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Cognitive process in bulimic disorders:

The role of schema avoidance and impulsivity

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Abstract

Treatments based on traditional cognitive behavioural models of bulimia are effective only in approximately 50% of cases. This suggests that alternative models of bulimia and its treatment need to be considered. Recent models highlight the role of negative emotions in bulimia and suggest that bulimic behaviours may serve to 'block' such emotions. The literature review focuses on how bulimic women process threatening information. A recent information processing model (Beck & Clark, 1997) highlights the role of attentional bias and schema avoidance in pathology. These processes are discussed in relation to bulimia. The literature review highlights the similarities between bulimia and other impulsive behaviours, and suggests that they might serve a similar function. The present study examined whether bulimia and impulsivity are associated with avoidance of threats to self-esteem. The results indicated that there were no significant differences between the bulimic group and a non-clinical group in levels of cognitive avoidance, and there were no significant associations between cognitive avoidance and impulsivity. However, differences were found in levels of dissociation for certain types of impulsive behaviours.

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Threat processing in women with bulimia

Abstract

Cognitive-behavioural treatments are the most common approaches used for bulimia nervosa. However, these treatments tend to produce only moderate remission rates. Therefore, it is useful to consider how experimental cognitive approaches can help to revise current cognitive behavioural models of bulimia. Information processing models highlight the role of attentional biases and schema avoidance in the aetiology and maintenance of pathology. This review considers how these processes relate to bulimia. In particular, a growing body of evidence suggests that bulimic behaviours may function to 'block' aversive self-awareness. Blocking behaviours also feature strongly in other impulsive disorders. This review considers the relationship between bulimia and impulsivity and discusses whether the functions of the two behaviours are the same. The clinical implications and future research needs that arise from this literature are discussed.

Threat processing in women with bulimia

Fairburn (1981) introduced the first cognitive model of bulimia nervosa. Cognitive-behavioural treatments based on this model are now the most common approach used (e.g., Roth & Fonagy, 1996; Wilson, 1996). However, treatment outcome studies based on this approach suggest that the remission rates for bulimia nervosa are only moderate, typically around 50% (e.g., Craighead & Agras, 1991; Fairburn, Jones, Peveler, Hope & O'Connor, 1993; Garner, Rockert, Davis, Garner, Olmsted & Eagle, 1993; Keele & Mitchell, 1997; Wilson, 1999). Therefore, it is useful to consider how experimental cognitive approaches can help to revise current cognitive behavioural models of bulimia.

It is possible that current models place too much emphasis on food, weight and shape issues (Hollon & Beck, 1994). Evidence is accumulating to suggest that emotion and threat processing (e.g., the way in which bulimic women process physical threats or threats to self-esteem) might also be important factors in our understanding of bulimia. For example, research indicates that predictable affective changes occur across the binge-purge cycle (Beebe, 1994; Hsu, 1990). Studies have also reported that negative emotions are common antecedents to bingeing (e.g., Arnow, Kenardy & Agras, 1992, 1995; Cooper & Bowskill, 1986; Cooper, Morrison, Bigman, Abramowitz, Levin & Krener, 1988; Johnson & Larson, 1982). A number of authors (e.g., Heatherton & Baumeister, 1991; Lacey, 1986; Root & Fallon, 1989) have proposed that bulimic behaviours are an attempt to reduce awareness of intolerable cognitions and emotional states. However, our current understanding of how bulimic women process these cognitions and emotional states is very limited.

This review will consider a recent model of information processing in psychopathology. It will then focus on the issues of attentional bias and schema avoidance, which this model highlights as important factors in the maintenance of pathology. The majority of research addressing information processing has been developed in anxiety disorders. This review will consider this literature and then discuss its application to bulimia. Research suggests that avoidant emotional coping is present in many disorders, particularly those involving impulsive behaviours. However, it is not known whether threat processing differs between the bulimic and impulsive populations. This review will conclude with clinical and research implications of the information processing model.

Information processing models

Over the past decade, researchers have increasingly turned to information processing paradigms to increase our understanding of emotion and threat processing. It has been suggested that the type of emotional material and the way in which it is processed is crucial to the aetiology, maintenance and treatment of anxiety (Beck, Emery & Greenberg, 1985; Eysenck, 1992; Wells & Mathews, 1994; Williams, Watts, MacLeod & Mathews, 1988). Information processing paradigms have been particularly influential in the evolution of cognitive behaviour therapy (CBT). Beck's model of CBT (Beck, 1967, 1976) is based on three different levels of cognition – automatic thoughts, dysfunctional assumptions and schemas (core beliefs). Beck defines a schema as "a structure for screening, coding, and evaluating the stimuli that impinge on the organism" (Beck, 1967, p.23). Thus, they act as structures for interpreting events and experiences in a meaningful way.

In his more recent publications, Beck states that an individual's personality is divided into sub-organisations, which are referred to as 'modes' (Beck, 1996).

Each mode is composed of schemas that relate to the basic systems of personality (e.g., cognitive, affective, behavioural and motivational systems). Recently, Beck & Clark (1997) have incorporated this cognitive theory into a three-stage model of threat processing. The model identifies both automatic and strategic processes, the details of which are discussed below.

Beck & Clark's (1997) information processing model of anxiety

A cognitive model of anxiety was first proposed by Beck et al. (1985). This information processing model proposes that the key feature of anxiety is biased interpretation of stimuli as threatening. The model suggests that normal and pathological anxiety can be conceptualised along a continuum, with pathological anxiety being characterised by an overestimation of danger. Beck & Clark (1997) postulate that the cognitive, affective, physiological and behavioural pattern that results in anxiety (Beck et al. 1985; Clark & Beck, 1988) arises from a three-stage information processing sequence.

Stage 1: Initial registration. This first stage of threat processing involves a very rapid and automatic recognition of a stimulus, which Beck refers to as the 'orienting mode' (Beck, 1996). This stage is generally outside of conscious awareness and involves little, if any, higher level processing (i.e., conscious thought, semantic analysis). The function of this stage is to identify incoming stimuli and assign processing priority to it by allocating attention. A stimulus that is identified as threatening is more likely to be allocated priority. Research suggests that this pre-attentive analysis may serve only to clarify whether stimuli is a threat or not (Mathews & MacLeod, 1994). In anxiety, Beck & Clark suggest the orienting mode may be biased towards negative, personally relevant information.

Stage 2: Immediate preparation. The recognition of personally relevant, negative stimuli leads to this second stage. This stage involves the activation of a 'primal mode' - a set of cognitive, behavioural, affective and physiological patterns, which aim to fulfil basic evolutionary goals (e.g., survival, procreation). Primal modes tend to be rigid and inflexible, taking up most of the attentional resources. This reduces the capacity for more reflective consideration. The activation of the primal mode results in a coordinated strategy to minimise danger and maximise safety. This strategy involves the use of both automatic and strategic processes. It is at this stage that an initial threat impression is formed - the beginning of threat appraisal. The reduced attentional capacity for secondary processing leads to a cognitive narrowing, in which cognitive errors can occur. These include cognitive biases, such as selective abstraction, dichotomous thinking and overestimation (e.g., of threat). This stage also sees the occurrence of negative automatic thoughts involving themes of threat and danger.

Stage 3: Secondary elaboration. The final stage of the model involves more elaborative semantic processing. Unlike the other stages, such information processing is typically slow and schema-driven. The individual begins to put information in context, and evaluates it in terms of his or her own schemas and current concerns. At this stage, a secondary appraisal occurs, in which individuals begin to evaluate their own resources for coping. This is made possible by the activation of the 'meta-cognitive mode' – the ability to think about thinking.

Research suggests that avoidance or failure to elaborate attributes of a threatening stimulus at the strategic level may be an important process in maintaining anxiety (Mathews, 1990; Zinbarg, Barlow, Brown & Hertz, 1992). Beck & Clark's (1997) model suggests that three outcomes might occur at the

secondary elaboration stage. Firstly, anxiety can increase because the primal mode continues to be dominant. Cognitive resources would not be available for a more realistic appraisal of the situation, and individuals may fail to process features of the threat. Secondly, anxiety may decrease as the individual positively re-evaluates the likelihood of threat and their ability to cope. Thirdly, anxiety may decrease as a result of defensive behaviours, such as, escape or avoidance.

Cognitive-behavioural models of bulimia nervosa

Cognitive-behavioural models of bulimia fit closely with Beck & Clark's (1997) information processing model. In particular, the importance of information processing errors in the maintenance of pathology is highlighted. Existing cognitive behavioural models of bulimia emphasise beliefs and values about shape and weight as central psychopathological elements. Cognitive-behavioural models also emphasize the automatic influence of biased information processing, which can lead to misinterpretation of information relating to weight and shape.

One of the most influential cognitive-behavioural models of bulimia nervosa is the 'starvation model' (Fairburn, 1981, 1997; Fairburn & Cooper, 1989). This model suggests that low self-esteem results in over-concern with body weight and shape issues, producing excessive dietary restriction. This restriction leads both psychologically and physiologically to binge eating. To counteract the effects of bingeing, the individual engages in purging. A cycle is then established in which these behaviours reinforce the feelings of low self-esteem.

Vitousek & Hollon (1990) build on this model and attempt to provide a framework in which to guide research into existing cognitive models. Vitousek & Hollon conceptualise eating disorders in terms of schemas and, like Fairburn, highlight the role of low self-esteem in attitudes towards eating, weight and shape.

They propose that patients with eating disorders form organised cognitive structures (schemas) around issues of weight and its implications for the self. These structures influence perception, thought, affect and behaviour. Vitousek & Hollon suggest that weight-related self-schemas form the core psychopathology, accounting for the persistence of bulimia (e.g., by selective attention and memory).

Evidence for cognitive-behavioural models of bulimia nervosa. Much of the evidence for cognitive models of bulimia comes from research using information processing paradigms. This research is discussed in detail in the next section, and therefore, will not be expanded upon here. The majority of this research has focused on demonstrating the presence of cognitive over-representation of material related to food, weight and shape. For example, many studies suggest that women with bulimia have an attentional bias towards such material, as they perform slower than controls on food-related and shape-related Stroop tasks (e.g., Ben-Tovim, Walker, Fok & Yap, 1989; Cooper, Anastasiades & Fairburn, 1992; Cooper & Fairburn, 1992).

Limitations of cognitive behavioural models of bulimia nervosa. As mentioned previously, a central tenet of the starvation model is the presence of low self-esteem. However, the model does not specify the origin of this low self-esteem, nor why an individual develops eating pathology as a result. Low self-esteem is associated with a number of pathological problems (e.g., Leary, Schreindorfer & Haupt, 1995), and not everybody with low self-esteem develops eating problems. Existing cognitive models of bulimia do not adequately address these points. In addition, contrary to the starvation model, research has shown that not all individuals who engage in bingeing and purging behaviour go through an initial period of food deprivation. Emotional factors have also been highlighted as

important triggers to bingeing (e.g., Cooper & Bowskill, 1986; Grilo, Shiffman & Carter-Campbell, 1994; Lingswiler, Crowther & Stephens, 1989).

Summary

Beck & Clark (1997) have presented a three-stage information processing model of anxiety, in which they suggest that the processing of threat involves both automatic and strategic processes. The model highlights a number of processes that may contribute to the aetiology and maintenance of anxiety, including an automatic attentional bias to personally relevant threatening stimuli, and avoidance of attending to the characteristics of threatening stimuli. Cognitive models of bulimia fit closely with this model. They also highlight the role of information processing errors, with a particular bias towards food, weight and shape issues. To evaluate these models of bulimia, it is necessary to explore the two key functional products of this information processing model - attentional bias and avoidance.

