

To change or not to change—‘How’ is the question?

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The objective was to apply the ‘trans-theoretical’ model of change to a group of patients with eating disorders. Patients were studied in an in-patient setting. Two sets of questionnaires were used, one to assess ‘stage’ of change, the other to measure the ‘processes’ used to achieve change. Three stages and eight processes were examined. Thirty-five patients completed the study. Highest scores were found in the contemplation, and lowest in the precontemplation stage. The most frequently used processes of change were self-reevaluation, helping relationships and consciousness raising, with different processes predominating at different stages. Covariance analysis supported an association between two latent variables ‘stage’ and ‘process’. Despite the limitations of small numbers, our results are in broad agreement with others using the ‘trans-theoretical’ model, supporting its use in eating disorders. Although further work is necessary, the model suggests a way of thinking about helping this very ambivalent group of patients to institute and sustain change.

Women with anorexia nervosa are notoriously ambivalent about treatment, which can deteriorate into an entrenched battle over food and weight. This is particularly true in an in-patient setting, where anxieties on both sides are initially higher. Inexperienced carers are often taken aback by the switch from apparent motivation and insight, to stubborn refusal as soon as behavioural change is required. Trying to understand these apparent switches, and working with the ambivalence, is an essential part of any carer’s role. Unsuccessful treatment outcomes are often attributed to poor motivation on the part of the patient, citing, for example, personality factors, or secondary gain.

The ‘trans-theoretical model of change’ sprang from a study of common processes among different therapeutic approaches (Prochaska, 1979), and was originally developed in smokers. It has subsequently been applied in other areas, such as alcohol abuse, weight control, and a variety of other psychiatric disorders. According to the model, change could usefully be measured along three integrative dimensions, ‘stage’, ‘process’ and ‘level’ (Prochaska, Velicer, DiClemente & Fava, 1988). ‘Level’ as a dimension lost prominence as the model was developed, and will not be addressed further in this paper. Four ‘stages’, *precontemplation*, *contemplation*, *action* and *maintenance*, describe the temporal and motivational aspects of change. Relapse can occur in the action or maintenance stages, resulting in re-entry to one of the

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earlier stages, and the whole operation cycles and recycles. Some studies have included a fifth stage, preparation, intermediate between precontemplation and action (Prochaska *et al.*, 1994). 'Process' measures the activities used to change a problem behaviour. Five basic processes were described in the original study (Prochaska, 1979), later expanded to 10, and including activities such as 'consciousness raising' and 'contingency control'. Different processes predominate at different stages of change (Ahijevych & Wewers, 1992; DiClemente, Prochaska, Fairhurst, Velicer, Velasquez & Rossi, 1991; Prochaska & DiClemente, 1983). This work is of clinical relevance, as knowledge about which processes are important at a particular stage can lead to an appropriate focus in treatment.

Self-change in bulimia, using the trans-theoretical model, was evaluated in a study with female undergraduates described as 'former bulimics' (Stanton, Rebert & Zinn, 1986). Results similar to those in smokers suggested that the model held promise for aiding our understanding of change in bulimia. However, the authors emphasized the preliminary nature of their results, and advocated further work with clinical groups. The aim of our study was to examine the trans-theoretical model in patients with eating disorders at the severe end of the spectrum, i.e. those requiring in-patient care. In this paper, we report an initial cross-sectional study of stage and process of change in 35 in-patients.

Method

All participants were in-patients on a specialist Eating Disorders Unit. Each participant was asked to fill in two questionnaires, one assessing stage of change, and one measuring processes of change.

The Stages of Change Questionnaire was a brief version of the original instrument which had had eight items for each of four stage subscales: precontemplation, contemplation, action and maintenance. Questions related to 'maintenance' were omitted in this study, as the participants were all in-patients receiving treatment, thus leaving three subscales. The first two items representing each of these stage subscales from the longer version were chosen to represent the brief version, thus yielding a six-item questionnaire. Reliability of the subscale scores in the full version was high (Cronbach alpha = .88), with item loadings of 0.6 or above on the principal components analysis (McConaughy, Prochaska & Velicer, 1983). Selecting simply the first occurring items for each subscale created a representation of items from the subscale that was more or less random (DiClemente—personal communication). The questions were scored using a Likert scale from 1 to 5, indicating a range of replies from 'strongly disagree' to 'strongly agree', thus yielding a mean subscore for each stage. Patients were also assigned to one stage overall on the basis of their highest mean subscore, or, if there was a tie, to the stage which was furthest along the continuum of change (Rollnick, Heather, Gold & Hall, 1992).

