Cite as: Troop, N.A. (2015). Social rank, rank-related life events and eating pathology. European Eating Disorders Review. In press.

Social rank, rank-related life events and eating pathology

Nicholas A. Troop PhD CPsychol

Address for correspondence:

Dr Nicholas Troop, School of Psychology, University of Hertfordshire, College Lane, Hatfield, Hertfordshire, AL10 9AB, U.K. Tel. +44 (0) 1707 286 451. Email: N.A.Troop@herts.ac.uk

Abstract

Background: This study explored the role of meaning in the link between stress and disordered eating, in particular focusing on social rank.

Method: 211 women completed measures of eating pathology, depression, social comparison and life events where life events were assessed in terms of general loss, threat, shame and loss of social status.

Results: Events involving loss of social status were related to eating pathology but only in women reporting self-perceived low rank. Events that did not concern social status were unrelated to eating pathology.

Discussion: Women who perceive themselves to be low social status appear vulnerable to events that concern their social status.

Keywords: eating disorders, social rank, life events, stress

Introduction

Life events and difficulties play an important role in the aetiology of psychological disorders (Tennant, 2002) including eating disorders (Schmidt, Tiller, Andrews, Blanchard & Treasure, 1997; Welch, Doll & Fairburn, 1997; Rojo, Conesa, Bermudez & Livianos, 2006) as well as disordered eating in non-clinical samples (for a review, see Kupeli, 2014). However, few studies have explored the role of *meaning* of events and difficulties. There is a growing literature exploring the role of social rank in relation to eating disorders and it is this that informs the present study.

Social rank is proposed to be an evolved solution to group living where access to mates and limited resources is distributed according to status within a hierarchy (Gilbert, 2006). When low social rank is imposed, involuntary and inescapable, this can lead to a submissive stance and passivity as a means of avoiding conflict (Allan & Gilbert, 1997). Most work on the link between social rank and psychiatric disorder has been carried out in depression. However, patients with eating disorders also report more submissiveness and lower status (Connan, Troop, Landau, Campbell, & Treasure, 2007; Pinto-Gouveia, Ferreira, & Duarte, 2012; Troop, Allan, Katzman & Treasure, 2003) while eating pathology is related to achieving status through intrasexual competition (Abed, Mehta, Figueredo, Aldridge, Balson, Meyer, & Palmer, 2012; Faer, Hendriks, Abed, & Figueredo, 2005) and striving to avoid feelings of inferiority (Bellew, Gilbert, Mills, McEwan, & Gale, 2006). Importantly, the link is independent of a shared association with depression in cross-sectional (Troop et al., 2003; Troop & Baker, 2008) and longitudinal studies (Troop, Andrews, Hiskey & Treasure, 2014).

However, studies have used trait measures of social rank and have not measured this in relation to specific life events. This study therefore explored the association

between rank-related stress and eating disorder symptoms in women who perceive themselves to be high or low status. The specific hypotheses are:

- Rank-related stress is associated with greater levels of eating pathology
- The association between rank-related stress and eating pathology is moderated by self-perceived low social rank

Method

Participants

Following ethical approval, 211 women were recruited amongst students and through social networking websites. They were predominantly white (81%), students (77%) and single (52%).

Measures

The **List of Threatening Experiences** (LTE: Brugha, Bebbington, Tennant, & Hurry, 1985) asks about the occurrence of 12 life event categories over the previous year. For the purposes of the present study this was modified so that, where respondents reported the occurrence of an event/difficulty, they also indicated the severity (degree of unpleasantness) and the meanings they attached to each event, based on the most widely used interview schedules and meanings relevant to ranking theory. Since even severe life events can have a positive element, meanings were rated from -3 to +3 and anchored at each end with a negative and a positive statement respectively. The positive and negative anchors, and the meanings to which they relate, were: *Unpleasantness* (was very unpleasant - was very pleasant); *Threat* (was something to dread - was something to look forward to); *Loss* (something had been lost - something had been gained); *Exit* (was the end of something - was the start of something new); *Shame* (was something to be ashamed of - was something to be

proud of); *Loss of social status* (decreased reputation/standing - increased reputation/standing). For the purposes of the analysis, scores were recoded from 1 to 7 with higher scores indicating a more negative appraisal of the meaning of the event/difficulty.

