value of social rank to changes in eating disorder symptoms in a longitudinal study.

Method

Participants

Individuals with a probable or possible history of an eating disorder were recruited from an eating disorder research volunteer register at the Section of Eating Disorders, Institute of Psychiatry in London. At the time of this study the volunteer register contained 366 names. After approval had been obtained from the Ethics Committee at the Maudsley and Bethlem Trust, all 366 were sent a

questionnaire pack and invited to participate. In total, 189 (52%) returned their questionnaires. Only these 189 were sent follow-up questionnaires 6-months later, 73 of whom returned follow-up measures of eating pathology and depression, representing 20% of those initially contacted and 39% of those who completed baseline measures. Participants who completed the 6-month follow-up did not differ significantly from those who did not on any of the study variables at baseline (t-values between .10 and 1.58, p-values between .12 and .92). The remainder of this report therefore considers only those 73 participants who completed the longitudinal study.

Mean age of participants was 35.5 years (s.d. 9.9), 70 (96%) were female and marital status was as follows: 59% single; 18% divorced; 14% married; 1% cohabiting; 1% widowed and 7% missing data.

Volunteers were known to be at various stages of an eating disorder including patients in hospital, sufferers not currently receiving treatment and individuals who were recovering or had recovered from an eating disorder. Although self-diagnosed at the point of volunteering, 67 (92%) of the sample reported having received treatment for an eating disorder at some time either currently or in the past. Furthermore, the Short Evaluation for Eating Disorders (SEED: Bauer, Winn, Schmidt & Kordy, 2005, see below) was administered and, although designed to give continuous Total Severity Indexes for anorexic and bulimic

symptoms, Troop, Allan, Serpell and Treasure (2008) describe operational criteria for generating possible/probable DSM-IV (APA, 1994) diagnoses from the SEED. Participants were asked about both *past* and *present* symptoms and, on the basis of these operational criteria, 22 of the volunteers in this study were considered to be in remission from an eating disorder at baseline (previous diagnoses were: 2 anorexia nervosa of the restricting subtype [AN-R], 13 anorexia nervosa of the binge/purge subtype [AN-BP], 3 bulimia nervosa [BN] and 4 eating disorder not-otherwise-specified [EDNOS]) and 51 were considered still ill (13 AN-R, 11 AN-BP, 13 BN and 14 EDNOS).

Measures: Symptoms

The Short Evaluation for Eating Disorders (SEED: Bauer et al., 2005) is a self-report questionnaire measuring behavioural and attitudinal symptoms of eating disorders and gives Total Severity Indexes separately for anorexic symptoms and bulimic symptoms (AN-TSI and BN-TSI respectively). Specifically, AN-TSI consists of symptoms of the degree of underweight, fear of weight gain and the distortion of body perception while BN-TSI consists of symptoms of binge eating frequency, frequency of compensatory behaviour (vomiting and laxative abuse) and over-concern with body weight and shape. Bauer et al. (2005) report excellent reliability and validity for the SEED. However, the version used in the present study was modified slightly from the original to include the definition of binge eating that is given in DSM-IV (APA, 1994) in order to increase the validity of

self-reports of binge eating (i.e. “consuming a large amount of food, that the average person would consider unusually large, and in a short period of time (less than 2 hours) where you also experience a sense of losing control over your eating”). In the present sample, internal reliabilities were modest (standardized Cronbach’s α coefficients were: AN-TSI at Time 1 = .62 and Time 2 = .63; BN-TSI at Time 1 = .59 and Time 2 = .61). However, since the calculation of Cronbach’s α depends on the number of items in a scale, Clark and Watson (1995) state that, for scales with only a few items (< 10), mean inter-item correlations are more informative for demonstrating internal consistency. Mean inter-item correlations between .20-.40 are considered optimal (Briggs & Cheek, 1986) and, in the present sample, they ranged from .32 to .36, indicating good internal consistency in spite of the small number of items ($n = 3$) used to measure symptoms.