Attentional bias

The early stages of Beck & Clark's (1997) information processing model highlight the importance of attentional bias towards personally relevant threatening material. A mass of evidence has accumulated for this automatic stage of processing. Automatic processes are generally regarded as: (a) effortless, involuntary or unintentional; (b) outside of conscious awareness (although some processes may become accessible to conscious awareness); (c) relatively fast and difficult to stop; (d) requiring minimal attentional capacity; (e) relying on a parallel type of processing; (f) stereotypic, involving familiar and highly practised tasks; and (g) utilising a low level of cognitive processing with minimal analysis (Beck & Clark, 1997). McNally (1995) suggests that attentional bias in anxiety is automatic, in terms of being involuntary and possibly unconscious. The following section will

discuss the evidence for attentional bias from studies utilising both non-bulimic and bulimic populations. This research is discussed in some detail as information processing models suggest that in the early stages of processing attentional biases are an important maintaining factor for pathology. Information processing models also suggest that attentional bias for personally relevant threatening material occurs before the more strategic strategies of schema avoidance. Therefore, there is a strong interaction between the two processes.

Attentional bias in non-bulimic populations

Attentional bias research has tended to employ one of three experimental methodologies – the Stroop colour naming task, the visual dot probe task and the dichotic listening task. The popularity of these methodologies stems from the widespread belief that self-report measures are flawed due to their inevitable subjectivity (Mathews & MacLeod, 1985). These tasks have been adapted and applied to the evaluation of many psychological disorders, including simple anxiety disorders (e.g., phobias), depression, post-traumatic stress disorder and obsessive-compulsive disorders.

Research using the Stroop colour-naming task. The Stroop colour-naming task is one of the most extensively used measures in information processing research. In the original version (Stroop, 1935) participants were asked to name the colour of the ink in which a word was printed, whilst ignoring the meaning of the word itself. Stroop discovered that participants were slower to name the colour if the meaning of the word clashed with its perceptual qualities (e.g., the word 'red' written in blue ink).

Since that original study, the Stroop task has been modified to research the effects of interference in specific disorders. Research in anxiety disorders has

frequently utilised the Stroop task, a central notion being that the basis of anxiety disorders involve an automatic selective hypervigilance for threat (Mathews, 1990; Thorpe & Salkovskis, 1997; Williams et al., 1988). Studies using anxiety disorder patients have found that they take longer to colour-name words when the words are emotionally threatening as opposed to neutral. For example, Mathews & MacLeod (1985) compared a group of anxious with non-anxious participants. Four stimulus cards were constructed, containing sets of twelve words written eight times in random order. The cards contained physical threat words (e.g., 'cancer', 'injury'), social threat words (e.g., 'foolish', 'inferior') and two sets of non-threat matched words. The anxiety group took considerably longer to colour-name all words, but particularly threat-related words. Research suggests that this attentional bias is specific to personally relevant material. For example, spider phobics have a bias towards spider-related words (Watts, McKenna, Sharrock & Trezise, 1986).

This disorder-specific Stroop effect has been found with other groups. Foa, Feske, Murdock, Kozak & McCarthy (1991) investigated the selective processing of threat in patients with post-traumatic stress disorder (PTSD) following rape. They found that the PTSD group demonstrated longer response latency for rape-related words. These results have been supported in other PTSD research (Cassiday, McNally & Zeitlin, 1992; McNally, English & Lipke, 1993; McNally, Kaspi, Riemann & Zeitlin, 1990; Thrasher, Dalgeish & Yule, 1994).

Williams et al. (1988) suggest that a number of processes occur in the brain before incoming stimuli reach conscious awareness. These include sensory registration, semantic labelling, associative spread and disambiguation of a stimulus. They argue that it is at this pre-conscious stage that anxious individuals orient their attention towards threatening stimuli. This hypothesis was studied by

Thorpe & Salkovskis (1997), using both masked (not available to consciousness) and unmasked (available to consciousness) words. The results indicated that an interference effect was confined to unmasked words, suggesting that there was no pre-attentive bias towards threat. Based on these results, Thorpe & Salkovskis suggest that people who believe themselves to be threatened may strategically orient towards threat stimuli in order to assess the potential danger and prepare threat reduction strategies. They conclude that this orientation would result in longer response latencies on Stroop type tasks. These results imply, therefore, that delayed response latencies are a result of cognitive avoidance, rather than attentional bias.

Although the Stroop effect has been demonstrated in a number of studies, others have produced more ambiguous results. For example, Mathews & Sebastian (1993) conducted research with snake phobics. They found that participants showed Stroop colour-naming interference when snakes were present, but the effect was greatly reduced when snakes were not present. This suggests that the effect is greater in the presence of a potent threat. Therefore, delayed response latencies may be the result of the emotional effects of the threat, rather than an attentional bias. Similar results were also reported by Thorpe & Salkovskis (1997) and Van Den Hout, Tenney, Huygens & De Jong (1997). Tolin, Sawchuk, Lee, Mount & Lohr (1996), again using participants with phobias, failed to find any colour-naming interference.

Research using the visual dot probe task. The visual dot probe task (Mathews & MacLeod, 1987) involves the simultaneous presentation of two words onto a computer screen – one word just above the middle of the screen and one just below. On terminating the word pairs, a visual dot probe appears in the area of one

of the words. Participants press a button when they detect the probe, and the response latency is recorded. MacLeod, Mathews & Tata (1986) used this paradigm to study the reaction times of generalised anxiety disorder patients. The words consisted of physical threat, social threat and neutral categories. Participants were asked to read aloud the word appearing in the upper screen position. Participants were quicker to respond when the probe followed a threat word in either the upper or lower position. This supports the notion of an attentional bias towards threat.

The visual dot probe task has also been used to study patients with panic disorder. Asmundson, Sandler, Wilson & Walker (1992) presented panic-disorder participants with pairs of social threat, physical threat and neutral words. Participants responded to a dot probe and were asked to direct their attention to the upper part of the screen. Participants responded faster when the probe followed physical threat words, but only when the words appeared in the upper portion of the screen. The authors suggested that participants could voluntarily direct their attention away from the lower portion of the screen, but directed their attention to physical threat words in the upper portion of the screen.

A more recent study by Wenzel & Holt (1999) used the visual dot probe procedure with spider and blood/injury phobics. However, the results failed to replicate those of previous findings, as there were no significant differences in response latencies between the experimental and control groups. Asmundson & Stein (1995) also failed to produce an effect with the visual dot probe paradigm. Wenzel & Holt suggest that these findings might be explained partly by the fact that semantic as opposed to actual threats were used. They conclude that semantic-based methodologies may not be sufficiently potent to detect biases in people with phobias

Research using the dichotic listening task. The third experimental paradigm employed in attentional bias research is the dichotic listening task. This task was originally used to study selective auditory attention (e.g., Lewis, Honeck & Fishbein, 1975). The task involves the presentation of two simultaneous auditory messages. Participants listen to one message and repeat it aloud (shadowing), whilst disregarding the second message (Nielson & Sarason, 1981). Participants can usually remember the content of the shadowed message but not the disregarded message, unless the content of the disregarded message is personally meaningful.

Burgess, Jones, Robertson, Radcliffe & Emerson (1981) used this method to compare the information processing of phobic and non-phobic groups. The phobic group were able to identify significantly more phobia-related words in the disregarded message than the non-phobic group. Mathews & MacLeod (1986) combined the dichotic listening task with a visual reaction time probe in anxious and non-anxious groups. Participants shadowed a neutral passage, and had to respond to a visual prompt whilst either neutral or threat words were presented in the disregarded message. Anxious participants demonstrated significantly slower reaction times when the threat words were presented in the auditory channel, suggesting the occurrence of interference. However, the participants were unable to identify any of the words from the disregarded passage, which implies an unconscious process.

It has been suggested that the natural pauses that occur between words and sentences could allow participants to divert attention to the disregarded passage but immediately forget the content. If this is the case, then dichotic listening tasks would fail to demonstrate processing without awareness unequivocally. Trandel & McNally (1987) controlled for this criticism by presenting unrelated words rather

than a prose passage, thus allowing no pauses in which attention could be diverted. They compared the shadowing errors of a group of PTSD patients and a control group, using threat and neutral words in the disregarded passage. Both groups displayed more errors when threat words were used, but there was no significant difference between the groups.

Attentional bias in bulimic populations

Attentional bias research in bulimic populations has tended to be based on the traditional cognitive models of bulimia (Fairburn, 1981; Fairburn & Cooper, 1989). The hypothesis that women with bulimia will have selective attention to food, weight and shape material has been tested using the information processing paradigms outlined above. For example, using the Stroop task, Ben-Tovim et al. (1989) found that women with bulimia are slower to colour-name both food words and body shape words. Cooper, Anastasiades & Fairburn (1992) and Cooper & Fairburn (1992) confirmed this attentional bias. Their results indicated that bulimic participants take longer on average to colour-name disorder-salient words than a non-dieting and dieting control group. This pattern supports the cognitive over-representation hypothesis, which highlights an over-concern with food, weight and shape issues.

Attentional bias research using modified Stroop procedures has been criticised because results have been much more consistent if the words contain combined food and body shape stimuli as opposed to separate body and food-related stimuli (Rieger, Schotte, Touyz, Beumont, Griffiths & Russell, 1998). A second criticism is that it has focused almost exclusively on negative valenced words. Rieger et al. (1998) addressed this by employing a visual dot probe detection paradigm containing body, shape and food words, both positively and

negatively valenced. They showed that persons with eating disorders (both anorexia nervosa and bulimia nervosa) tended to direct their attention away from words connoting a thin physique, but directed their attention towards words connoting a large physique. Therefore, the authors suggest that people with eating disorders attend to information consistent with fatness, but may actively ignore information consistent with thinness. Similar results have been found with research using dichotic listening tasks (e.g., Schotte, McNally & Turner, 1990).

The findings of other studies suggest that attentional bias in bulimia may not simply reflect food, weight and shape-related concerns. For example, while Cooper & Hunt (1998) have demonstrated the importance of understanding dysfunctional assumptions relating to food, weight and shape, they have also shown that women with eating disorders have a broader pattern of unconditional negative self-beliefs. There is a general bias in the processing of threatening information that does not directly reflect eating pathology (e.g., Patton, 1992). For example, McManus, Waller & Chadwick (1996) used a modified Stroop task to investigate more general forms of threat in women with bulimia. They used five different types of threat words, including sociotropy threats (e.g., 'isolated'), autonomy threats (e.g., 'powerless'), discomfort anxiety threats (e.g., 'pain'), ego-other threats (e.g., 'ridiculed'), and ego-self threats (e.g., 'failure'). The results revealed that the bulimic group were significantly slower to colour-name all forms of threat, but there was a particularly strong association between bulimic pathology and ego-self threats. However, the majority of attentional bias research has focused exclusively on disorder-salient information.

