



A Process Account of Anorexia Nervosa

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Background

- There is "a pressing need to develop new treatments for Anorexia Nervosa (AN), because the outcome is so poor" (Fairburn, 2005). For treatment development, a better understanding of processes underpinning AN is urgently required.
- An ICS approach to AN augments existing accounts of AN (Garner and Bemis, 1982; Garner, Vitousek and Pike, 1997; Fairburn et al., 1999) by focusing on mental processing activity, influence of body state, and how these interact to determine subjective experience.

Interacting Cognitive Subsystems (ICS)

- ICS is a Macro-theory of a "normal" mental architecture which also specifies related accounts of different psychopathologies (Teasdale & Barnard, 1993; Barnard, 2003, 2004; Barnard et al., 2005).
- The ICS account of depression (Teasdale & Barnard, 1993) underpinned development of novel interventions such as mindfulness (Teasdale 1999; Segal, Williams & Teasdale 2002).
- ICS describes two qualitatively different levels of meaning. These account for the difference between talking about and experiencing feelings.

'Propositional' meanings are intellectual and explicit (e.g., the meaning conveyed by single sentence of an instruction manual).

'Implicational' meanings are emotional, holistic and intuitive (the meaning conveyed by a verse of a poem). Patterns of implicational code represent higher order, implicit meanings, as schematic mental models of experience.

Reciprocal Interactions between these two levels of meaning are seen as central to the maintenance of emotional states (Teasdale, 1999).

Implicational' schematic models encode information from a wide range of sources (including, body state, visual and auditory information), and have a direct link to emotion production.

Transformation processes convert patterns of information between subsystems. These can operate in one of 2 distinct modes: direct, 'on line' or 'buffered', in which information goes into a temporary memory store. Only one subsystem can be buffered at a time, and this will dominate and direct focal subjective experience (blue areas figure 2).

ICS Analysis of Depression:

This proposes that depression is maintained by reciprocal interaction between 2 levels of meaning in a state of "Depressive interlock" (Teasdale and Barnard, 1993).

2 feedback loops continually regenerate implicational schematic self-models: (1) explicit, verbal meanings eg streams of ruminative thoughts, reinforced by (2) body state information eg frowning and slumped posture

Attention is directed at Propositional (explicit, verbal) meanings leading to a subjective awareness of ruminative thoughts (blue areas figure 2). (For evidence see Teasdale and Barnard 1993; Park, Goodyer and Teasdale, 2005).