The **Beck Depression Inventory-IA** (BDI-IA: Beck & Steer, 1987) is a 21-item questionnaire used to assess cognitive and physical symptoms of depression.

The items are scored on a 4-point Likert scale and items are summed to yield a total score. Cronbach's alpha for the BDI total score was 0.94.

Measures: Social rank

The **Social Comparison Rating Scale** (SCRS: Allan & Gilbert, 1995) is an 11-item scale in which respondents rate their perceptions of self in relation to others

on 10-point scales, anchored at either end by descriptors such as *unattractive-attractive*, *weak-strong* etc. Scores of around 60 would indicate that the respondent perceived herself as no better or worse than anyone else.

The **Submissive Behaviour Scale** (SBS: Allan & Gilbert, 1997) is a 16-item questionnaire in which respondents rate a series of statements referring to behaviors such as avoiding eye contact with others or walking out of a shop, knowing one had been short-changed but without challenging the shopkeeper.

The **Social Defeat Scale** (SDS: Gilbert & Allan, 1998) is a 16-item questionnaire measuring the sense of failed struggle and losing rank. Sample items include "I feel that I have not made it in life" and "I feel that there is no fight left in me".

The **Internal-External Entrapment Scale** (IEE: Gilbert & Allan, 1998) is a 16-item questionnaire measuring the perception of things in the outside world (external entrapment: IEE-EXT) or internal feelings and thoughts (internal entrapment: IEE-INT) that induce escape motivation but where such escape is blocked. Sample items include "I am in a situation I feel trapped in" (external entrapment) and "I feel powerless to escape myself" (internal entrapment).

Scores for measures are calculated by summing all items. Higher scores on the IEE, the SDS and the SBS relate to lower social rank (i.e. feel more trapped,

more submissive, more defeated) while lower scores on the SCRS relate to lower social rank (i.e. more unfavourable comparison). Internal reliabilities were all high (α coefficients between .90 and .94).

Data analysis

Social rank variables were used to predict residual changes in eating disorder symptoms over time. Specifically, symptoms of anorexia, bulimia and depression at 6-month follow-up were regressed onto the corresponding baseline symptom and these residual scores were the dependent variables in subsequent regression analyses. Baseline levels of social rank were used to predict residual scores of anorexia and bulimia symptoms and to determine whether any significant effects were mediated by changes in depressive symptom scores. In order to test for a mediating effect, Baron and Kenny's (1986) criteria were used (condition 1 = the predictor must predict the outcome; condition 2 = the predictor must predict the potential mediator; condition 3 = the potential mediator must predict the outcome in the presence of the predictor variable). Only when all three conditions are met can a variable be said to mediate the effect of a predictor on the outcome. In addition, because previous research has identified a strong association between social rank and depression, baseline levels of depression were also included in the prediction of residual change in symptoms in order to determine whether any predictive effects of social rank are genuine or merely an artefact of shared variance with depression.

Results

Sample characteristics

Table 1 gives the means, standard deviations, and the minima and maxima for all variables measured. Mean current BMI is 19.4kg/m² (s.d. 4.9) although since this includes people with a range of diagnoses and at various stages of recovery/illness this is not particularly meaningful, as evidenced by the wide range of BMIs from 11.4kg/m² to 42.5kg/m².

Table 1 about here

Social rank variables at baseline were correlated highly with each other as well as with baseline levels of depression (see Table 2) which can lead to problems of multi-collinearity in regression analyses. Such problems were evident here with condition indices reaching 27.5 (although values for tolerances [$> .13$] and Variance Inflation Factors [< 7.67] were reasonable). However, problems of multi-collinearity were resolved by centring the baseline predictor variables before entering them into the regression analyses (condition indices < 7.10 , tolerances $> .13$, Variance Inflation Factors < 7.67). All social rank variables were also significantly correlated with eating disorder symptoms.