Summary of attentional-bias research

Research in attentional bias has used methodologies from information processing paradigms. The majority of evidence from modified Stroop tasks, visual dot probe tasks and dichotic listening tasks supports a disorder-salient bias. However, this evidence is not conclusive, and authors are still debating the underlying processes involved when using such methodologies. The majority of attentional bias research in bulimic populations has concentrated on the disorder-salient stimuli of food, shape and weight concerns. However, there is also a bias towards processing of more general forms of threat. According to information processing models, attentional bias occurs at the earlier stages of threat processing. A second line of research, schema avoidance, focuses on the maintenance of anxiety at the later stages. The next section will consider this research for both non-bulimic and bulimic populations.

Schema avoidance

Beck & Clark's (1997) information processing model suggests that avoidance plays an important role in the maintenance of anxiety. It is likely that this avoidance can occur at a number of different levels (e.g., both behaviourally and cognitively). To understand such avoidance, it is helpful to consider Young's (1994) schema focused cognitive-behavioural model. Young describes schemas as 'extremely stable and enduring themes that develop during childhood and are elaborated upon throughout the individual's lifetime... [that] serve as templates for the processing of later experience' (Young, 1994, p.9). He suggests that early negative experiences result in the development of pathological maladaptive schemas. Once formed, these schemas continue to influence how a person interprets events and experiences. Within the information processing model,

schema avoidance is likely to occur at the later stages of processing in which individuals may avoid attending to characteristics of threatening stimuli.

Young suggests that early maladaptive schemas have their influence through three schema processes, which filter information in biased ways. These processes have been identified as maintenance, compensation and avoidance (e.g., McGinn & Young, 1996; Young, 1994). Schema maintenance refers to the processes by which early maladaptive schemas are reinforced. These processes include cognitive distortions (e.g., highlighting or exaggerating information that is consistent with the schema, and minimising information that contradicts the schema) and self-defeating behaviours (e.g., a woman with a subjugation schema may repeatedly select men who are domineering). Schema compensation refers to processes that overcompensate for early maladaptive schemas. Many people engage in cognitive and behavioural patterns that are the opposite of what their early maladaptive schemas tend to drive. For example, a person with a dependency schema may refuse to ask for help even when it is very appropriate to do so. Schema avoidance refers to a set of behaviours and cognitive strategies that reduce the activation of schemas. Activation of early maladaptive schemas can result in the individual experiencing intense affect (e.g., anger, anxiety, sadness, or guilt), and the emotional intensity is usually unpleasant. Therefore, if there is no other perceived way of reducing that unpleasant affect the individual often develops strategies to avoid triggering the schema or experiencing the associated affect.

It is suggested that early maladaptive schemas contribute to many of the pathological behaviours exhibited by women with bulimia (Waller, Ohanian, Meyer & Osman, in press), since bulimic behaviours function to avoid triggering such schemas. The following sections will discuss these avoidance strategies -

cognitive avoidance, escape from awareness, and dissociation. Although these strategies may involve the use of different processes, it is hypothesised that they all function to avoid triggering maladaptive schemas and hence the negative emotions associated with them. Finally, this section will consider the similarities between these strategies and avoidant emotional coping – a common concept within health psychology for describing how individuals cope with stressful situations.

Cognitive avoidance

It has been suggested that cognitive avoidance is a defensive mechanism, which results in an individual processing threatening information more slowly or selectively (e.g., Foa & Kozak, 1986). Young (1994) suggests that this can be either an automatic or volitional attempt to block thoughts or images that might trigger early maladaptive schemas. However, unlike research into attentional biases, there is only a small body of evidence for cognitive avoidance (e.g., McNally, Metzger, Lasko, Clancy & Pitman, 1998).

Measures that demonstrate cognitive avoidance tend to be based on tasks that involve purposive, strategic processing. The tasks usually require the individual to process threatening material more explicitly. For example, Waller, Quinton & Watson (1995) developed a computer driven test of the processing of threat-related information. Participants are asked to decide whether a stimulus cue (e.g., neutral or threat word) that is shown initially is present in or absent from an array of 16 words displayed subsequently. Waller & Meyer (1997) developed a second measure of strategic cognitive avoidance. This task involves participants solving either threat-related or neutral anagrams. If cognitive avoidance of threat occurs, then participants will be slower at solving the threat-related anagrams.

Cognitive avoidance in non-bulimic populations. The majority of the information processing literature has focused on the automatic processing of threat. However, Beck & Clark's (1997) model suggests that threat is processed both automatically and strategically at different points over time. Cognitive avoidance is more likely to be seen at the later strategic level of processing. Therefore, it is unlikely that research utilising experimental methodologies that tap into early automatic processing (such as the Stroop task) will demonstrate cognitive avoidance.

Amir, Foa & Coles (1998) looked at cognitive avoidance in social phobics. They hypothesised that information processing biases could be attributed to abnormalities in the automatic and strategic processing of threat. To test this, participants were presented with sentences ending in homographs (words with multiple meanings) and were asked to make a decision about a cue word that followed each sentence. Half of the homographs had social-threat implications (e.g., "She wrote down the mean"... "UNFRIENDLY"), the remainder were neutral (e.g., "He dug with a spade"... "ACE"). Longer response latency to make decisions about sentences ending in homographs, compared with sentences ending in non-homographs, is thought to reflect activation of the inappropriate meaning of the homographs. The results indicated that the phobic group showed initial activation of inappropriate meanings of socially relevant homographs followed by later inhibition of these meanings. This suggests that there is an initial attentional bias for threat relevant information, followed by an attempt to avoid processing such material.

Although there is not much empirical evidence for cognitive avoidance, a number of subjective findings suggest that it is characteristic of anxiety disorders.

For example, Rachman & de Silva (1978) created an inventory of normal and clinical obsessions. They noted that clinically obsessed subjects reported strongly resisting their obsessions, mostly by employing distraction techniques. Similarly, Craske, Street, Jayaraman & Barlow (1991) reported that individuals with panic attacks attempted to avoid thinking about bodily sensations that they feared. Finally, Watts, Sharrock & Trezise (1986) found that even simple phobics (people with a single feared object or situation) avoid thinking about the phobic object.

Cognitive avoidance in bulimic populations. As with non-bulimic populations, little empirical evidence has been generated for cognitive avoidance in women with bulimic disorders. In the first such study, Waller et al. (1995) reported that women with bulimic attitudes show a pattern of cognitive avoidance in that they are particularly slow to respond to a task that requires them to identify threat.

Since that time, further research has demonstrated cognitive avoidance of threat in bulimic populations. Waller & Meyer (1997) conducted a two-part study using the Eating Disorder Inventory (EDI; Garner, 1991) and the anagram task described previously. In the first study, they considered the processing of food-related and general-threat cues. There was no association between the solution times for the food or threat words and scores on six of the EDI scales (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, impulse regulation). However, the scores for the remaining scales (identity disturbance, interoceptive awareness, maturity fears, asceticism and social identity) were positively correlated with solution times for both the food-related and threat-related words. This suggests that the relevant characteristics can be described as relating to ego development, rather than to more explicit eating patterns. In the second study, the threat words were divided into three subcategories – physical-threat (e.g.,

'wound', 'burn'), self-directed ego-threat (e.g., 'failure', 'alone') and ego-threat directed from others (e.g., 'insult', 'spurned'). There was no correlation between the EDI and physical-threat or ego-other threat anagram solution times. However, the time taken to solve self-directed ego-threats positively correlated with the ego-development constructs of the EDI (ineffectiveness, interoceptive awareness, interpersonal distrust, and social insecurity). These results highlight the link between cognitive avoidance of threats to the self and the psychopathology of eating distress.

Meyer, Serpell, Waller, Murphy, Treasure & Leung (under consideration) used the same paradigm to provide further evidence of cognitive avoidance of ego-threats, but not of food-related stimuli. Using the anagram task, there were no differences in solution times between the clinical and the control groups on the neutral or food-related words. However, there was a significant difference between the bulimic group and the control group on solution times for threat-related words. This suggests that cognitive avoidance of self-ego threat words is associated with pathological bulimic attitudes.

Summary. In women with bulimia, these studies indicate that, cognitive avoidance occurs for threat-related information, but not for food-related information. These results are inconsistent with current cognitive conceptualisations of bulimia (which highlight the importance of shape, weight and food issues). Cognitive avoidance research suggests that cognitive models need to be revised and greater significance placed on the ego-self threats that contribute to factors such as low self-esteem. Heatherton & Baumeister (1991) present a similar argument when describing the concept of 'escape from self-awareness'.

Escape from self-awareness

Two escape from awareness models have been proposed. The first suggests that distress leads to a cognitive narrowing. The consequent disinhibition of this leads to overeating (Heatherton & Baumeister, 1991). The second model proposes that distress results in the use of bulimic behaviours to block intolerable thoughts and feelings (Lacey, 1986; Root & Fallon, 1989).

Heatherton & Baumeister (1991) propose that bingeing occurs as a consequence of cognitive narrowing (a purposeful shift to low levels of awareness). Their central hypothesis is that binge-eating is a consequence of disinhibition that arises from a motivated attempt to escape from self-awareness. They suggest that the need to escape from self-awareness begins with a comparison of the self against unrealistic high standards or ideals. Heatherton & Baumeister present evidence to suggest that binge-eaters have unrealistically high standards (e.g., Barnett, 1986; Butterfield & Leclair, 1988; Mizes, 1988). These high standards are rarely achievable, and result in the individual feeling a failure. In turn, this results in high emotional distress (e.g., anxiety and depression) and an aversive self-awareness. Heatherton & Baumeister argue that, when this pattern occurs, the individual employs the cognitive technique of narrowing their awareness to the immediate environment. This reduces the comparison of the self against perfectionist standards, thereby providing relief from negative self-evaluation. However, this conversion to 'low-level' thought reduces the use of more elaborate cognitive functions, such as reason and inhibition.

Root & Fallon (1989) also highlight the role of low self-esteem, when discussing the functions of the binge-purge cycle in victimised bulimics. They state that one of the functions is to "anaesthetise intense negative feelings associated

with the victimisation experience such as rage, pain, fear and powerlessness" (p. 92). Root & Fallon suggest that bingeing and purging enable the individual to block out feelings associated with traumatic memories. A similar 'blocking' model is proposed by Lacey (1986). He suggests that negative life events cause individuals to examine themselves critically, to have low self-esteem and to experience negative affect. Lacey suggests that binge-eating serves as a way of dealing with this negative affect, as it moderates emotions.

Summary. These two models are similar to cognitive avoidance, in that they suggest that bulimic behaviours are related to aversive emotional states. However, the two models differ in one important respect. Heatherton & Baumeister (1991) propose that both the reduction of aversive emotional states and the binge-eating result from a cognitive mechanism that narrows the individual's attention. In contrast, Root & Fallon (1989) and Lacey (1986) suggest that bingeing itself reduces aversive self-awareness. McManus & Waller (1995) suggest that both of these mechanisms are necessary to explain the affect-regulation role of the bulimic behaviours fully. It is important to note that these models all emphasise the influence of internal ego-states in the role of bingeing behaviour.

Dissociation

Some authors have proposed that cognitive avoidance is a defensive mechanism, which serves the function of reducing levels of intolerable affect. It is likely that dissociation serves a similar defensive function. Dissociation refers to a "structured separation of mental processes (e.g., thoughts, emotions, connotation, memory and identity) that are ordinarily integrated" (Spiegel & Cadeña, 1991). Dissociative experiences are relatively common in both general and psychiatric

populations (e.g., Ross, Joshi & Currie, 1990; Saxe, van der Kolk, Berkowitz, Chinman, Hall, Lieberg & Schwartz, 1993).