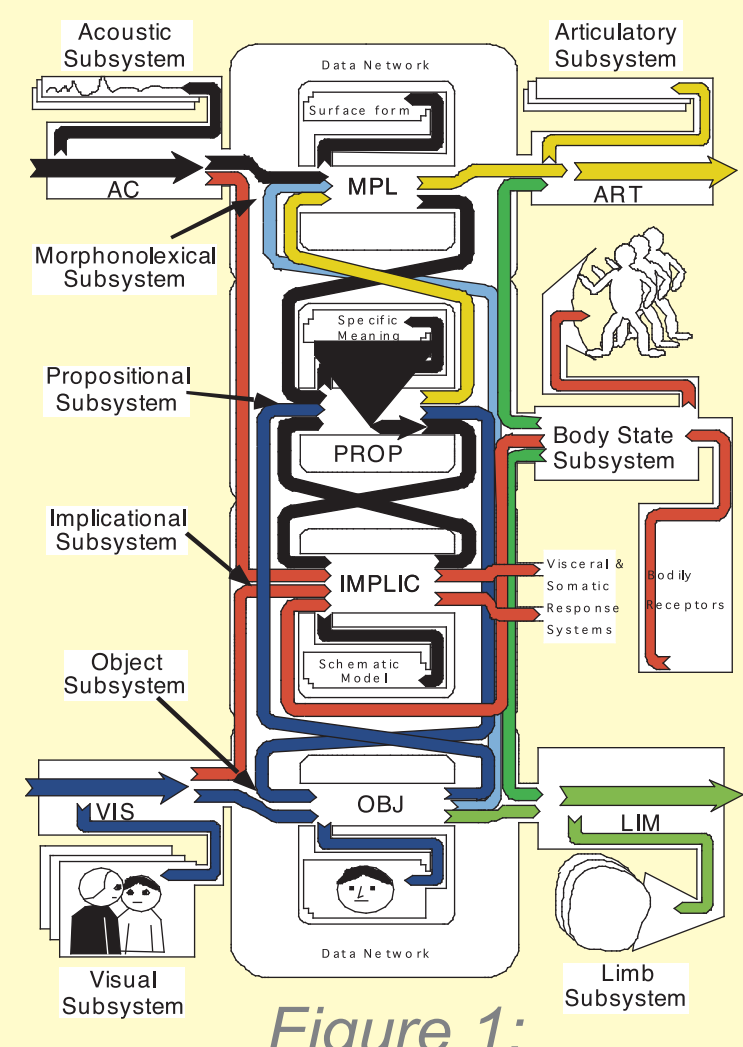


Figure 1: The ICS Architecture

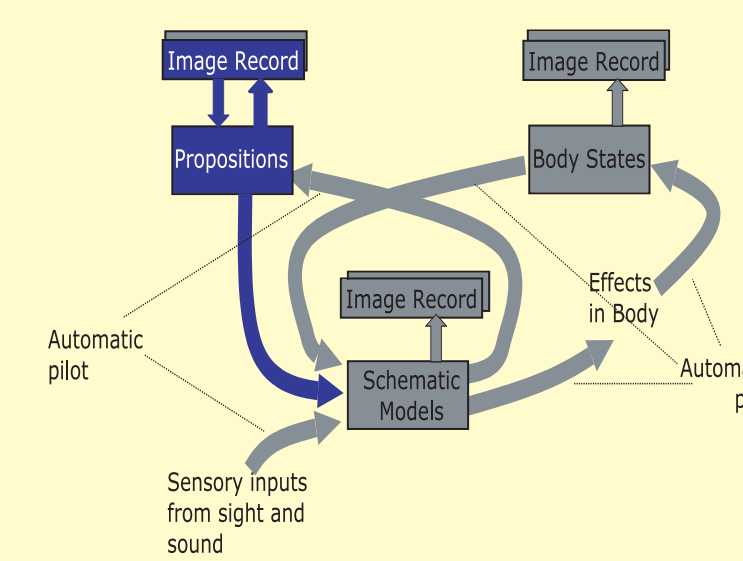


Figure 2: Interlocked processing in depression

Application of ICS to Anorexia

1. Schematic models and meaning:

Our account of Anorexia Nervosa (AN) is a close cousin of the account of major depression. AN shares with major depression a tendency to self-focussed rumination, involving negative self-representations. However processes maintaining AN have distinct features:

- Excessive focus, 'overvaluation' of control of body weight, shape and eating (Fairburn et al., 2003).
- A sense of security, specialness or powerfulness experienced as a function of success in anorexic control (Serpell et al., 1999; Vitousek and Hollon, 1990).
- An aberrant sensitivity to starvation/satiety cues, which seems to intensify the psychopathology (Fairburn et al., 1999).

ICS augments existing accounts by adding the notion that the signs and symptoms of AN emerge and are sustained by the mental dialogue between two levels of meaning, propositional and implicational, in concert with extreme body states. The constant flow of extreme body state cues serve to regenerate 'anorexicogenic' schematic models of self which shape the personal anorexic experience.

4 features underlie the dynamics of mental activity in Anorexia Nervosa:

- Marked extremes and a lack of gradation in sense of self-agency/control.
- A schematic pattern linking bodily ideation and self-agency to extreme affect.
- Processing self-related meanings for most of the time in 'propositional' mode: This mode functions to avoid intense affect, so reinforces the AN state and resists change.
- Low rates of change in content of 'self in control' schematic models (as a result of routinised patterns of cognition and behaviour).