Processes of change were measured using the Processes of Change Questionnaire (PCQ) for bulimia nervosa (Stanton *et al.*, 1986), modified for use in anorexia nervosa by two of the authors (JT & NT). This yielded a 47-item instrument, in which eight of the original 10 processes (Prochaska *et al.*, 1988) were deemed relevant. The bulimia version assessed the same eight subscales, and coefficients alphas ranged from .71 to .93, with a mean of .86 (Stanton *et al.*, 1986). Examples of the questions used on the various subscales include:

- (1) *Consciousness raising*, e.g. 'I think about information from articles or ads concerning the benefits of shaking off anorexia'.
- (2) *Counter-conditioning*, e.g. 'I find that doing things with my time is a good substitute for dwelling on my anorexic part'.
- (3) *Dramatic relief*, e.g. 'Dramatic portrayals of the evils of anorexia move me emotionally'.
- (4) *Helping relationships*, e.g. 'I have someone on whom I can count when I'm having problems with my eating'.
- (5) *Reinforcement management*, e.g. 'I reward myself when I don't let the anorexic part take over'.

- (6) *Self-liberation*, e.g. 'I tell myself that "if I try hard enough" I can begin to eat normally'.
(7) *Self-re-evaluation*, e.g. 'My dependency on anorexia makes me feel disappointed in myself'.
(8) *Stimulus control*, e.g. 'I remove things from around me that remind me of vomiting or laxatives'.
The questions were scored using a Likert scale from 0 to 4, indicating a range of replies from 'never' to 'repeatedly'. A 'not applicable' option was attached to some questions, which were then not scored.

Summary statistics (mean and standard error of the mean) were calculated for each stage and each process. Stepwise multiple regression was performed for each stage, treating the processes as independent variables. A search for any underlying association between the latent variables 'process' and 'stage' was carried out using a confirmatory factor analysis model. In this model, the latent variables 'process' and 'stage' were indicated by the observed values for each process and each stage respectively. All data were analysed using SPSS Version 6.0 for Windows; and EQS, BMPD Statistical Software Inc., Version 3.00 (Dunn, Everitt & Pickles, 1993).

Results

Participants

Thirty-six patients out of a possible 44 returned the questionnaires. One set of these was unusable, as the patient who had anorexia nervosa, had written 'I'm not anorexic so please . . .', and left the PCQ blank. Of the 35 completers, two were male, and 33 female. The median (range) age was 23 (15–46) years. Twenty-two patients had restricting anorexia nervosa, two had bulimia nervosa, and 11 had anorexia nervosa, purging subtype. One patient had been in a 'motivational' group prior to completing the questionnaires. Of the non-responders, one was male, and seven were female. The median (range) age was 23.5 (16–43) years. Three patients had restricting anorexia nervosa, one had bulimia nervosa, and four had anorexia nervosa, purging subtype.

Questionnaires

(a) *Stages of change*. Mean (SEM) scores for the stages were as follows: precontemplation 2.03 (0.16); contemplation 3.96 (0.15); action 3.75 (0.15), and maintenance 3.41 (0.24), where maximum and minimum mean scores on any stage are 5.0 and 1.0 respectively. Allocation to a single stage put three patients in precontemplation, 14 in contemplation, and 18 in action. Fifteen of these allocations involved ties, all in the action group.

(b) *Processes of change*. Mean (SEM) scores for the processes were: consciousness raising 2.43 (0.14), counter-conditioning 2.18 (0.17), dramatic relief 2.22 (0.16), helping relationships 2.52 (0.17), reinforcement management 1.68 (0.16), self-liberation 2.31 (0.16), self-re-evaluation 2.77 (0.15), and stimulus control 1.41 (0.19), where maximum and minimum mean scores on any process are 4 and 0 respectively. Reliability of the subscale scores was generally high (mean (range) alpha = .86 (.75–.96)). Table 1 shows the breakdown of mean process scores by overall stage.

Stepwise multiple regression of each stage on process (Table 2) led to the following significant associations: self-re-evaluation (negatively) with precontemplation ($p = .0004$), accounting for 33 per cent of the variance; consciousness raising and self-re-evaluation (positively) with contemplation ($p = .0023$, and $p = .0031$ respectively), accounting for 58 per cent of the variance; and counter-conditioning and stimulus control (positively) with action ($p = .0175$, and $p = .007$ respectively), accounting for 40 per cent of the variance.