Dissociation in non-bulimic populations. Dissociation is commonly regarded as a dimensional construct that is present in all of us to some degree. Ross et al. (1990) used the Dissociative Experiences Scale (DES; Bernstein-Carlson & Putnam, 1986) to measure the prevalence of dissociative experiences in the general population. The DES measures a range of experiences, including, amnesia, depersonalisation, a sense of being more than one person, ability to block out pain and auditory hallucinations. Five per cent of the sample scored over 30 on the DES (within clinical samples, scores over 30 are associated with a high likelihood of post-traumatic stress disorder or dissociative identity disorder).

Research in clinical populations suggests that high levels of dissociation are often associated with trauma (e.g., Anderson, Yasenick & Ross, 1993; Bagley, Rodberg, Wellings, Moosa-Mitha & Young, 1995; Putnam, Helmers & Horowitz, 1995; Sanders & Giolas, 1991). In traumatic situations it is likely that dissociation enables the individual to avoid processing the stressful event and blocks-off the person's awareness of pain. Empirical research suggests that dissociation acts as a mediator between trauma and psychopathology (e.g., Becker-Lausen, Sanders & Chinsky 1995; Everill, Waller & Macdonald, 1995; Ross-Gower, Waller, Tyson & Elliott, 1998; Zatzick, Marmar, Weiss & Metzler, 1994).

Dissociation in bulimic populations. A number of authors have studied the link between eating disorders and dissociation (e.g., Demitrack, Putnam, Brewerton, Brandt & Gold, 1990; Everill et al., 1995; McCallum, Lock, Kulla, Rorty & Wetzel, 1992; Vanderlinden, Vandereycken, van Dyck & Vertommen, 1993). The results of these studies have generally shown that women with eating

disorders exhibit a higher level of dissociative symptomology than normal. However, the link is complex and many of the findings are confounded by co-morbid pathology (e.g., personality disorders, depression and anxiety).

Researchers have considered the more specific link between bulimic behaviours and dissociation. It has been found that women with bulimia report dissociative experiences during bingeing (e.g., Abraham & Beumont, 1982; Everill et al., 1995; Johnson, Lewis & Hagman, 1984). However, Gleaves & Eberenz (1995) stated that bulimic behaviour did not appear to correlate with dissociative symptoms. They did find though, that there was a positive correlation between dissociation and other pathology (anxiety, depression) among women with bulimia. Everill et al. (1995) reported that dissociation correlated with bingeing, but not with vomiting. This suggests that the function of the two behaviours is different. For example, Everill et al. (1995) propose that bingeing may function to block out negative affect, whereas vomiting may serve to deal with negative cognitions (e.g., self-dislike or guilt). This is consistent with previous research linking different bulimic behaviours to specific cognitions and emotions (e.g., Johnson & Larson, 1982; Pitts & Waller, 1993).

The majority of research has demonstrated a link between eating disorders and dissociation (e.g., Demitrack et al., 1990; Everill et al., 1995; McCallum et al., 1992; Vanderlinden et al., 1993). This is consistent with the 'blocking' models (Heatherton & Baumeister, 1991; Lacey, 1986; Root & Fallon, 1989), which suggest that bulimic behaviours act as a defence against intolerable emotional and cognitive states. Everill et al. (1995) expand on the ways in which bulimia and dissociation may be related. First, dissociation may be a defensive response to intolerable cognitions of self-loathing caused by the bulimic behaviours. Second,

women with bulimia may turn to food to lessen the feelings of detachment caused by dissociation, as the food acts as a blocking stimulus (Heatherton & Baumeister, 1991). Third, bulimia and dissociation may be two separate co-morbid disorders with the common function of reducing intolerable affect. Finally, Everill et al. suggest that dissociation may be a consequence of early trauma (e.g., sexual abuse, family dysfunction). This defensive function is frequently used to deal with stressful situations, but over time becomes increasingly ineffective. The dissociation temporarily refocuses attention, enabling the individual to engage in bulimic behaviours without having to consider the long-term consequences. Everill et al. suggest that this last explanation is the most plausible.

Avoidant emotional coping

The way in which individuals cope with stress is a theme found frequently in the health psychology literature. It has been suggested that there are two general types of coping – problem-focused and emotion-focused (e.g., Folkman & Lazarus, 1980, 1985). It is important to consider these coping styles, as many processes within schema avoidance are conceptually similar to emotion-focused coping.

Lazarus (1966) suggests that stress consists of three processes - primary appraisal (the process of perceiving a threat to oneself), secondary appraisal (bringing to mind a potential response to threat), and coping (the process of executing that response). Problem-focused coping aims to solve the problem by doing something to alter the source of the stress. In contrast, emotion-focused coping aims to reduce or manage the emotional distress associated with the situation.

Emotion-focused coping is usually considered the least constructive way of dealing with stress. For example, Carver, Pozo, Harris, Noriega, Scheier, Robinson,

Ketcham, Moffat & Clark (1993) suggest that acceptance of the situation may be a necessary precedent to more active coping. Stanton & Snider (1993) argue that denial may prevent thoughtful decisions and may demand effort in itself. It is likely that the main processes of emotion-focused coping will include cognitive avoidance, 'blocking' behaviours, and dissociation.

Summary

This section has considered the role of schema avoidance in bulimic and non-bulimic populations. Evidence suggests that a common response to distress is avoidance of intolerable affect and cognition. Research has demonstrated a number of ways in which this schema-avoidance occurs – cognitive avoidance, 'blocking' behaviours, and dissociation. These processes are likely to be active responses in avoidant emotional coping. To further understand schema-avoidance in bulimia, it is helpful to consider other behaviours in which schema avoidance frequently occurs. A strong link has been proposed between avoidance behaviours and impulsive behaviours. Evidence also suggests a high occurrence of impulsive behaviours in bulimic populations. The next section will consider this relationship.

Impulsive behaviour

The DSM-IV (American Psychiatric Association, 1994) describes impulse-control disorders as a "failure to resist an impulse, drive or temptation to perform an act that is harmful to the person or to others" (p. 609). It has been suggested (e.g., Baumeister, 1989; Baumeister, Heatherton & Tice, 1994; Steele & Josephs, 1990) that impulsive behaviours may serve an escape from awareness function similar to that described by Heatherton & Baumeister (1991). In support of this, there is evidence that cognitive avoidance and dissociation are often present in impulsive behaviours (e.g., Baumeister et al., 1994). A number of studies have

reported an association between impulsivity and bulimic behaviours (e.g., Holderness, Brooks-Gunn & Warren, 1994; Striegel-Moore & Huydic, 1993; Vanderlinden & Vandereycken, 1997). On the basis of this, some authors argue that bulimia should be categorised as an impulse-control disorder (e.g., Vanderlinden, Norre & Vandereycken, 1992).

Impulsivity and bulimia

Bulimia has been associated with high rates of addictive behaviour, including alcohol and drug abuse, stealing, repeated overdoses, self-cutting and sexual promiscuity (e.g., Fichter, Quadflieg & Rief, 1994; Lacey, 1993; Sohlberg, Norring, Holmgren & Rosmark, 1989). Based on this high rate of impulsivity, Lacey & Evans (1986) propose the existence of a multi-impulsive form of bulimia. They suggest that this sub-group consists of bulimics with at least one of the following behaviours: alcohol or drug abuse, suicide attempts, repeated self-harm, sexual disinhibition, or shoplifting.

Fahy & Eisler (1993) studied a group of 39 women with bulimia and found that 20 exhibited at least one of the above impulsive behaviours. They noted that this multi-impulsive group displayed more frequent binge-eating, both at initial assessment and after eight weeks of treatment. However, after a one-year follow-up there were no differences in binge-eating between the multi-impulsive and uni-impulsive (i.e., bulimia only) groups. The authors concluded that the multi-impulsives do not constitute a distinct sub-group. However, it is questionable as to whether women who display just one additional impulsive behaviour should be classified as being multi-impulsive.

In contrast, Fichter et al. (1994) support the existence of a multi-impulsive sub-group. Their criteria were more stringent, as they categorised the multi-

impulsive group as having at least three of the impulsive behaviours. They compared 32 multi-impulsive bulimics with 32 uni-impulsive bulimics. The results indicated that there were no significant differences between the groups on measures of eating and body related attitudes. However, the multi-impulsive group showed greater levels of co-morbid psychopathology and poorer psychosocial functioning.

Although a link between bulimia and impulsivity has been established, the precise nature of this relationship is unclear. In a non-clinical sample, Peñas LLedó & Waller (in press) found that there was not a simple linear link. They reported a strong association between bulimic attitudes and self-harm and a weaker link between bulimic attitudes and alcohol/substance use. No associations existed for other impulsive behaviours (e.g., stealing, spending, promiscuity). It is possible, however, that these findings are not representative of a clinical group. Vanderlinden & Vandereycken (1997) and Favaro & Santonastaso (1999) also confirm the strong link between bulimic and self-harm behaviours.

Wiederman & Pryor (1996) found that a multi-impulsive group showed an earlier onset of binge-eating. They also noted trends towards an earlier onset of self-induced vomiting and longer durations of both binge-eating and vomiting. Lacey (1993) suggests that once a person with bulimia moves from just abusing food to other self-damaging behaviours, the multi-impulsive disorder rapidly escalates to encompass further addictive problems. Lacey states that 80% of bulimics report at least three self-damaging behaviours. At present, we can only speculate as to why bulimic attitudes should escalate to encompass further impulsive behaviours. It is possible that different impulsive behaviours serve different functions, or that alternative behaviours are employed because previous behaviours are no longer as effective.

Some authors (e.g., Brisman & Siegel, 1984) suggest that the co-morbidity of eating disorders and impulsive behaviours (particularly substance use) is due to an addictive personality, which predisposes individuals to abuse any one of a number of substances. They suggest that food and drugs are functional equivalents (Sinnett, Judd & Olsen, 1983). However, the evidence for this explanation is inconclusive. Studies have met with little success in attempting to isolate personality characteristics common to both bulimic and substance abusing women (Butterfield & LeClair, 1988; Kagan & Albertson, 1986). Research has also found that a reduction in bulimia does not result in an increase in the abuse of other drugs (Mitchell, Pyle, Eckert, Hatsukami & Soll, 1990).

Summary

Evidence suggests a link between bulimia and impulsive behaviours. The presence of cognitive avoidance and dissociation in many impulsive disorders suggests that impulsivity may serve an escape from awareness function. Some authors argue that the bulimic population can be divided into uni-impulsive and multi-impulsive groups. Pathological differences have been found between these two groups when more stringent criteria are used to define multi-impulsivity. The precise nature of the relationship between bulimia and impulsivity remains unclear. It is possible that individuals with bulimia progress onto other impulsive behaviours when the bulimia is no longer effective. Alternatively, individual bulimic and impulsive behaviours may serve unique functions.

Clinical implications

Information processing models suggest that threatening information is processed both automatically and strategically over time, and that a combination of these processes results in the maintenance of anxiety. Clinically, these stages of

information processing may be represented by vigilance towards negative personally relevant information, negative automatic thoughts and cognitive errors (e.g., overestimation of threat, selective abstraction, minimisation). A traditional aim of cognitive therapy has been to bring the automatic stages into conscious awareness (e.g., to enable individuals to recognise disruptive vigilance and become aware of negative automatic thoughts). However, traditional cognitive therapy has been criticised (e.g., Young, 1994) for focusing on the relatively superficial level of automatic thoughts, cognitive distortions and underlying assumptions. Some authors have argued, therefore, that a more schematic approach is necessary to target the deepest levels of cognition. However, at present there remains a lack of an evidence base for schema-focused therapy.