Regeneration of anorexicogenic schematic model leads to senses of success, security and agentful control, yet discrepancy from ideal self-properties. These 'felt senses' (Teasdale, 1999) are also maintained by body state inputs from starvation, activity routines, visual and proprioceptive cues as well as smells and sounds.

2. Modes of processing self-related meaning and body states

ICS suggests 3 'modes' of subjective experience that are qualitatively different, depending on whether processes in the propositional or implicational subsystem are buffered, or whether there is a rapid flux between buffering implicational processes and body state processes (Teasdale, 1999).

- Buffering of the Propositional subsystem results in the subjective experience of **thinking about** the self/emotion as objects, about goals or strategies. It supports 'DOING' Anorexia mode. This leads to a verbal, conceptualising frame of mind which may inhibit emotional processing and could thus serve as a means of reducing intense aversive affect (Borkovec, 1994).
- The hallmark of buffering in the Implicational subsystem is **in-the-moment experiencing** of self/emotion: 'BEING' mode. In this holistic 'mindful experiencing' mode, for example when meditating or writing poetry, emotions and sensations are directly experienced as intuitively 'felt senses' (Teasdale, 1999) rather than the object of conceptual thought. This mode facilitates emotional processing and metacognitive awareness. Training in implicational mode is a central component of Mindfulness-based Cognitive Therapy, which has been shown to reduce relapse risk in recurrent depression (Segal et al., 2002).
- If NEITHER meaning subsystems (propositional nor implicational) are buffered, the subjective experience is of being overwhelmed by emotional and bodily reactions with little self-awareness or reflection: 'MINDLESS EMOTING'. In this frame of mind there is a rapid flux between attending to schematic models and attending to body states.

3. Mode Shifts in Anorexia

The ICS account of AN proposes that the disorder is maintained by a flux between dysfunctional modes of processing which correspond to the phenomenology of the anorexic experience. Understanding these modes is key to effective intervention.

- The predominant modes maintaining the disorder are (1) 'Doing ANOREXIA' mode: when the individual feels in control and (2) 'Mindless Bodily Emoting' mode when the individual experiences their body and affect to be out of control.

'Doing Anorexia' Mode

"I'm fine leave me alone (to do my stuff)!"

