Fig. 1. Cost-effectiveness acceptability curves.

therapy could produce an extra unit of outcomes at a cost of GBP 53 (EUR 76) or it could be dominated by *BTSteps* (i.e. the latter would have lower costs and better outcomes).

Figure 1 shows the cost-effectiveness acceptability curves. The two active treatments become more cost-effective than relaxation at the points indicated by the ICERs, i.e. GBP 66 (EUR 95) for *BTSteps* and GBP 90 (EUR 130) for clinician-guided therapy. For λ values between around GBP 40 (EUR 58) and GBP 133 (EUR 192), *BTSteps* has more chance of being cost-effective compared to relaxation than does clinician-guided therapy. For values above this range, clinician-guided therapy is more cost-effective than *BTSteps*.

In the original RCT, *BTSteps* and clinician-guided therapy were more effective than relaxation, and *BTSteps* was less effective than clinician-guided ERP. However, *BTSteps* costs less, and there is a high probability that *BTSteps* is the most cost-effective option for modest values placed on a one-unit fall in the YBOCS. Clinician-guided therapy would be more cost-effective than *BTSteps* only if a unit reduction in the YBOCS was valued at around GBP 133 (EUR 192) or above. However, even if this were acceptable it ignores the fact that there is likely to be a limit on the number of therapists available. Therefore, the difference in cost-effectiveness may be greater than presented here.

The original trial did not collect detailed resource-use information. We could only cost the therapies themselves and not other health services or lost employment. Therefore the perspective is limited. We also had to make an assumption about the proportion of clinician-guided therapy sessions attended (75%) that may not be accurate. The main outcome measure is syndrome specific, making comparisons elsewhere problematic.

Behaviour therapists for OCD are scarce and they have many competing demands on their time. This study suggests that computer-aided therapy can be a cost-effective alternative for OCD.

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Dynamic Analysis of Electronic Diary Data of Obese Patients with and without Binge Eating Disorder

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Binge eating disorder (BED) is characterized by the consumption of large amounts of food over short periods of time, accompanied by a sense of loss of control. The episodes of binge eating are not compensated by inappropriate weight control behaviours such as purging, fasting or excessive exercise (DSM-IV) [1]. The association of BED with an extensive psychopathology, impaired quality of life and social functioning suggests that differentiating BED from obesity and other forms of psychopathology is a critical clinical issue [2, 3].

In this study, we investigated the electronic diary data of 35 obese patients, both with and without a BED, who participated in a multimodal outpatient intervention program [4, 5]. The aim of

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Table 1. Analysis of optimal graphical VAR(1) model

a p values associated with partial contemporaneous correlations

Link	eat-dep	eat-ctl	eat-anx	dep-ctl	dep-anx	ctl-anx
Patients with BED	<0.001	<0.001	–	0.063	<0.001	–
Patients without BED	<0.001	<0.001	–	0.270	<0.001	0.053

b p values associated with autoregressive coefficients in the model

To		Patients with BED				Patients without BED			
		eat	dep	ctl	anx	eat	dep	ctl	anx
From	eat	0.944	–	0.119	–	0.392	0.001	–	–
	dep	0.010	<0.001	–	<0.001	–	<0.001	–	0.102
	ctl	0.026	0.015	<0.001	–	0.053	–	<0.001	–
	anx	–	–	0.107	<0.001	0.097	–	0.003	<0.001

Variables included in the dynamic analysis: eat = eating behaviour; dep = depression; ctl = eating control; anx = anxiety.

the study was to analyse the dynamic structure between eating behaviour and possible explanatory factors like depression, anxiety and eating control throughout the course of the treatment for both subgroups. Based on the findings of Greeno et al. [6], we expected, specifically, that the lagged associations between eating behaviour and depression would be different in both groups.

At pretreatment, the Structured Clinical Interview for DSM-IV [7] and a clinical interview based on the Structured Inventory for Anorexic and Bulimic Eating Disorders [8] were used to assess general psychopathology and eating disorder psychopathology. As continuous cross-sectional measurements, we used the depression sum score of the Patient Health Questionnaire [9] and the sum scores for physical and mental quality of life measured by the SF-12 [10]. Participants were 35 overweight patients: 28 women and 7 men. At the beginning of treatment, 16 patients were diagnosed as obese and met the DSM-IV diagnostic criteria for BED; the other 19 patients were diagnosed as obese without BED. The average age of the participants was 45 (SD = 10.2), the average BMI was 37.3 (SD = 5.0). Cross-sectional comparisons revealed that at the beginning of treatment the two subgroups did not differ in sex, age, BMI, frequency of axis I disorders, average depression level, and average quality of life level. Consequently, we could not confirm the finding that obese patients with BED experience considerably more negative affect and greater decrements in quality of life than obese patients without BED [3, 6, 11]. This may be attributable to the fact that the patients included in our study sought not only weight loss treatment, but presented for a multimodal intervention with a clear focus on psychotherapy.