It can be argued that the above criticism of traditional cognitive therapy is reflected in the eating disorder literature. Cognitive behaviour therapy is the most common intervention for bulimia, and is based on cognitive models of bulimia. However, outcome studies indicate low remission rates (e.g., Craighead & Agras, 1991; Fairburn et al., 1993; Garner et al., 1993; Keele & Mitchell, 1997; Wilson, 1999). This may be explained by the tendency for therapists to focus only on food, weight and shape issues (e.g., Hollon & Beck, 1994). There is little empirical evidence to suggest that the aetiology and maintenance of bulimia is due to pathological attitudes around these issues. It is possible therefore, that food, weight and shape issues reflect the superficial level of cognition discussed above.

Recent research suggests that women with bulimic attitudes display a more general bias towards threatening information (particularly threats to self-esteem). This may be the result of deeper levels of cognition (e.g., early maladaptive schemas). Therefore, therapeutic intervention needs to address this. If clinicians

focus only on the superficial level of removing the bingeing and purging behaviours, the person may be left with the same motivations and aversive self-awareness that is likely to drive them to more destructive forms of behaviour.

This literature review has suggested that individuals engage in a number of strategies to avoid triggering their maladaptive schemas. Therapists need to be aware of what these strategies are, as information processing models suggest that they play a major role in the maintenance of pathology. In particular, cognitive avoidance, escape from awareness and dissociation have been highlighted as common responses to threatening stimuli. It is likely that the different strategies of schema avoidance will be reflected in numerous behaviours in therapy. For example, avoidance may take the form of changing the subject, not answering questions, asking counter-questions, denying the importance of subjects, saying a subject is too difficult to talk about, inability to speak/find words, inaccessible memory, or 'blanking-off'. An initial aim of therapy, therefore, should be to increase the individual's awareness and tolerance of negative emotional states and to develop coping skills for dealing with them. For example, strategies described in dialectical behaviour therapy (Linehan, 1993) could be usefully applied to people with bulimia (e.g., Telch, 1997; Wiser & Telch, 1999).

An issue that is often neglected in therapeutic interventions for people with bulimia is the existence of other impulsive behaviours. The co-existence of bulimia and multi-impulsivity is clinically relevant, as these clients tend to do worse in therapy than those with only bulimia (Fichter et al., 1994). Research also indicates that multi-impulsive bulimics require more intensive treatment (Lacey & Read, 1993). Therefore, it is necessary that therapists understand the interaction between bulimic and other impulsive behaviours. The initial aim of therapy should be to

identify the triggers to the different behaviours. If the triggers (e.g., threats to self-esteem) and the functions (e.g., reducing awareness) are the same, then therapy need not address the individual behaviours.

Research Implications

The majority of research addressing emotional processing has concentrated on the automatic stage of processing, particularly utilising Stroop-type tasks. However, the use of these tasks has been criticised, and there are contrasting explanations for the psychological effects demonstrated. Beck & Clark's (1997) model can explain why attentional biases are present for personally relevant threat material. However, it is debatable as to whether these attentional biases are truly automatic. The majority of studies comparing masked with unmasked stimuli, have only found attentional biases when the threatening information is available to consciousness. Therefore, it is unclear whether results obtained from Stroop-type tasks demonstrate automatic or strategic processing. Until this is clarified, research addressing the automatic stage of processing might need to utilise alternative measures.

Research in bulimic populations has also tended to focus on the initial stages of emotional processing. Evidence from this research indicates a biased orientation towards food, weight, and shape material. However, this biased orientation may reflect only a superficial presentation of the problem, as clinical interventions addressing these issues meet with limited success (e.g., Keele & Mitchell, 1997). This limited success in treatment outcome implies that psychologists need to consider the beliefs underlying the food, weight, and shape biases. Research is beginning to address the schematic content of women with bulimia, and early findings suggest that negative beliefs about the self are present

(e.g., Cooper, 1997). Future research needs to clarify the content of these schemas and address how they interact with bulimic behaviours and attitudes.

A number of authors have demonstrated the presence of schema avoidance (particularly dissociation) in women with bulimia. However, far less evidence has accumulated for the presence of cognitive avoidance. This may be a reflection of the measures employed, as the majority of research taps only into the earlier stages of information processing. Future research should focus on developing new measures of cognitive avoidance. These measures need to involve the use of strategic tasks to ensure that later stages of processing are addressed.

Research addressing the schema content of women with bulimic attitudes suggests that threats to self-esteem result in behaviours that function to reduce the intolerable cognition and affect. It has been hypothesised that cognitive avoidance serves as a means to escape from such self-awareness. Further research is needed to determine whether threats to self-esteem result in cognitive avoidance in clinical populations.

A number of authors have reported a greater incidence of impulsive behaviours in women with bulimia. However, little is known about the interaction between bulimia and impulsivity. It has been noted that multi-impulsivity in bulimia is a predictor of poor prognosis. It could be hypothesised that this is due to higher levels of schema-avoidance. If this is the case, there should be a greater incidence of cognitive avoidance and dissociation in bulimic women with multi-impulsive behaviours. Further research is also needed to identify the precise relationship between bulimic behaviours and impulsive behaviours.

Conclusions

Traditional cognitive-behavioural models of bulimia have focused on issues of food, shape, and weight. However, moderate remission rates suggest that current models of bulimia and its treatment need to be revised. Information processing models highlight the role of attentional biases and schema avoidance in the maintenance of pathology. This review has discussed these processes in relation to bulimia. Evidence indicates that bulimic behaviours may serve a 'blocking' function, reducing aversive self-awareness. This schema avoidance occurs for threat-related information but not for food-related information. Blocking behaviours also feature strongly in impulsive disorders, and some authors have suggested that bulimia can be conceptualised as another example of an impulsive behaviour. However, further research is needed to clarify this relationship.

References

Abraham, S. F., & Beumont, P. J. V. (1982). How patients describe bulimia or binge eating. Psychological Medicine, 12, 625-635.

American Psychiatric Association. (1994). Diagnostic and Statistical Manual of Mental Disorders, (4th Ed). Washington DC: American Psychiatric Association.

Amir, N., Foa, E. B., & Coles, M. E. (1998). Automatic activation and strategic avoidance of threat-relevant information in social phobia. Journal of Abnormal Psychology, 107, 285-290.

Anderson, G., Yasenick, L., & Ross, C. A. (1993). Dissociative experiences and disorders among women who identify themselves as sexual abuse survivors. Child Abuse and Neglect, 17, 677-686.

Arnow, B., Kenardy, J., & Agras, W. S. (1992). Binge-eating among the obese: A descriptive study. Journal of Behavioural Medicine, 15, 155-170.

Arnow, B., Kenardy, J., & Agras, W. S. (1995). The Emotional Eating Scale: The development of a measure to assess coping with negative affect by eating. International Journal of Eating Disorders, 18, 79-90.

Asmundson, G. J. G., Sandler, L. S., Wilson, K. G., & Walker, J. R. (1992). Selective attention toward physical threat in patients with panic disorder. Journal of Anxiety Disorders, 6, 295-303.

Asmundson, G. J. G., & Stein, M. B. (1995). Dot probe evaluation of cognitive processing biases in patients with panic disorder: A failure to replicate and extend. Anxiety, 1, 123-128.

Bagley, C., Rodberg, G., Wellings, D., Moosa-Mitha, M., & Young, L. (1995). Sexual and physical child abuse and the development of dissociative personality traits. Child Abuse Review, 4, 99-113.

Barnett, L. R. (1986). Bulimarexia as a symptom of sex-role strain in professional women. Psychotherapy, 23, 311-315.

Baumeister, R. F. (1989). Masochism and the Self. Hillsdale, NJ: Erlbaum.

Baumeister, R., Heatherton, T., & Tice, D. (1994). How and Why People Fail at Self-Regulation. London: Academic Press.

Beck, A. T. (1967). Depression: Clinical, Experimental, and Theoretical Aspects. New York: Harper & Row.

Beck, A. T. (1976). Cognitive Therapy and the Emotional Disorders. New York: International Universities Press.

Beck, A. T. (1996). Beyond belief: A theory of modes, personality, and psychopathology. In P. M. Salkovskis (Ed.), Frontiers of Cognitive Therapy (pp. 1-25). New York: Guilford Press.

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. Behaviour Research and Therapy, 35, 49-58.

Beck, A. T., Emery, G., & Greenberg, R. (1985). Anxiety Disorders and Phobias: A Cognitive Perspective. New York: Basic Books.

Becker-Lausen, E., Sanders, B., & Chinsky, J. M. (1995). Mediation of abusive childhood experiences: Depression, dissociation, and negative life outcomes. American Journal of Orthopsychiatry, 65, 560-573.

Beebe, D. W. (1994). Bulimia nervosa and depression: A theoretical and clinical appraisal in light of the binge-purge cycle. British Journal of Clinical Psychology, 33, 259-276.

Ben-Tovim, D. I., Walker, M. K., Fok, D., & Yap, E. (1989). An adaptation of the Stroop test for measuring shape and food concerns in eating disorders: A

quantitative measure of psychopathology? International Journal of Eating Disorders, 8, 681-687.

Bernstein-Carlson, E., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. The Journal of Nervous and Mental Disease, 174, 727-735.

Brisman, J., & Siegel, M. (1984). Bulimia and alcoholism: Two sides of the same coin? Journal of Substance Abuse Treatment, 1, 113-118.

Burgess, I. S., Jones, L. M., Robertson, S. A., Radcliffe, W. N., & Emerson, E. (1981). The degree of control exerted by phobic and non-phobic verbal stimuli over the recognition behaviour of phobic and non-phobic subjects. Behaviour Research and Therapy, 19, 233-243.

Butterfield, P. S., & Leclair, S. (1988). Cognitive characteristics of bulimic and drug abusing women. Addictive Behaviours, 13, 131-138.

Carver, C. S., Pozo, C., Harris, S. D., Noriega, V., Scheier, M. F., Robinson, D. S., Ketcham, A. S., Moffat, F. L., & Clark, K. C. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. Journal of Personality and Social Psychology, 65, 375-390.

Cassiday, K. L., McNally, R. J., & Zeitlin, S. B. (1992). Cognitive processing of trauma cues in rape victims with post-traumatic stress disorder. Cognitive Therapy and Research, 16, 283-295.

Clark, D. M., & Beck, A. T. (1988). Cognitive approaches. In C. Last & M. Hersen (Eds), Handbook of Anxiety Disorders (pp. 362-385). Oxford: Pergamon Press.

Cooper, J. L., Morrison, T. L., Bigman, O. L., Abramowitz, S. I., Levin, S., & Krener, P. (1988). Mood changes and affective disorder in the bulimic binge-purge cycle. International Journal of Eating Disorders, 7, 469-474.

Cooper, M. (1997). Cognitive theory in anorexia nervosa and bulimia nervosa: a review. Behavioural and Cognitive Psychotherapy, 25, 113-145.

Cooper, M. J., & Fairburn, C. G. (1992). Selective processing of eating, weight, and shape related words in patients with eating disorders and dieters. British Journal of Clinical Psychology, 31, 363-365.

Cooper, M. J., Anastasiades, P., & Fairburn, C. G. (1992). Selective processing of eating, shape, and weight related words in persons with bulimia nervosa. Journal of Abnormal Psychology, 101, 352-355.