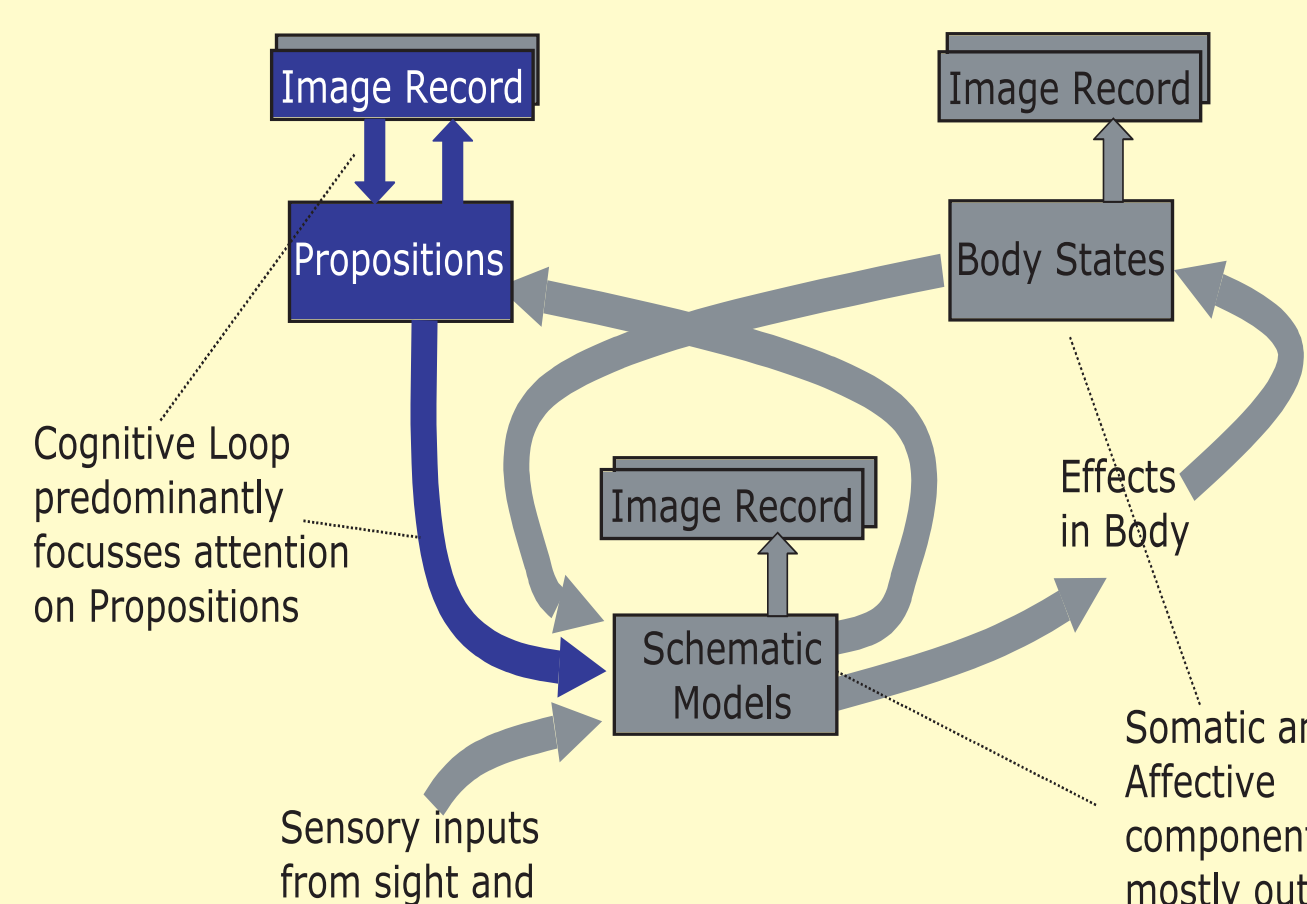


Figure 3: Anorexic Interlock

- This mode, which we define as **Anorexic Interlock** (figure 3), dominates the experience of restrictive AN. It is sustained by constant, compulsive activity (ruminations and preoccupation with planning, calorie counting, routines of exercise, eating and schedules). The individual is aware (blue process arrow) of preoccupations with food and eating control but remains distanced from emotion and bodily experiences, which remain outside focal awareness (grey areas). Thus, they are able to function in domains outwith eating, weight and shape control (e.g. academic studies) despite advanced starvation.
- The subjective experience is of the body as an 'object to be controlled'. Attempts from others to help or express concern about the degree of emaciation are seen as threats to self-control, and are heavily warded against by 'propositional' intellectualization. The individual is able to talk about 'getting better' yet unable to change.
- 'Doing' mode may help to minimise intense affect (Borkovec, 1994) and bodily sensation such as cold and hunger, which may further threaten control (Shafraan et al., 2003). This mode may thus be seen as highly reinforcing of the starving state, a means of avoiding intense bodily or emotional discomfort.