Table 1. Mean scores for each process by stage, following allocation to a single stage

	Precontemplation	Contemplation	Action
Consciousness raising	1.13	2.70	2.43
Counter-conditioning	2.00	2.01	2.36
Dramatic relief	1.58	2.39	2.19
Helping relationships	1.50	2.46	2.74
Reinforcement management	1.67	1.57	1.76
Self-liberation	1.00	2.49	2.39
Self-re-evaluation	1.60	3.08	2.74
Stimulus control	0.00	1.42	1.65

Modelling the data using all observed variables (Fig. 1a) revealed negative correlations between the first stage, Precontemplation, and all other stages and processes. Other correlations were all positive, and therefore the observed variable precontemplation was excluded *a priori* from the model. Using this design (Fig. 1b), the correlation between the latent variables 'stage' and 'process' was estimated to be .793, with a standard error of .104. Fit of the model can be assessed in various ways (Dunn *et al.*, 1993). A 'goodness of fit' summary is included for those familiar with this analysis, where a 'fit index' of 0.9 or greater indicates a good fit.

- (i) Independence model Chi-squared = 170.105, d.f. = 45
Model Chi-squared = 56.977, d.f. = 34, $p = .008$
- (ii) Independence Akaike's Information Criterion (AIC)
= 80.105
Model AIC = -11.023
- (iii) Fit indices (a) Normed Fit Index (NFI) .665
(b) Non-Normed Fit Index (NNFI) .757
(c) Comparative Fit Index (CFI) .816

Table 2. Stepwise regression of each stage on process

Stage	Predictor variable	Regression coefficient	95% confidence interval	R ²
Precontemplation	Self-re-evaluation	-1.286	(-1.925, -0.647)	0.334
Contemplation	Consciousness raising	0.989	(0.407, 1.571)	0.430
	Self-re-evaluation	0.864	(0.339, 1.389)	0.576
Action	Counter-conditioning	0.613	(0.135, 1.091)	0.270
	Stimulus control	0.677	(0.218, 1.136)	0.397

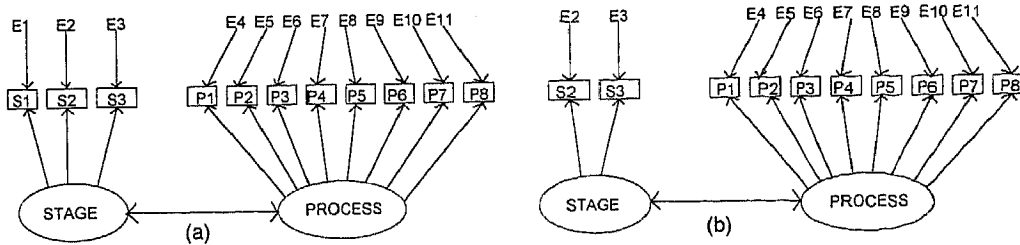


Figure 1. (a) Initial confirmatory factor analysis model; (b) Modified confirmatory factor analysis model. S1–S3 = observed variables—3 stages; P1–P8 = observed variables—8 processes; E1–E11 = residuals of the observed variables; Single headed arrows represent causal links.

These fit indices suggest that, although there is an association between the two latent variables 'stage' and 'process', the particular model chosen needs modification.

Discussion

This study arose from a desire to understand more about the ambivalence which is such a feature of our patient group, and to try to incorporate that understanding into treatment. The study was limited by small numbers, and by its restriction to the severe end of the eating disorder spectrum. Nevertheless, a number of interesting and clinically relevant points emerged.

The stages of change model has been applied to a variety of clinical groups. Two approaches to characterizing stage have been used. In the first, the patient is described as being in a particular stage, according to a preassigned rule (Ahijevych & Wewers, 1992; DiClemente *et al.*, 1991; Prochaska & DiClemente, 1983; Prochaska *et al.*, 1988; Stanton *et al.*, 1986). The other approach involves scoring each stage, for example by the use of a questionnaire (URICA, McConaughy *et al.*, 1983). The two approaches have also been combined, giving scores for each stage, and then using the highest score to decide on overall stage (Rollnick *et al.*, 1992). Allocation to a single stage of change is relatively straightforward in a group of smokers, where the goal is abstinence, and the earlier stages can be related to that single outcome. The situation is more complicated in other addictive behaviours, where the habit is more likely to be an indication of underlying psychological distress, and abstinence is not the final goal of change. However, in the study on self-change in bulimia (Stanton *et al.*, 1986), a single stage placement was made, based on the behavioural indices bingeing and purging. As we wished to compare our results with this study, we used the combined approach. Our patients' mean scores on the three stages suggest that they had some of the features of all three stages, but that they were least characterized by precontemplation.