Cooper, M. J., & Hunt, J. (1998). Core beliefs and underlying assumptions in bulimia nervosa and depression. Behavioural Research and Therapy, 36, 895-898.

Cooper, P. J., & Bowskill, R. (1986). Dysphoric mood and overeating. British Journal of Clinical Psychology, 25, 155-136.

Craighead, L. W., & Agras, W. S. (1991). Mechanisms of action in cognitive-behavioural and pharmacological interventions for obesity and bulimia nervosa. Journal of Consulting and Clinical Psychology, 59, 115-125.

Craske, M. G., Street, L. L., Jayaraman, J., & Barlow, D. H. (1991). Attention versus distraction during in vivo exposure: snake and spider phobics. Journal of Anxiety Disorders, 5, 199-211.

Demitrack, M. A., Putnam, F. W., Brewerton, T. D., Brandt, H. A., & Gold, P. W. (1990). Relation of clinical variables to dissociative phenomena in eating disorders. American Journal of Psychiatry, 147, 1184-1188.

Everill, J. T., Waller, G., & Macdonald, W. (1995). Dissociation in bulimic and non-eating-disordered women. International Journal of Eating Disorders, 17, 127-134.

Eysenck, M. W. (1992). Anxiety: The Cognitive Perspective. Hillsdale, NJ: Lawrence Erlbaum Associates.

Fahy, T., & Eisler, I. (1993). Impulsivity and eating disorders. British Journal of Psychiatry, 162, 193-197.

Fairburn, C. G. (1981). A cognitive behavioural approach to the treatment of bulimia. Psychological Medicine, 11, 707-711.

Fairburn, C. G. (1997). Interpersonal psychotherapy for bulimia nervosa. In D. M. Garner & P. E. Garfinkel (Eds), Handbook of Treatment for Eating Disorders (2nd ed., pp. 278-294). London: Guilford Press.

Fairburn, C. G., & Cooper, P. (1989). Eating Disorders. In K. Hawton, P. M. Salkovskis, J. Kirk, & D. M. Clark (Eds), Cognitive Behaviour Therapy for Psychiatric Problems (pp. 277-314). Oxford: Oxford Medical Publications.

Fairburn, C. G., Jones, R., Peveler, R. C., Hope, R. A., & O'Connor, M. (1993). Psychotherapy and bulimia nervosa. Archives of General Psychiatry, 50, 419-428.

Favaro, A., & Santonastaso, P. (1999). Different types of self-injurious behaviour in bulimia nervosa. Comprehensive Psychiatry, 40, 57-60.

Fichter, M., Quadflieg, N., & Rief, W. (1994). Course of multi-impulsive bulimia. Psychological Medicine, 24, 591-604.

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. Psychological Bulletin, 99, 20-35.

Foa, E. B., Feske, U., Murdock, T. B., Kozak, M. J., & McCarthy, P. R. (1991). Processing of threat related information in rape victims. Journal of Abnormal Psychology, 100, 156-162.

Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behaviour, 21, 219-239.

Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. Journal of Personality and Social Psychology, 48, 150-170.

Garner, D. (1991). Eating Disorders Inventory 2: Professional Manual. Odessa, FL: Psychological Assessment Resources.

Garner, D. M., Rockert, W., Davis, R., Garner, M. V., Olmsted, M. P., & Eagle, M. (1993). Comparison of cognitive-behavioural and supportive-expressive therapy for bulimia nervosa. American Journal of Psychiatry, 150, 137-146.

Gleaves, D. H., & Eberenz, K. P. (1995). Correlates of dissociative symptoms among women with eating disorders. Journal of Psychiatric Research, 29, 417-426.

Grilo, C. M., Shiffman, S., & Carter-Campbell, J. T. (1994). Binge eating antecedents in normal-weight non-purging females: Is there consistency? International Journal of Eating Disorders, 16, 239-249.

Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. Psychological Bulletin, 110, 86-108.

Holderness, C. C., Brooks-Gunn, J., & Warren, M. P. (1994). Co-morbidity of eating disorders and substance abuse. Review of the literature. International Journal of Eating Disorders, 16, 1-34.

Hollon, S. D., & Beck, A. T. (1994). Cognitive and cognitive-behavioural therapies. In A. E. Bergin & S. L. Garfield (Eds), Handbook of Psychotherapy and Behavioural Change (pp. 428-466). Chichester: Wiley.

Hsu, L. K. G. (1990). Experimental aspects of bulimia nervosa: Implications for cognitive behavioural therapy. Behaviour Modification, 14, 50-65.

Johnson, C., & Larson, R. (1982). Bulimia: An analysis of moods and behaviour. Psychosomatic Medicine, 44, 341-351.

Johnson, C., Lewis, C., & Hagman, J. (1984). The syndrome of bulimia: Review and synthesis. Psychiatric Clinics of North America, 7, 247-273.

Kagan, D. M., & Albertson, L. M. (1986). Scores on the MacAndrew factors: Bulimics and other addictive populations. International Journal of Eating Disorders, 5, 1095-1101.

Keele, P. K., & Mitchell, J. E. (1997). Outcome in bulimia nervosa. American Journal of Psychiatry, 154, 313-321.

Lacey, J. H. (1986). Pathogenesis. In L. J. Downey & J. C. Malkin (Eds), Current Approaches: Bulimia Nervosa (pp. 17-27). Southampton, UK: Duphar.

Lacey, J. H. (1993). Self-damaging and addictive behaviour in bulimia nervosa: A catchment area study. British Journal of Psychiatry, 163, 190-194.

Lacey, J. H., & Evans, C. D. H. (1986). The impulsivist: A multi-impulsive personality disorder. British Journal of Addiction, 81, 641-649.

Lacey, J. H., & Read, T. (1993). Multi-impulsive bulimia: description of an inpatient eclectic treatment programme and a pilot follow-up study of its efficacy. Eating Disorders Review, 1, 22-31.

Lazarus, R. S. (1966). Psychological Stress and the Coping Process. New York: McGraw-Hill.

Leary, M. R., Schreindorfer, L. S., & Haupt, A. L. (1995). The role of low self-esteem in emotional and behavioural problems: Why is low self-esteem dysfunctional? Journal of Social and Clinical Psychology, 14, 297-314.

Lewis, M., Honeck, R. P., & Fishbein, H. (1975). Does shadowing differentially unlock attention? American Journal of Psychology, 88, 455-458.

Linehan, M. M. (1993). Cognitive-Behavioural Treatment of Borderline Personality Disorder. London: Guilford Press.

Lingswiler, V. M., Crowther, J. H., & Stephens, M. A. P. (1989). Affective and cognitive antecedents to eating episodes in bulimia and binge eating. International Journal of Eating Disorders, 8, 533-539.

MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional bias in the emotional disorders. Journal of Abnormal Psychology, 95, 15-20.

Mathews, A. (1990). Why worry? The cognitive function of anxiety. Behaviour Research and Therapy, 28, 455-468.

Mathews, A., & MacLeod, C. (1985). Selective processing of threat cues in anxiety states. Behaviour Research and Therapy, 23, 563-569.

Mathews, A., & MacLeod, C. (1986). Discrimination of threat cues without awareness in anxiety states. Journal of Abnormal Psychology, 95, 131-138.

Mathews, A., & MacLeod, C. (1987). An information processing approach to anxiety. Journal of Cognitive Psychotherapy: An International Quarterly, 1, 105-115.

Mathews, A., & MacLeod, C. (1994). Cognitive approaches to emotion and emotional disorders. Annual Review of Psychology, 45, 25-50.

Mathews, A., & Sebastian, S. (1993). Suppression of emotional Stroop effects by fear-arousal. Cognition and Emotion, 7, 517-530.

McCallum, K. E., Lock, J., Kulla, M., Rorty, M., & Wetzel, R. D. (1992). Dissociative symptoms and disorders in patients with eating disorders. Dissociation, 5, 227-235.

McGinn, L. K., & Young, J. E. (1996). Schema-focused therapy. In. P. M. Salkovskis (Ed.), Frontiers of Cognitive Therapy (pp. 182-207). London: Guilford Press.

McManus, F., & Waller, G. (1995). A functional analysis of binge-eating. Clinical Psychology Review, 15, 845-865.

McManus, F., Waller, G., & Chadwick, P. (1996). Biases in the processing of different forms of threat in bulimic and comparison women. Journal of Nervous and Mental Disease, 184, 547-554.

McNally, R. J. (1995). Automaticity and the anxiety disorders. Behaviour Research and Therapy, 28, 747-754.

McNally, R. J., English, G. E., & Lipke, H. J. (1993). Assessment of intrusive cognition in PTSD: Use of the modified Stroop paradigm. Journal of Traumatic Stress, 6, 33-41.

McNally, R. J., Kaspi, S. P., Riemann, B. C., & Zeitlin, S. B. (1990). Selective processing of threat cues in post-traumatic stress disorder. Journal of Abnormal Psychology, 99, 398-402.

McNally, R. J., Metzger, L. J., Lasko, N. B., Clancy, S. A., & Pitman, R. K. (1998). Directed forgetting of trauma cues in adult survivors of childhood sexual abuse with and without post-traumatic stress disorder. Journal of Abnormal Psychology, 107, 596-601.

Meyer, C., Serpell, L., Waller, G., Murphy, F., Treasure, J., & Leung, N. (under consideration). Cognitive avoidance in the strategic processing of ego threats: Evidence from eating disordered patients. Cognitive Therapy and Research.

Mitchell, J. E., Pyle, R., Eckert, E. C., Hatsukami, D., & Soll, E. (1990). Bulimia nervosa with and without a history of anorexia nervosa. Comprehensive Psychiatry, 31, 171-175.

Mizes, J. S. (1988). Personality characteristics of bulimic and non-eating-disordered female controls: A cognitive-behavioural perspective. International Journal of Eating Disorders, 7, 541-550.

Nielson, S. L., & Sarason, I. G. (1981). Emotion, personality, and selective attention. Journal of Personality and Social Psychology, 41, 945-960.

Patton, C. J. (1992). Fear of abandonment and binge eating: A subliminal psychodynamic activation investigation. Journal of Nervous and Mental Disease, 180, 484-490.

Peñas LLedó, E., & Waller, G. (in press). Bulimic psychopathology and impulsive behaviour among non-clinical women. International Journal of Eating Disorders.

Pitts, C., & Waller, G. (1993). Self-denigratory beliefs following sexual abuse: Association with the symptomology of bulimic disorders. International Journal of Eating Disorders, 13, 407-410.

Putnam, F. W., Helmers, K., & Horowitz, L. A. (1995). Hypnotizability and dissociativity in sexually abused girls. Child Abuse and Neglect, 17, 731-741.

Rachman, S., & de Silva, P. (1978). Abnormal and normal obsessions. Behaviour Research and Therapy, 16, 233-248.

Rieger, E., Schotte, D. E., Touyz, S. W., Beumont, P. J. V., Griffiths, R., & Russell, J. (1998). Attentional biases in eating disorders: A visual dot probe detection procedure. International Journal of Eating Disorders, 23, 199-205.

Root, M. P. P., & Fallon, P. (1989). Treating the victimised bulimic. Journal of Interpersonal Violence, 4, 90-100.

Ross, C. A., Joshi, S., & Currie, R. (1990). Dissociative experiences in the general population. American Journal of Psychiatry, 147, 1547-1552.