Mindless Bodily Emoting

"I feel disgustingly fat, totally out of control"

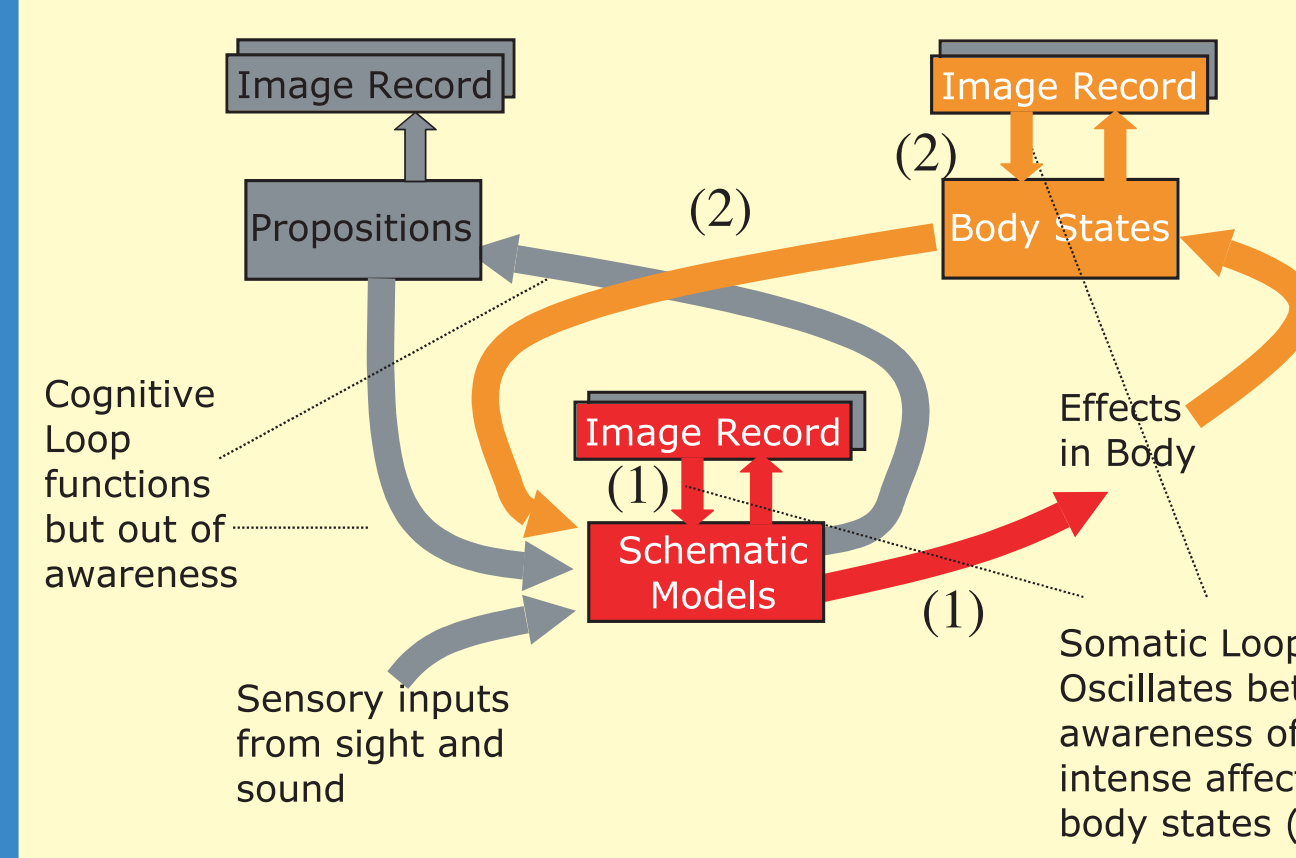


Figure 4: Mindless Bodily Emoting

- If control is challenged or lapses, the individual 'switches' into a mode of 'mindless bodily emoting' in which she experiences overwhelming degrees of aversive (figure 4 - (1)/red) **emotion** and (figure 4 - (2)/orange) **bodily sensations**, and often confuses the two.
- Physicality of emotions, intermixed with intense affect, dominates experience, leading to the experience of 'feeling fat', 'bloating' and 'out of control.'
- This flux between **overwhelming emotional experience and affect laden somatic/bodily experience** is explained in ICS by shifts in the exact processes being buffered (being attended to) at any one time.
- There is no conscious ability to reflect on these experiences; meaning is out of view as there is no buffering in the cognitive loop.
- A powerfully reinforcing vicious cycle of rigid routines and dietary restriction ensues: 'Doing Anorexia' in an interlocked mode (figure 3). This is highly reinforcing because it serves to shift subjective experience away from the unpleasant affect of mindless emoting (figure 4).