Table 2 about here

Predicting residual change scores in symptoms

Analyses were carried out separately to use baseline levels of social rank and depression (all variables were centred before being entered in the regression analyses) to predict residual change in AN-TSI and BN-TSI scores from baseline to 6 month follow-up. As shown in Table 3, these variables significantly predicted residual change in AN-TSI scores (explaining 11% of the variance) but not BN-TSI scores. Therefore Baron and Kenny's (1986) first criterion for mediation was met for AN-TSI scores but not BN-TSI scores. However, as is also shown in Table 3, these baseline variables did not predict residual change in BDI-IA scores. Therefore Baron and Kenny's (1986) second criterion for mediation was not met. In other words, the prediction of residual change in symptoms of anorexia by baseline variables is not mediated by changes in BDI-IA scores.

Table 3 about here

In predicting residual change in AN-TSI, baseline levels of SBS and IEE-Ext were uniquely predictive of residual change in AN-TSI scores. Importantly, these associations were independent of the shared association with BDI-IA.

Since SBS and E-E scores predict a change in anorexia symptoms, data were analysed further to explore whether this change is due to participants with low

social rank developing worse symptoms or whether participants with high rank show an improvement in symptoms over 6 months. To achieve this, SBS and E-E scores were standardised and their average computed. Participants were then divided into tertiles in order to compare those in the highest tertile (lowest rank) versus the lowest tertile (highest rank) of the combined SBS/E-E score. Note that, in order to differentiate those with the highest and lowest social rank, tertile splits were preferred to median splits in order to exclude those in the middle range (neither high nor low rank) and preferred to quartile splits in order to maximise the number of participants included in the high and low rank groups. However, exploring these alternative methods of dividing participants led to essentially the same conclusions.

Participants in the lowest tertile (highest social rank) increased from a mean AN-TSI of 1.36 (s.d. = .77) at baseline to 1.43 (s.d. = .67) at follow-up, representing an increase in AN-TSI scores of 5.1%. However, participants in the highest tertile (lowest social rank) increased from a mean AN-TSI of 2.37 (s.d. = 1.14) at baseline to 2.64 (s.d. = .87) at follow-up, representing an increase in AN-TSI scores of 11.4% (see Figure 1). In other words, higher perceived social rank is not associated with a decrease in symptoms of anorexia, rather lower perceived social rank is associated with an increase in anorexic symptoms.

[Figure 1 about here](#)

Discussion

The present study examined the role of social rank in predicting changes in eating disorder symptoms over 6 months in 70 women and 3 men with a history of eating disorders.

Findings

Low social rank predicted an increase in anorexic but not bulimic symptoms over 6 months. Importantly, the prediction of change in anorexic symptoms by social rank variables was not mediated by change in symptoms of depression and was independent of baseline levels of depression. This therefore extends previous studies showing cross-sectional associations between eating disorder symptoms and social rank in patients (Troop et al., 2003) and students (Troop & Baker, 2008) and differences between women with anorexia nervosa who are either still ill or in remission (Connan et al., 2007). Of particular note is that, while Troop & Baker (2008) found unfavourable social comparison, submissive behaviour and feelings of external entrapment to predict eating pathology in female students, the results of the present study were remarkably similar. Although all measures of social rank correlated with both anorexic and bulimic symptoms at baseline, submissive behaviour and feelings of external entrapment were independently predictive of residual change in symptoms of anorexia.

In addition, the possibility was raised that any longitudinal association could indicate either that low rank led to an increase in symptoms or else that high rank led to a reduction in symptoms. In this study, the former seems to be the case. Participants who were low in self-reported rank, in addition to reporting greater pathology at baseline, were also more likely to increase their anorexic symptoms more than were those with high self-reported rank.

Implications

While cross-sectional studies have suggested a role for social rank in eating disorders, the present study is the first to identify that (a) there is a predictive association and so treatment may need to consider this and (b) this may be specific to symptoms of anorexia rather than bulimia.