Throughout the course of the treatment period, participants recorded their eating behaviour, levels of depression, anxiety and self-perceived eating control on handheld computers (Palm m100) on a daily basis. The majority of the items were rated on a visual analogue scale with bipolar labels. Each time series had a length of 112 measurement points, equivalent to 112 days of monitoring. A daily assessment of the patients (regarding the number of meals eaten, the amount eaten at each meal and the occurrence of the binge episodes) was used to calculate the variable 'eating behaviour', which is a discontinuous measurement for the daily amount of food consumed [12, 13].

Recently, Feiler et al. [14] have presented an interesting new methodology to analyse diary data at group level using interaction graphs. This method allows the identification of dynamic relationships between therapy-relevant variables. However, a drawback of this method is that the direction of the influence cannot be determined. Therefore, in the present approach, we used a dynamic modelling approach based on graphical vector autoregressive models for the analysis of diary data at group level [15, 16]. This method allows the identification of the dynamic dependence structure of a multivariate system, that is, how the variables in the systems at each point of time depend on their past instances. As a dynamic model, we chose a vector autoregressive model of order 1 [15, 17]. We expected, specifically, that in the subgroup with BED depression would be a positive predictor for the eating behaviour.

For the dynamic analysis of the diary data, a likelihood ratio test revealed a significant difference in the dynamic structure between the two subgroups of obese patients with and without BED (T = 61.04, p = 0.006). The most obvious difference between the two subgroups lies in the partial directed correlations; that is, the partial correlations that reflect associations between variables across adjacent days (table 1b). The results indicate that for patients with BED, depression is predictive of eating behaviour; that is, after a day of high depression, a high level of eating becomes more probable. In contrast, obese patients without BED show the opposite dependency; in this group, a high level of eating on any one day predicts a higher depression level on the following day.

One could interpret this to mean that for obese patients with BED, eating serves the regularization of emotions; increased eating and binge episodes could be a reward or compensation for a bad previous day. This connection is missing with obese patients without BED. Regarding the contemporaneous correlations (table 1a), we did not find any differences between the two subgroups. In both groups, the strongest associations between the variables occurred on the same day. For instance, depression scores and level of eating are strongly related on the same day. These results correspond, in part, to the findings of previous studies which investigated the relationship between binge eating and mood in obese patients with and without BED, using ecologic momentary assessment (EMA) strategies [6, 18, 19]. Clearly, a direct comparison of our results with the findings of the EMA studies is not appropriate due to the fact that the EMA studies focused on the trajectory of mood immediately before and after a binge episode. For this purpose, in each EMA study, the participants recorded both binge episodes and mood variables multiple times each day, for a period of 7–14 days. In contrast, the participants in the present study completed the data assessment once per day over a 4-month period of treatment. The analysis of the diary data therefore focused on associations between eating behaviour and other variables across adjacent days.

As the sample of our study is small, the results should be seen as preliminary. However, the differences revealed by the dynamic analysis show that the subgroups of obese patients with and without BED seeking multimodal treatment are distinguishable by the patterns which influence their respective eating behaviours.

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Psychological Well-Being and Ill-Being and Their Biological Correlates: Additional Findings from an Integrative Single-Case Study

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With great interest I read the article by Ryff et al. [1]. Applying a cross-sectional design on 135 women, the authors used various biomarkers to investigate whether psychological well-being and ill-being comprise opposite ends of a bipolar continuum (i.e. mirrored hypothesis) or are best construed as separate, independent dimensions of mental health (i.e. distinct hypothesis). While 7 out of 10 biomarkers supported the distinct hypothesis (i.e. they significantly correlated either with well-being or with ill-being), 2 supported the mirrored hypothesis (i.e. well-being and ill-being correlated similarly with biomarkers, but showed opposite directional signs), and 1 biomarker conformed to neither the distinct nor the mirrored hypothesis.

Our group approaches the psychobiology of emotions in a different way. We are primarily interested in understanding biological processes through careful analysis of a person's emotional adaptation to everyday psychosocial incidents. We empirically