'Being Embodied' Mode

A key to recovery?: "It's like re-recognising myself.... as if I'm inhabiting my body, perhaps for the first time in my experience!"

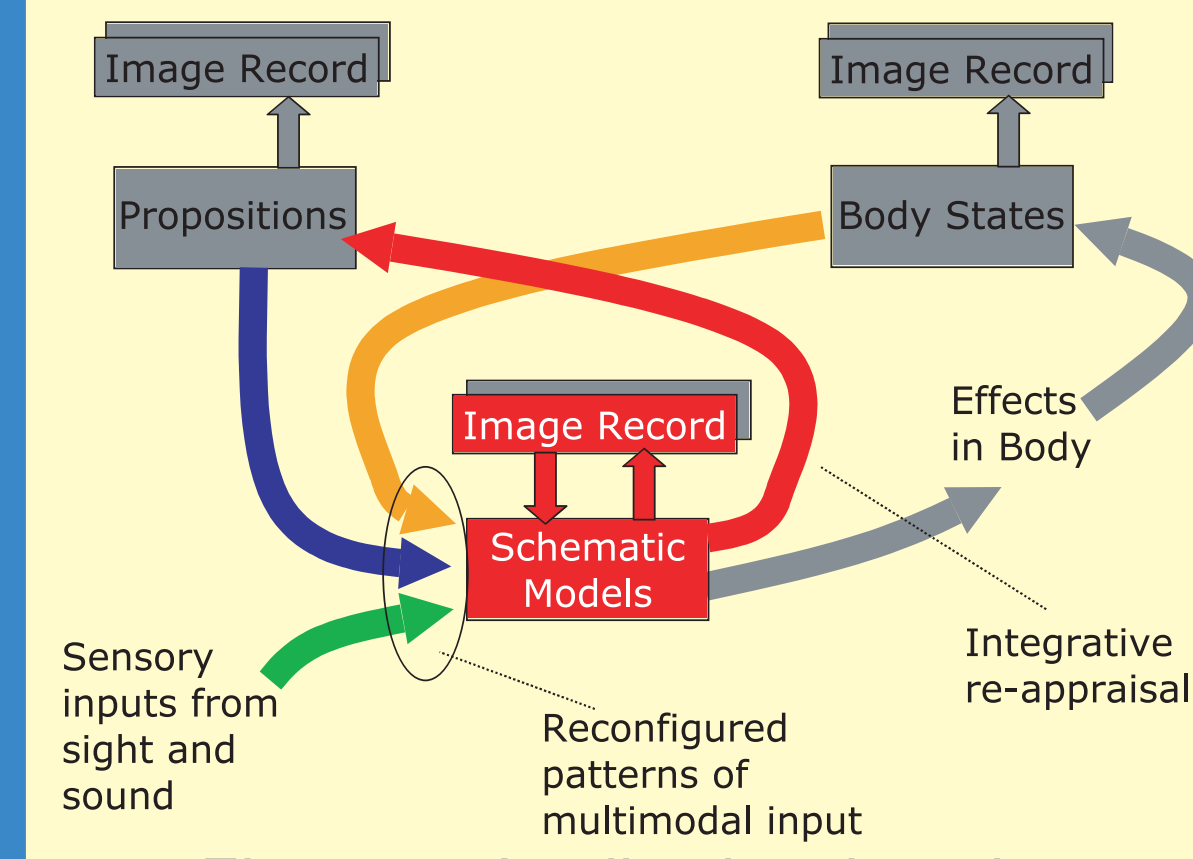


Figure 5: Implicational mode.