The **Eating Disorders Examination-Questionnaire** (EDE-Q: Fairburn & Beglin, 1994) is a widely used measure of eating pathology with attitudinal sub-scales and a number of diagnostic items. For the purposes of the present report only the overall EDE-Q score (mean of the attitudinal sub-scales) will be used. Higher scores indicate greater pathology.

Body Mass Index (kg/m^2) was assessed via self-reported weight and height.

The **Short Depression-Happiness Scale** (SDHS; Joseph, Linley, Harwood, Lewis & McCollam, 2004) is a 6-item measure of mood in which participants rate how they have felt over the last 7 days. It is a bidirectional scale with lower scores indicating more depression and higher scores indicating greater happiness.

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. High scores indicate a more favourable social comparison.

Internal reliabilities for all measures were satisfactory to high (see Table 2) and the SDHS and SCRS were selected because they have been used in much of the research cited in the Introduction that formed the rationale for the current study.

Data analysis

Principal Components Analysis (PCA) identified factors within the event meanings measure. Subsequently, to determine whether meanings of events predicted eating pathology, linear regression was performed controlling for age, BMI and DHS scores on Step 1, entering the main effects of SCRS and event meanings on Step 2 and the interaction terms (SCRS with event meanings) on Step 3.

Results

Summary of threatening experiences

In total, 85% of participants reported at least one life event/difficulty in the previous year with a median of 2 events/difficulties (range 0 to 12). Only participants reporting at least 1 event/difficulty were included in the remaining analyses, of whom 5 did not reliably rate appraisals of events/difficulties and 4 did not complete other measures. Therefore, the remaining analyses included 171 participants.

Principal Components Analysis of the *meaning* items

PCA on the 6 *meaning* ratings (KMO = .73 and Bartlett's test of Sphericity = 433.0, $p < .001$) identified two factors with Eigen-values > 1 which accounted for a total of 72.6% of the variance (Factor 1 Eigen-value = 3.2, accounting for 52.7% of the variance; Factor 2 Eigen-value = 1.2, accounting for 19.9% of the variance). Using .5 as a cut-off, Factor 1 was made up of the items *unpleasantness*, *threat* and *loss* and was labelled "negative event ratings"; Factor 2 was made up of the items *shame* and *loss of status* and was labelled "rank-related event ratings". *Exit* did not load on either factor. Means for items in these two factors were significantly higher (i.e. more negative) than the neutral mid-point ($t = 26.3$ and 8.1 for *negative event ratings* and *rank-related event ratings* respectively, both p-values < .001).

Table 1 about here

Rank-related event ratings correlated significantly with *negative event ratings* ($r = .38$, $p < .001$) and with both the SCRS ($r = -.19$, $p < .05$) and the DHS ($r = -.22$, $p < .01$). *Negative event ratings* correlated significantly with the DHS ($r = -.18$, $p < .05$) but only moderately with the SCRS ($r = -.13$, $p = .067$)

Predicting eating pathology

All assumptions required for regression analysis were met and predictor variables were centred to resolve problems of multi-collinearity (Condition Index = 2.3).

Table 2 presents the results of the regression analysis using meaning of events to predict EDE scores. The first step included age, BMI, SDHS scores and the number of events and was highly significantly predictive of EDE scores. The second step included the main effects of SCRS, *negative event rating* and *rank-related event rating* and did not add significantly to the prediction of EDE scores. The third step included the two interaction terms and added significantly to the prediction of EDE scores. The interaction between the SCRS and *rank-related event rating* was uniquely predictive of EDE scores even after controlling for age, BMI, SDHS scores, number of events, SCRS scores and the main effects of event meaning ratings.

Table 2 about here

Further regression analyses were carried out separately for those scoring above and below a median cut-off on the SCRS. Controlling for age, BMI, DHS scores and number of events, *rank-related event ratings* were significantly predictive of EDE scores in those with low SCRS scores (more rank-related stress predicting higher EDE scores) but not in those with high SCRS scores.