Sturman (2011; Sturman & Mongrain, 2008) has argued that the measures of social rank used here all form a single construct, *involuntary subordination*, and that they can be measured as such. However, the present study found unique aspects of social rank to predict increases in symptoms of anorexia, specifically submissive behaviour and perceptions of external entrapment. These aspects of social rank could be argued to reflect an external focus (e.g. the source of the entrapment is external and submissiveness is displayed overtly) rather than an internal focus (such as perceived internal entrapment and the personal experience of having been defeated). Thus, symptoms of anorexia nervosa may

not relate to sufferers feeling low rank (i.e. internally oriented) but to sufferers feeling they are perceived by others to be low rank (i.e. externally-oriented). Serpell and colleagues (Serpell, Treasure, Teasdale, & Sullivan, 1999; Serpell, Treasure, Troop, & Teasdale, 2004; Gale, Holliday, Troop, Serpell, & Treasure, 2006) have identified a number of benefits of the illness that are perceived by people with anorexia nervosa and Schmidt and Treasure (2006) argue that these may relate, in many cases, to social status. For example, one perceived benefit of anorexia is feeling special as a consequence of the symptoms. Another is not feeling emotions, the expression of which is often viewed by the sufferer (or important people in her life) as a weakness (Schmidt & Treasure, 2006).

According to this view, symptoms of anorexia may therefore have the function for sufferers of restoring or maintaining social rank in the minds of others. This is consistent with the results both of the present study as well as those by Troop et al. (2008) who found, in a cross-sectional study, that anorexic symptoms were related to perceptions of being *shamed by others* (external shame) but not *feeling ashamed* (internal shame).

Clearly further work is required to differentiate internally-oriented and externally-oriented features of social rank. It will also be important to determine the clinical utility of such a distinction, for example whether these are differentially related to the aetiology of anorexia versus depression and whether interventions addressing these have different effects for these two conditions. Whether this

turns out to be true and (ultimately) useful, the mere suggestion that specific rank processes may relate to increases in anorexic symptoms argues that it may be premature to abandon measuring these different aspects of rank (submissiveness, social comparison, social defeat and internal and external entrapment) in favour of a single construct of *involuntary subordination*.

Regardless, the results of the present study suggest that interventions that promote social rank could be considered for inclusion in treatments for anorexia nervosa. These may be either in terms of helping individuals to identify battles they can win or finding alternative contexts in which to achieve status (Sloman, 2008). Alternatively, interventions that render the effect of threats to social rank less important could also be useful. For example, the ability to be self-soothing can tone down threat and facilitate acceptance of defeat (Gilbert, 2005, 2010; Sloman, 2008). There is emerging evidence for the effectiveness of a number of approaches to increase self-compassion, of which the ability to self-soothe is a key component, including in eating disorders (Goss & Allan, 2011; Gale, Gilbert, Read & Goss, 2012). These approaches include compassion-focused therapy (e.g. Ashworth, Gracey, & Gilbert, 2011; Gilbert, 2010; Gilbert & Proctor, 2006; Laithwaite, Gumley, O'Hanlon, Collins, Doyle, Abraham, & Porter, 2009; Mayhew, & Gilbert, 2008), mindfulness based stress reduction (Shapiro, Astin, Bishop, & Cordova, 2005; Shapiro, Brown, & Biegel, 2007), experimental approaches (Kelly, Zuroff, Foa, & Gilbert, 2010; Kelly, Zuroff, & Shapira, 2009) and expressive

writing (Imrie & Troop, 2012; Leary, Tate, Adams, Allen, & Hancock, 2007) (for a thorough review, see Barnard, & Curry, 2011).

Strengths and limitations

There are, of course, limitations that should be acknowledged. While the present study used clinical measures in a sample of people with a history of eating disorders, the measures were self-report and were not strictly diagnostic.

Interview assessment of symptoms and diagnoses would clearly have been ideal.

It was not possible, therefore, to identify the effect of social rank on remission, relapse or onset of new cases, merely changes in symptom scores. Since participants were self-selected, generalisability may also be an issue. However, since the volunteer register from which participants were recruited was built over several years and from various clinical and non-clinical sources, one could argue that the sample is more representative than studies using purely hospital-based samples. Even so, another limitation is that information was not collected on any additional or on-going treatment received by participants during the study period so whether such treatment would mask or enhance the predictive effects of social rank cannot be determined.