Ross-Gower, J., Waller, G., Tyson, M., & Elliott, P. (1998). Reported sexual abuse and subsequent psychopathology among women attending psychology clinics: The mediating role of dissociation. British Journal of Clinical Psychology, 37, 313-326.

Roth, A., & Fonagy, P. (1996). What Works for Whom? A Critical Review of Psychotherapy Research. London: Guilford Press.

Sanders, B., & Giolas, M. H. (1991). Dissociation and childhood trauma in psychologically disturbed adolescents. American Journal of Psychiatry, 148, 50-54.

Saxe, G. N., van der Kolk, B. A., Berkowitz, R., Chinman, G., Hall, K., Lieberg, G., & Schwartz, J. (1993). Dissociative disorders in psychiatric inpatients. American Journal of Psychiatry, 150, 1037-1042.

Schotte, D. E., McNally, R. J., & Turner, M. L. (1990). A dichotic listening analysis of body weight concern in bulimia nervosa. International Journal of Eating Disorders, 9, 109-113.

Sinnett, E., Judd, B., & Olsen, M. (1983). Food, drugs and alcohol: A common temporal pattern of use. Perceptual and Motor Skills, 57, 375-379.

Sohlberg, S., Norring, C., Holmgren, S., & Rosmark, B. (1989). Impulsivity and long-term prognosis of psychiatric patients with anorexia nervosa/bulimia nervosa. Journal of Nervous and Mental Disease, 177, 249-258.

Spiegel, D., & Cadeña, E. (1991). Disintegrated experience: The dissociative disorders revisited. Journal of Abnormal Psychology, 100, 366-378.

Stanton, A. L., & Snider, P. R. (1993). Coping with a breast cancer diagnosis: A prospective study. Health Psychology, 12, 16-23.

Steele, C. M., & Josephs, R. A. (1990). Alcoholic myopia: Its prized and dangerous effects. American Psychologist, 45, 921-933.

Striegel-Moore, R. H., & Huydic, E. S. (1993). Problem drinking and symptoms of disordered eating in female high school students. International Journal of Eating Disorders, 14, 417-425.

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. Journal of Experimental Psychology, 18, 643-662.

Telch, C. F. (1997). Skills training treatment for adaptive affect regulation in women with binge-eating disorder. International Journal of Eating Disorders, 22, 77-81.

Thorpe, S. J., & Salkovskis, P. M. (1997). Information processing in spider phobics: The Stroop colour naming task may indicate strategic but not automatic attentional bias. Behaviour Research and Therapy, 35, 131-144.

Thrasher, S. M., Dalgeish, T., & Yule, W. (1994). Information processing in post-traumatic stress disorder. Behaviour Research and Therapy, 32, 247-254.

Tolin, D. F., Sawchuk, C. N., Lee, T. C., Mount, M. K., & Lohr, J. M. (1996). Attentional Bias and Perceptual Avoidance in Specific Phobia. Poster presented at the 30th Annual Meeting of the Association for Advancement of Behaviour Therapy. New York: USA.

Trandel, D. V., & McNally, R. J. (1987). Perception of threat cues in post-traumatic stress disorder: Semantic processing without awareness. Behaviour Research and Therapy, 25, 469-476.

Van Den Hout, M., Tenney, N., Huygens, K., & De Jong, P. (1997). Preconscious processing bias in specific phobia. Behaviour Research and Therapy, 35, 29-34.

Vanderlinden, J., & Vandereycken, W. (1997). Trauma, Dissociation, and Impulse Dyscontrol in the Eating Disorders. Bristol, PA: Brunner Mazel.

Vanderlinden, J., Norre, J., & Vandereycken, W. (1992). A Practical Guide to the Treatment of Bulimia Nervosa. New York: Brunner/Mazel.

Vanderlinden, J., Vandereycken, W., van Dyck, R., & Vertommen, H. (1993). Dissociative experiences and trauma in eating disorders. International Journal of Eating Disorders, 13, 187-193.

Vitousek, K. M., & Hollon, S. D. (1990). The investigation of schematic content and processing in the eating disorders. Cognitive Therapy and Research, 14, 191-214.

Waller, G., & Meyer, C. (1997). Cognitive avoidance of threat cues: Association with Eating Disorder Inventory scores among a non-eating-disordered population. International Journal of Eating Disorders, 22, 299-308.

Waller, G., Ohanian, V., Meyer, C., & Osman, S. (in press). Cognitive content among bulimic women: The role of core beliefs. International Journal of Eating Disorders.

Waller, G., Quinton, S., & Watson, D. (1995). Processing of threat-related information by women with bulimic eating attitudes. International Journal of Eating Disorders, 18, 189-193.

Watts, F. N., McKenna, F. P., Sharrock, R., & Trezise, L. (1986). Colour naming of phobia-related words. British Journal of Psychology, 77, 97-108.

Watts, F. N., Sharrock, R., & Trezise, L. (1986). Detail and elaboration in phobic stimuli. British Journal of Clinical Psychology, 25, 253-259.

Wells, A., & Matthews, G. (1994). Attention and Emotion: A Clinical Perspective. Hillsdale, NJ: Lawrence Erlbaum Associates.

Wenzel, A., & Holt, C. S. (1999). Dot probe performance in two specific phobias. British Journal of Clinical Psychology, 38, 407-410.

Wiederman, M. W., & Pryor, T. (1996). Multi-impulsivity among women with bulimia nervosa. International Journal of Eating Disorders, 20, 359-365.

Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A. (1988). Cognitive Psychology and Emotional Disorders. New York: Wiley.

Wilson, G. T. (1996). Treatment of bulimia nervosa: When CBT fails. Behaviour Research and Therapy, 34, 197-212.

Wilson, G. T. (1999). Cognitive behaviour therapy for eating disorders: Progress and problems. Behaviour Research and Therapy, 37, S79-S95.

Wiser, S., & Telch, C. F. (1999). Dialectical behaviour therapy for binge-eating disorder. Journal of Clinical Psychology, 55, 755-768.

Young, J. E. (1994). Cognitive Therapy for Personality Disorders: A Schema-Focused Approach (2nd ed.). Sarasota, Florida: Professional Resource Press.

Zatzick, D. F., Marmar, C. R., Weiss, D. S., & Metzler, T. (1994). Does trauma-linked dissociation vary across ethnic groups? Journal of Nervous and Mental Disease, 182, 576-582.

Zinbarg, R. E., Barlow, D. H., Brown, T. A., & Hertz, R. M. (1992). Cognitive behavioural approaches to the nature and treatment of anxiety disorders. Annual Review of Psychology, 43, 235-267.

Empirical paper

Cognitive process in bulimic disorders: Schema avoidance in low-impulsive and high-impulsive cases

Submitted to Cognitive Therapy and Research (See Appendix B)

Cognitive process in bulimic disorders: Schema avoidance in low-impulsive and high-impulsive cases

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Running head

Schema avoidance in bulimia

Cognitive process in bulimic disorders: Schema avoidance in low-impulsive and high-impulsive cases

Abstract

It has been proposed that bulimic and other impulsive behaviours are a way of escaping from intolerable affect. This study examined whether threats to self-esteem result in higher levels of schema avoidance (cognitive avoidance and dissociation) in bulimic women who engage in either low or high levels of impulsive behaviours. A strategic processing task (anagram solutions) was used as a measure of cognitive avoidance. The results indicated that there were no significant differences between the bulimic group and a non-clinical group in levels of cognitive avoidance, and there were no significant associations between cognitive avoidance and impulsivity. However, there was a significant association between two different types of schema avoidance (cognitive avoidance and dissociation) within the bulimic group. Further analysis of the data indicated that bulimic women who dissociate engage in higher levels of externally-directed impulsive behaviours. Further research is needed to establish the schematic content of bulimic women. Clinically, the results highlight the importance of assessing impulsive behaviours in bulimic women, as certain behaviours are associated with greater avoidance.

Key words:

bulimia nervosa, schema avoidance, impulsivity

Cognitive process in bulimic disorders: Schema avoidance in low-impulsive and high-impulsive cases

Traditional cognitive behavioural models of bulimia (e.g., Fairburn, 1981; Fairburn & Cooper, 1989) suggest that beliefs and values about food, shape and weight are the central psychopathological elements of the disorder. Evidence in support of this model comes in the form of cognitive over-representation of material related to food, weight and shape (e.g., Ben-Tovim, Walker, Fok & Yap, 1989; Cooper, Anastasiades & Fairburn, 1992; Long, Hinton & Gillespie, 1994; Mahamedi & Heatherton, 1993; Rieger, Schotte, Touyz, Beumont, Griffiths & Russell, 1998). However, outcome studies of treatment based on this model of bulimic pathology suggest that remission rates for bulimia are only moderate, typically around 50% (e.g., Craighead & Agras, 1991; Fairburn, Jones, Peveler, Hope & O'Connor, 1993; Garner, Rockert, Davis, Garner, Olmsted & Eagle, 1993; Keele & Mitchell, 1997; Wilson, 1999). Therefore, current models of bulimia and its treatment need to be revised. A growing body of research places a greater emphasis, than previous cognitive models, on the role of emotion in bulimia (e.g., Arnow, Kenardy & Agras, 1992, 1995; Beebe, 1994; Hsu, 1990; Meyer, Waller & Waters, 1998). In particular, it has been hypothesised that bulimic behaviours are a way of escaping from intolerable affect. However, our current understanding of how bulimic women process intolerable emotions is limited. Therefore, it will be important to consider the broader cognitive literature, to develop an understanding of this facet of bulimic disorders.

In that literature, Beck & Clark (1997) recently proposed an information processing model that suggests that anxiety involves a three-stage sequence. The

first stage is 'initial registration', involving a rapid, automatic registration of a stimulus that is usually outside of conscious awareness. This stage assigns processing priority through the allocation of attention. The second stage is 'immediate preparation'. It involves using a combination of strategic and automatic processes, and is activated if the stimulus is recognised as personally relevant and threatening. The majority of attentional resources are allocated to cognitive, behavioural, affective, and physiological patterns that aim to fulfil basic evolutionary goals (e.g., survival), thereby reducing the capacity for more reflective consideration. The final stage is 'secondary elaboration' and uses more elaborative semantic processing. Processing at this stage is typically slow and schema-driven, as information is interpreted according to an individual's own concerns (schemas). It is at these later, more strategic stages, that cognitive avoidance is likely to occur.

Beck & Clark's (1997) model highlights two processes that contribute to the maintenance of anxiety – automatic attentional bias to personally relevant threatening stimuli, and avoidance of attending to the characteristics of threatening stimuli. To date, a large body of research has accumulated in support of an automatic attentional bias in both non-bulimics (e.g., Foa, Feske, Murdock, Kozak & McCarthy, 1991; Mathews, 1990; Mathews & MacLeod, 1985) and bulimics (e.g., Ben-Tovim et al., 1989; Cooper et al., 1992; Cooper & Fairburn, 1992). However, far less is known about the role of avoidance.

Young (1994) has highlighted the process of avoidance in his schema-focused cognitive behavioural model. He suggests that early negative experiences result in the development of pathological maladaptive schemas. The model states that an individual uses a set of behavioural, emotional, physiological and cognitive strategies, which function to avoid triggering such schemas. Research suggests that

bulimic behaviours may function to block the triggering of maladaptive schemas (e.g., Waller, Ohanian, Meyer & Osman, in press). However, several ways have been proposed for formulating such avoidance in the eating disorders.