Table 3 about here

Discussion

This study found that events that are perceived to be shameful and damaging to one's reputation predict greater eating pathology but only in women who have a self-perceived low social status.

Limitations should be acknowledged. Participants self-reported their subjective experiences of event meanings in a cross-sectional study. Investigator-based ratings of meanings of events (on the basis of pre-determined criteria) using a prospective-retrospective design would increase objectivity and permit inferring a causal role.

Participants were predominantly white students and may not be representative of the general population and, since non-clinical participants were recruited, caution must also be exercised in extending conclusions to participants with clinical disorders.

Nevertheless, the findings add to the growing literature on the role of social rank in eating disorders and this study is the first to have linked this construct directly with life events in relation to eating pathology.

Although cross-sectional, the results suggest that the issue of social status may need to be addressed clinically since rank-related stress may increase or perpetuate symptoms. Developing the ability to self-soothe tones down threat to status (Gilbert, 2005) and interventions that increase self-soothing show promise in the treatment of eating disorders (Gale, Gilbert, Read & Goss, 2012).

Conclusions

Only stress which relates to the loss of social rank predicts eating pathology and only in those who already perceive themselves to be low status. Neither social rank nor life events are sufficient in explaining eating disorder symptoms on their own but the presence of both simultaneously appear to be necessary.

References

Abed, R., Mehta, S., Figueredo, A.J., Aldridge, S., Balson, H., Meyer, C., & Palmer, R. (2012). Eating disorders and intrasexual competition: Testing an evolutionary hypothesis among young women. *The Scientific World Journal* 2012, 290813. DOI:10.1100/2012/290813

Allan, S., & Gilbert, P. (1995). A social comparison rating scale: Psychometric properties and relationship to psychopathology. *Personality and Individual Differences*, 19, 293-299.

Allan, S., & Gilbert, P. (1997). Submissive behaviour and psychopathology. *British Journal of Clinical Psychology*, 36, 467-488. DOI: 10.1111/j.2044-8260.1997.tb01255.x

Bellew, R., Gilbert, P., Mills, A., McEwan, K., & Gale, C. (2006). Eating attitudes and striving to avoid inferiority. *Eating Disorders*, 14, 313-322.

Brown, G.W. & Harris, T.O. (1978). *Social origins of depression: A study of psychiatric disorder in women*. London: Tavistock.

Brugha,T., Bebbington, P., Tennant, C., & Hurry, J. (1985). The List of Threatening Experiences: A subset of 12 life event categories with considerable long-term contextual threat. *Psychological Medicine*, 15(1), 189-194. DOI: 10.1017/S003329170002105X

Connan, F., Troop, N.A., Landau, S., Campbell, I.C., & Treasure, J.L. (2007). Poor social comparison and the tendency to submissive behavior in anorexia nervosa. *International Journal of Eating Disorders*, 40, 733-793. DOI: 10.1002/eat.20427

Faer, L.M., Hendriks, A., Abed, R., & Figueredo, A. (2005). The evolutionary psychology of eating disorders: Female competition for mates or for status? *Psychology and Psychotherapy: Theory, Research and Practice*, 78, 397–417.

Fairburn, C.G. & Beglin, S.J. (1994). Assessment of eating disorders: Interview or self-report questionnaire. *International Journal of Eating Disorders.*, 16, 363-370. DOI: 10.1002/1098-108X(199412)

Gale, C., Gilbert, P., Read, N. & Goss, K. (2012). An evaluation of the impact of introducing compassion focused therapy to a standard treatment programme for

people with eating disorders. *Clinical Psychology and Psychotherapy*, 21, 1-12. DOI: 10.1002/cpp.1806

Gilbert, P. (2005). Compassion and cruelty: A biopsychosocial approach. In P. Gilbert (Ed). *Compassion: Conceptualisations, Research and Use in Psychotherapy* (pp. 3-74). London: Routledge.