Nevertheless, this is the first longitudinal study on the role of social rank in eating disorders and the design does allow us to make inferences about the predictive value of social rank and changes in anorexic symptoms. The present

study also used a wider range of cognitive, emotional and behavioural measures tapping into the construct of social rank than has generally been used in eating disorder research so far.

Conclusion

In conclusion, perceived low social rank predicts an increase in symptoms of anorexia nervosa. However, while the evidence presented here is consistent with a causal role for social rank, the present results should be viewed as preliminary. Although an important first step, a good deal of further research is required to determine exactly how social rank exerts its influence.

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Table 1. Sample characteristics

	Mean	s.d.	Min.	Max.
Age	35.5	9.9	19	57
BMI (kg/m ²)	19.7	5.5	11.4	42.9
I-E	15.4	7.6	0	24
E-E	20.2	11.2	0	40
SDS	36.3	14.2	6	64
SCRS	38.2	17.0	11	76
SBS	37.7	12.1	8	61
AN-TSI Time 1	1.8	1.0	0	4
AN-TSI Time 2	1.9	1.0	0	4
BN-TSI Time 1	1.6	1.2	0	4
BN-TSI Time 2	1.7	1.2	0	4
BDI-IA Time 1	27.8	14.4	4	63
BDI-IA Time 2	25.4	14.0	0	50

I-E = Internal entrapment; E-E = External entrapment; SDS = Social Defeat Scale; SCRS = Social Comparison Rating Scale; SBS = Submissive Behaviour Scale; BDI-IA = Beck Depression Inventory; AN-TSI = Anorexia Nervosa – Total Severity Index; BN-TSI = Bulimia Nervosa – Total Severity Index.

Table 2. Correlations between baseline scores of social rank, eating disorder symptoms and depression

	AN-TSI	BN-TSI	BDI-IA	I-E	E-E	SDS	SCRS
BN-TSI	.27*						
BDI-IA	.37***	.46***					
I-E	.49***	.47***	.83***				
E-E	.32**	.35**	.78***	.82***			
SDS	.36**	.51***	.88***	.80***	.80***		
SCRS	-.37**	-.31**	-.64***	-.58***	-.49***	-.75***	
SBS	.32**	.40***	.69***	.62***	.51***	.72***	-.69***

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

AN-TSI = Anorexia Nervosa – Total Severity Index; BN-TSI = Bulimia Nervosa – Total Severity Index; BDI-IA = Beck Depression Inventory; I-E = Internal entrapment; E-E = External entrapment; SDS = Social Defeat Scale; SCRS = Social Comparison Rating Scale; SBS = Submissive Behaviour Scale.

Table 3. Regressing residual change scores onto baseline scores of social rank and depression

	<u>AN-TSI</u>		<u>BN-TSI</u>		<u>BDI-IA</u>	
	β	t-value	β	t-value	β	t-value
BDI-IA	-.04	-.14	-.02	-.06	-.36	-1.28
I-E	-.18	-.78	.06	.25	.24	.98
E-E	.51	2.30*	.46	1.95	.21	.89
SDS	-.23	-.76	-.52	-.159	-.32	-.98
SCRS	.03	.16	-.28	-1.46	-.18	-.89
SBS	.40	2.30*	.03	.15	.24	1.30
F-value	2.51*		1.31		1.05	
df	6, 65		6, 65		6, 65	
R ²	.118		.108		.089	

BDI-IA = Beck Depression Inventory; I-E = Internal entrapment; E-E = External entrapment; SDS = Social Defeat Scale; SCRS = Social Comparison Rating Scale; SBS = Submissive Behaviour Scale; AN-TSI_{residual} = residual change in Anorexia Nervosa – Total Severity Index; BN-TSI_{residual} = residual change in Bulimia Nervosa – Total Severity Index; BDI-IA_{residual} = residual change in BDI-IA scores

Figure 1. Changes in AN-TSI scores over 6 months in those with high or low social rank at baseline