The subjective experience associated with generation of the 'embodied self' schematic model is of awareness and acceptance of bodily state. Rather than the experience of attempting to control, change or judge feelings, eating habits or body weight and shape, the individual is enabled to be at one, 'nonjudgementally in the present moment', with their body. This involves being sensitive to and able to reflect on bodily and emotional cues such as pain or hunger.

"Breathing beforehand....then I enter a meal in the right frame of mind"

- Individuals with AN frequently experience their bodies as an object to be controlled by, rather than an integral aspect of, the self.
- Given the altered processing of bodily and somatic information experienced in AN, the recovery process demands a reconfiguration of body/somatic inputs, so that the body can be experienced as a valued aspect of self.
- The 'recovery' mode required to facilitate this transition is best described as "the embodied self," reflecting mindful awareness and attention to bodily states. It is an implicational mode of attending.
- The individual is in touch with, but able to reflect on, implicational meaning and has a holistic 'multimodal' experience (figure 5) because schematic models integrate sensory information across domains (visual, acoustic, emotional, conceptual, bodily).

Pilot Study of Body Mindfulness

Training 'Being embodied' in Anorexia Nervosa (Enyati & Park, 2006)

Linking with the principles of mindfulness-based cognitive therapy (Segal, Williams & Teasdale 2001) training a 'mindful' mode in subjects with Anorexia nervosa involves gently and non-judgementally focusing on sensory and bodily experiences.

HYPOTHESIS: An experiential group teaching mindful experiencing of body states will increase sense of 'at oneness' with self and body, as compared to a supportive, non-experiential group teaching facts about the body (psychoeducation) with AN.

PARTICIPANTS: 18 inpatients and day-patients with severe Anorexia Nervosa.

MEASURES: The dependent measures were self ratings on visual analogue scales.

RESULTS:

- There was **increased** happiness, at oneness with self and at oneness with body following Body Mindfulness training than following psychoeducation ($p < .001$ on each of these three scales).
- There was a trend for a reduction in sense of fatness with Body Mindfulness when compared to psychoeducation ($p < .1$).
- There were no effects on the negative emotions of anger and sadness.