Self-re-evaluation was the most frequent process endorsed to achieve change, followed by helping relationships and consciousness raising. All three are cognitive/affective processes. The least used were reinforcement management and stimulus control, both more behavioural strategies. That behavioural strategies are less common should not be surprising on an in-patient unit, where a certain amount of

behavioural structure is inevitably imposed. However, it is of interest that these two strategies were also the least frequently applied in the study of self-change in bulimia, and that helping relationships was the commonest process used. There were differences between the two studies, in particular, the overall use of processes was higher in the self-change study, reflecting the recovered status of the population.

It is of clinical interest to understand what processes are relevant to each stage of altering unwanted behaviour, as it is helpful to match any therapeutic intervention with the coping strategies used by the individual. The trans-theoretical model leads to certain predictions (Prochaska & DiClemente, 1983). Precontemplators, as the most avoidant and defensive group, would use the least number of processes. Consciousness raising would be prominent among contemplators, who are seriously thinking about change. Self-re-evaluation, which appears to bridge contemplation and action, would be used most in these stages. Action would involve most use of behavioural strategies. The findings in this study resemble those seen in smokers. Precontemplators used the fewest processes (Prochaska & DiClemente, 1983). Consciousness raising and self-re-evaluation were emphasized by contemplators. Our action group were characterized by their use of counter-conditioning and stimulus control, processes which were also used, though not necessarily emphasized by, the smoking group. We could not compare maintenance processes, as these were not assessed in our study, but, otherwise, the trans-theoretical model predictions are largely fulfilled in the present study.

Precontemplation was not used in the proposed model for the observed variables for the reasons given earlier. This should not be too surprising, since precontemplation by its very nature involves minimal use of the process variables. If precontemplation is excluded, covariance analysis supports a reasonably strong underlying association between the two latent variables 'stage' and 'process'. Goodness of fit statistics suggest that the particular model chosen needs refinement, for example one might consider splitting 'process' into two subcategories, behavioural versus cognitive/affective. In addition, the association would need to be confirmed with the maintenance stage included. As further research in this area generates more data, alternative models can be fitted with a greater degree of confidence.

Awareness of stage and process of change lends itself to a motivational model of therapy (Miller & Rollnick, 1991; Rollnick *et al.*, 1992). In problem drinkers, it has been shown that a direct confrontational style in the therapist produces significantly more resistance, and a worse outcome, than a client-centred counselling approach (Miller, Benefield & Tonigan, 1993). Although no attempt was made to assign the participants to a stage of change in that study, the finding that resistance is affected by therapist approach has implications for the stage/processes model, emphasizing as it does the therapist's contribution to change. The trans-theoretical model implies that different resistances are important at different stages, suggesting that therapist style may need to be flexible in order to enhance motivation.

The focus of therapeutic effort for patients in the contemplation phase should be to facilitate a cognitive and emotional reappraisal of the eating disorder, including the exploration of ambivalent feelings. A belief in the ability to change and the awareness, availability and acceptance of an alternative life-style should be stressed. Once the stage of action is reached, change can be supported in a practical manner by the

introduction of various behavioural strategies, such as diary keeping, distraction, and self-soothing techniques. Social support may be mobilized, which involves trusting and accepting help from caring others.

Relapse is a common problem following any treatment for eating disorders. The trans-theoretical model sees change as a cycle, with relapse as an integral part of that procedure. However, earlier work is not negated by a relapse, rather the cycle continues more rapidly a second or subsequent time around. The more cognitive/affective processes of change need to be continued beyond the achievement of a normal weight in order to minimize the number of cycles.

There are, however, some limitations to the use of the trans-theoretical model for eating disorders. The majority of our patients appeared to be in the action stage, whereas our clinical impression was of a greater degree of ambivalence, reflected in the large number of tied scores. Larger numbers may have overcome this, but it also raises the question of how accurately a patient can be assigned to a single stage, especially for more complicated problems. Cluster analysis has supported the idea that it is possible to be simultaneously engaged in behaviours and attitudes described by more than one stage (McConaughy, DiClemente, Prochaska & Velicer, 1989). This suggests a potentially fruitful avenue for further exploration with our patient group. Finally, with respect to the present study, the questionnaires need to be tested on larger groups of patients with eating disorders. It is interesting that, despite the limitations discussed, our results do suggest a compatibility with other studies.

In summary, a model of change, initially described in smokers, has been applied to an in-patient group with eating disorders. Our numbers were small, and the patients studied were at the severe end of the eating disorder spectrum. Nevertheless, the results are in broad agreement with other studies in the field, and have face validity. Although more definitive studies are necessary, this model does provide a way of thinking about helping this very ambivalent group of patients to initiate and maintain change.

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