Gilbert, P. (2006). Evolution and depression: Issues and implications. *Psychological Medicine*, 36, 287-297. DOI:10.1017/S0033291705006112

Joseph, S., Linley, P. A., Harwood, J., Lewis, C. A., & McCollam, P. (2004). Rapid assessment of well‐being: The Short Depression-Happiness Scale (SDHS). *Psychology and Psychotherapy: Theory, Research and Practice*, 77, 463-478.

Kupeli, N. (2014). *Stress, affect systems and eating pathology in problematic weight regulation*. Unpublished PhD thesis: University of Hertfordshire.

Pinto-Gouveia, J., Ferreira, C., & Duarte, C. (2012). Thinness in the pursuit for social safeness: An integrative model of social rank mentality to explain eating psychopathology. *Clinical Psychology and Psychotherapy*, 21, 154-165. DOI: 10.1002/cpp.1820

Rojo, L., Conesa, L., Bermudez, O., & Livianos, L. (2006). Influence of stress in the onset of eating disorders: Data from a two-stage epidemiologic controlled study. *Psychosomatic Medicine*, 68, 628-635. DOI: 10.1097/01.psy.0000227749.58726.41

Schmidt, U.H., Tiller, J.M., Andrews, B., Blanchard, M. & Treasure, J.L. (1997). Is there a specific trauma precipitating onset of anorexia nervosa? *Psychological Medicine*, 27, 523-530.

Tennant, C. (2002). Life events, stress and depression: A review of recent findings. *Australian and New Zealand Journal of Psychiatry*, 36, 173-182. DOI: 10.1046/j.1440-1614.2002.01007.x

Troop, N.A., Allan, S., Treasure, J.L., & Katzman, M. (2003). Social comparison and submissive behaviour in eating disorder patients. *British Journal of Clinical Psychology*, 76, 237-249. DOI: 10.1348/147608303322362479

Troop, N.A., Andrews, L., Hiskey, S., & Treasure, J.L. (2014). Social rank and symptom change in eating disorders: A 6-month longitudinal study. *Clinical Psychology & Psychotherapy*, 21, 115-122. DOI: 10.1002/cpp.1830

Troop, N.A. & Baker, A. (2008). The specificity of social rank in eating disorder versus depressive symptoms. *Eating Disorders*, 16, 331-341. DOI:10.1080/10640260802115993

Welch, S.L., Doll, H.A and Fairburn, C.G. (1997). Life Events and the Onset of Bulimia Nervosa: A Controlled Study. *Psychological Medicine*, 27, 515-522. DOI: http://dx.doi.org/10.1017/S0033291796004370

Table 1. Means (s.d.s) of sample characteristics and meaning of life events

Descriptives	Mean	S.D.	α
Age	22.6	6.1	N/A
BMI[1]	24.0	5.7	N/A
EDE	2.1	1.5	.96
DHS	16.9	2.8	.88
SCRS	56.4	15.9	.92
Ratings of events			
Negative *(unpleasantness*, *threat* and *loss)*	5.8	.9	.76
Rank-related *(shame* and *loss of status)*	4.5	.8	.79

Table 2. Regressing EDE-Q scores on stress ratings and social rank

	Step 1 (β)	Step 2 (β)	Step 3 (β)
Age	-.01	-.04	-.07
BMI	.29***	.30***	.30***
DHS	-.53***	-.46***	-.45***
Number of events/difficulties	.03	.02	.01
Negative event rating		-.08	-.08
Rank-related event ratings		.12	.12
SCRS		-.09	-.09
SCRS × Negative event rating			-.05
SCRS × Rank-related event rating			-.16*
ΔF	29.92***	1.85	5.96**
Δdf	4, 166	3, 163	1, 162
ΔR^2	.419	.019	.039

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

Table 3. Regressing EDE-Q scores on rank-related stress in women with high and low SCRS scores

	Low SCRS scorers N = 87 (β)	High SCRS scorers N = 84 (β)
Age	-.18	.04
BMI	.33***	.32**
DHS	-.48***	-.38***
Number of events	.02	.04
Rank-related event rating	.22*	.01
F	10.89***	7.10***
df	5, 81	5, 78
R^2	.402	.313

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