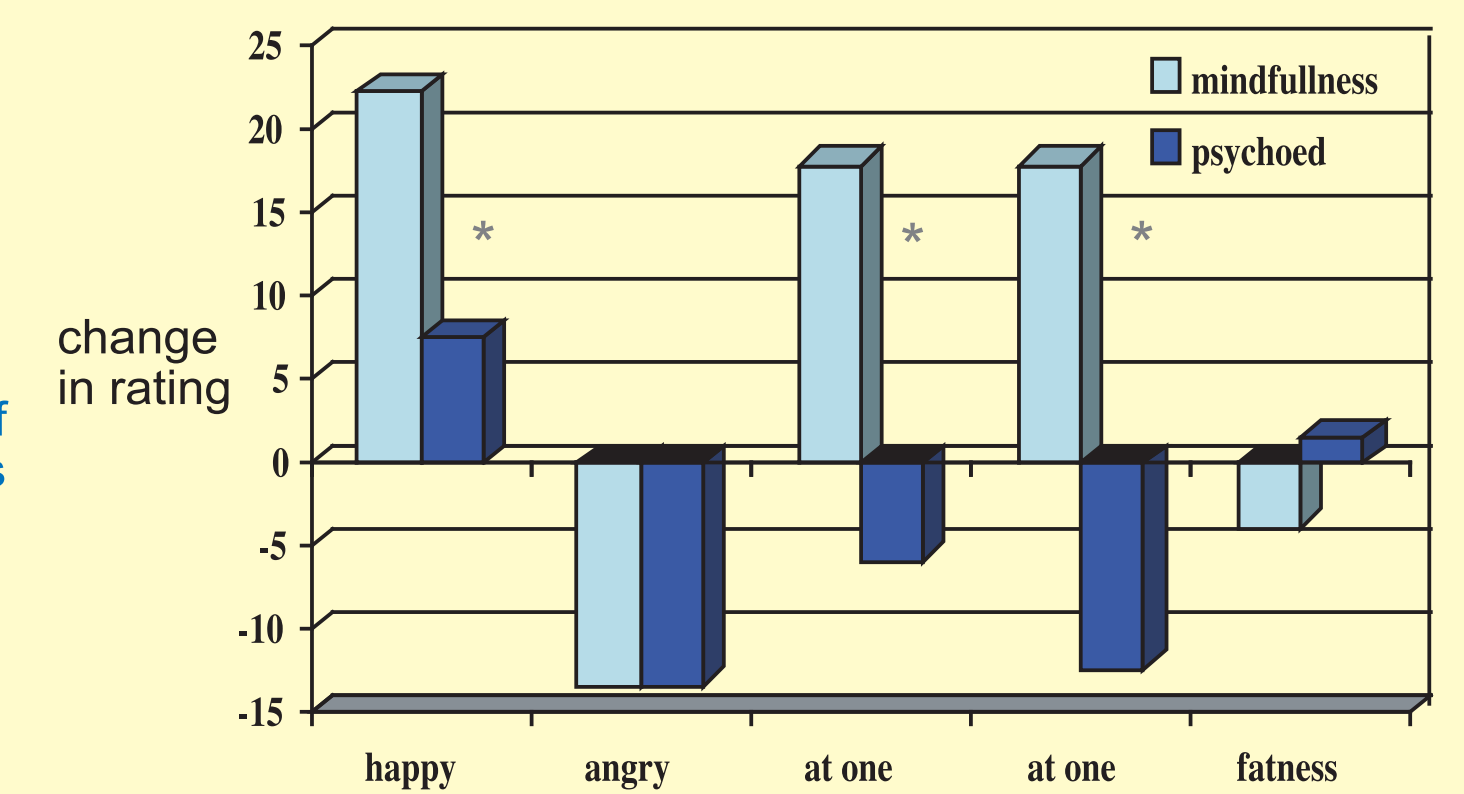


Figure 6: Change in ratings on five aspects of self-experience (* indicates significant difference).

Treatment Implications

Key to recovery and subsequent relapse prevention in AN is a **change in the relationship between bodily experience, thoughts and feelings**. This permits development of an holistic 'embodied' experience of self. This preliminary ICS account suggests particular therapeutic strategies which may help or hinder recovery:

WHAT MAY HELP:

- Mode of Actions** speak louder than words: **attending to** (1) modes of mind and (2) the distribution of modes over time will be central to the impact of therapeutic strategies (e.g. diaries, meal or mirror exposure, behavioural experiments).
- Altering the modes** in which self-related meanings are experienced, in particular **cultivating 'Being Embodied' mode**. For example, training 'Mindful awareness' of body states may assist recovery and relapse prevention following initial phases of weight restoration, but caution so that affect is not overwhelmed.
- Additional body state interventions** may allow for re-modelling relationships between agency, affect and body-related themes. These might incorporate mental imagery and routine breaking strategies to enhance the 'rate of change' of schematic models.

WHAT MAY HINDER:

- Some interventions (e.g. food diaries, meal groups) may **exacerbate psychopathology** if carried out in "Doing AN" mode, by encouraging rumination or the switch to mindless emoting, resulting in overwhelming aversive affect.
- Similarly, treatment regimes where individuals with AN feel they have no control over weight regain (e.g. some inpatient programmes) may exacerbate psychopathology because the need for 'Doing mode' control will be heightened in the face of overwhelming affect. (Gowers et al., 2000).
- Coexisting starvation intensifies, and comorbid Depressive Disorder compounds AN interlock. Thus, reversing starvation and rigorously treating any comorbid depressive disorder should accompany interventions for AN.

LIMITATIONS AND RESEARCH IMPLICATIONS

- Preliminary model** based on a fusion of macrotheory and clinical experience.
- Awaits full empirical testing** in experimental and treatment paradigms.
- Potential application to **other eating disorders**.

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