First, Heatherton & Baumeister (1991) suggest that bingeing occurs as a consequence of cognitive narrowing (a purposeful shift to low levels of awareness). They suggest that binge-eating is a consequence of disinhibition, arising from a motivated attempt to escape from negative self-awareness (triggered by comparing the self to unrealistically high standards). The second model suggests that bulimic behaviours serve a different role, more directly serving to 'block' the negative affect brought about by traumatic memories (Root & Fallon, 1989) or self-criticism (Lacey, 1986). A third avoidance strategy is dissociation. Research demonstrates that women with eating disorders exhibit a higher level of dissociative symptomology than non-clinical women (e.g., Demitrack, Putnam, Brewerton, Brandt & Gold, 1990; Everill, Waller & Macdonald, 1995; Vanderlinden, Vandereycken, van Dyck & Vertommen, 1993). Everill et al. (1995) suggest that dissociation temporarily refocuses attention, enabling the individual to engage in bulimic behaviours without having to consider the long-term consequences.

The avoidant strategy that is least well understood in the eating disorders is cognitive avoidance. This is a defensive mechanism, whereby the individual processes threatening information more slowly or selectively (e.g., Foa & Kozak, 1986). Young (1994) suggests that such avoidance can be an automatic or a volitional attempt to block thoughts or images that might activate early maladaptive schemas. However, at present, there is little empirical evidence for cognitive avoidance in the eating disorders. In a non-clinical population, research has demonstrated a link between cognitive avoidance of general threat cues and bulimic

attitudes (Waller, Quinton & Watson, 1995). Further such research, by Waller & Meyer (1997), considered the processing of food-related and general threat-cues in a non-clinical population. Participants were asked to solve a series of anagrams consisting of food-related or general-threat words. Longer solution times indicate higher levels of cognitive avoidance. The authors demonstrated a link between cognitive avoidance of threats to the self and the psychopathology of eating distress. Similar associations were not established for food-related cues. Using the same paradigm with an eating-disordered group, Meyer, Serpell, Waller, Murphy, Treasure & Leung (under consideration) have demonstrated an association between cognitive avoidance of self-directed ego threats and pathological bulimic behaviours.

The research discussed above demonstrates cognitive avoidance for threat-related cues in women who exhibit bulimic attitudes and behaviours. However, little is known about the precise relationship between bulimia and cognitive avoidance. It has been suggested (e.g., Holderness, Brooks-Gunn & Warren, 1994) that bulimia serves a similar function to other impulsive behaviours (e.g., excessive alcohol / drug use, self-harm, suicide, stealing). This suggestion is supported by the high occurrence of impulsive behaviours in women with bulimia (e.g., Holderness et al., 1994; Striegel-Moore & Huydic, 1993; Vanderlinden & Vandereycken, 1997). It has been proposed that other impulsive behaviours might also serve an 'escape from awareness' or 'blocking' function (e.g., Baumeister, 1989; Baumeister, Heatherton & Tice, 1994; Steele & Josephs, 1990).

Given this close relationship between bulimia and impulsivity, some authors have proposed the existence of a multi-impulsive form of bulimia (e.g., Lacey & Evans, 1986). However, the nature of this relationship remains unclear. In a non-

clinical group, Peñas LLedó & Waller (in press) reported a strong association between bulimic attitudes and self-harm, and a weaker link between bulimic attitudes and alcohol / substance use. No associations existed for other impulsive behaviours (e.g., stealing, spending, promiscuity). However, these results might not apply to a clinical population. Considering these results, it might be useful to distinguish between internally-directed (e.g., self-harm) and externally-directed (e.g., sexual promiscuity) impulsive behaviours (Milligan & Waller, in press). Research has tended to focus only on internally-directed impulsive behaviours, thus excluding the possibility that the two types of behaviour may be functionally different.

The literature discussed above highlights a number of gaps in our knowledge of the relationships between cognitive avoidance and bulimia, and between impulsivity and bulimia. The majority of this research focuses on bulimia nervosa. However, due to the pragmatics of accessing a pure bulimia nervosa population, this study includes women with diagnosable eating disorders (e.g., bulimia nervosa, binge eating disorder and anorexia with binge-purge subtype). Evidence suggests that women with bulimia avoid processing threats to self-esteem. However, it is not known whether the severity of the bulimic behaviours can predict levels of cognitive avoidance. Given that impulsivity serves a 'blocking' function, an important question to be answered is whether the level of impulsivity is predictive of the degree of cognitive avoidance.

Therefore, the present study has the following aims. The first aim is to establish the relationship between cognitive avoidance and bulimic behaviours. It is hypothesised that bulimic women will be slower than a control group to complete a threat-related strategic processing task. A second hypothesis is that cognitive

avoidance of threat-related information will be positively associated with greater use of bulimic behaviours. A further aim is to establish the relationship between impulsive behaviours and cognitive avoidance. Since it has been suggested that greater impulsivity serves a stronger 'blocking' function, it is hypothesised that there will be a positive association between levels of impulsive behaviour and cognitive avoidance of threat-related information. Previous research has highlighted high levels of schema avoidance in women with bulimic disorders. It is possible that different types of schema avoidance serve the same function. Therefore, the final aim is to determine whether there is an association between different types of schema avoidance behaviours. It is hypothesised that cognitive avoidance of threat-related information will be positively associated with levels of dissociation.

Method

Participants

Two groups of participants were used - a clinical bulimic group and a non-clinical comparison group. The groups were matched for age, and all participants were female. All participants gave their informed consent (Appendix E). Participants were excluded from the study if they suffered from dyslexia.

Bulimic group. This group consisted of 22 women, who met the DSM-IV (American Psychiatric Association, 1994) criteria for bulimic disorders (8 binge-eating disorder, 13 bulimia nervosa, 1 bulimic anorexic). The diagnosis was made by their individual clinicians. Their mean age was 25.1 years (SD = 4.81, range = 18 – 36 years).

Control group. This group consisted of 34 women, recruited from an undergraduate population and personal contacts. The researcher asked the

participants if they had a current or past diagnosis of an eating disorder. Participants were excluded if they had been previously diagnosed. The control group had a mean age of 25.6 years (SD = 4.72, range = 18 – 37 years).

Measures

The research involved the use of five measures. These were completed by all participants, in the order given below.

Anagram task. The anagram task (Waller & Meyer, 1997) is a strategic processing task, which is used as a measure of cognitive avoidance. The task involves the presentation of 12 words - six neutral word anagrams and six ego-threat word anagrams. These 12 words (presented in random order) were compiled from an original list of 55 single-solution anagrams, after establishing normative solution times in non-eating-disordered women. The mean solution time for the neutral anagrams was 10.9 seconds per word. The mean solution time for the ego-threat anagrams was 10.2 seconds per word. The neutral word anagrams were – ryou = your; lheo = hole; wlgo = glow; pohe = hope; eivw = view; licp = clip. The ego-threat word anagrams were – neloa = alone; lfia = fail; budm = dumb; ludl = dull; neloly = lonely; temyp = empty.

Bulimic Investigatory Test, Edinburgh (BITE; Henderson & Freeman, 1987). The BITE is a 33-item questionnaire measuring bulimic attitudes and behaviours (Appendix F). The scale measures both bulimic symptoms and their severity. These two scores (symptom and severity) can be added to form a total score (range = 0-69). Higher scores reflect more pathological bulimic attitudes and behaviour. The scale has been shown to have good psychometric properties (Henderson & Freeman, 1987; Peñas LLedó & Waller, in press).

Impulsive Behaviours Scale – Revised (IBS; Rossotto, Yager & Rorty, 1994). This is a self-report measure, which assesses the degree to which an individual uses 25 different impulsive behaviours (Appendix G). The frequency of the behaviour is recorded on a five-point Likert-type scale (1=never; 2=once; 3=on occasion; 4=sometimes; 5=regularly). Higher scores indicate greater levels of impulsivity. Internal consistency is acceptable (Cronbach's alpha = 0.69; Peñas LLedó & Waller, in press). For data analysis purposes, the IBS scores were split into internally-directed and externally-directed behaviours, the primary differentiating factor being the intention to harm the self. This procedure was established by Milligan & Waller (in press). The 11-internally directed impulsive behaviours were: overdose, thoughts of self-mutilation, excessive alcohol use, suicide gestures, treatment for self-harm, purging behaviours, suicide attempts, suicidal ideation, excess of recreational drugs, accidental self-injury, and self-mutilation. The 14 externally-directed behaviours were: sexual promiscuity, unwanted sex, 'daredevil' behaviour, theft from family, driving under the influence of alcohol or drugs, stealing food, driving recklessly, stealing non-food items, impulsive spending, risk-taking, eating food prior to paying, unsafe sex, accident proneness, and pushing self to physical limit.

Dissociative Experiences Scale – II (DES; Carlson & Putnam, 1993). This is a 28-item self-report questionnaire, measuring the extent of dissociative experiences (Appendix H). The questionnaire measures three types of dissociative experience: amnesic dissociation, absorption / imaginative involvement, and depersonalisation / derealisation. The DES has been reported as having good reliability and validity in both clinical and non-clinical populations (Carlson & Putnam, 1993). It was included to investigate whether cognitive avoidance is

associated with other forms of schema avoidance. The DES-Taxon score (Waller, Putnam & Carlson, 1996) was also calculated. The DES-Taxon distinguishes between non-pathological and pathological dissociative experiences. It is obtained by calculating the mean score on eight items of the DES (items 3, 5, 7, 8, 12, 13, 22 and 27).

Mill Hill Vocabulary Scale (Raven, Raven & Court, 1998). This scale provides an index of a person's present capacity for intellectual activity (Appendix I). It is reported as having good reliability and validity (Raven, Raven & Court 1998). Higher scores indicate greater capacity for intellectual activity. The measure was included within this research to control for vocabulary and intellectual differences between the control and experimental group on the anagram task.

Procedure

The research received appropriate local ethical approval (Appendix C). The individual therapists approached participants from the clinical group. All participants were provided with an information sheet (Appendix D) that outlined the purpose of the study, and were asked to sign a consent form (Appendix E). The participants were assessed individually. Participants first completed the anagram task. The words were presented individually on a piece of card (randomly ordered). Participants were told that: "A card will be placed in front of you containing mixed up letters that, when re-arranged, will form a word. You must use all of the letters and say the word out loud when you think you know it". The time taken to solve each anagram correctly was recorded with a stopwatch. Participants then completed the self-report measures in the following order – the BITE, the IBS, the DES, and the Mill Hill Vocabulary Scale.

Data analysis

Statistical analysis (Kolmogorov-Smirnov tests) indicated that the data were sufficiently normally distributed. Therefore, parametric analyses were used throughout. Hypothesis 1 (bulimic women will be slower than a control group to complete a threat-related strategic processing task) was analysed using an independent t-test. Although, some variables had unequal variance, for consistency, the data was analysed using an independent t-test where variances are not assumed to be equal. The data could have been analysed using a 2-way anova test. However, given the hypotheses, it is appropriate to conduct planned comparisons anyway. Therefore, only independent t-tests were used. Hypothesis 2 (cognitive avoidance of threat-related information will be positively associated with greater use of bulimic behaviours), hypothesis 3 (positive association between levels of impulsive behaviour and cognitive avoidance of threat-related information) and hypothesis 4 (cognitive avoidance of threat-related information will be positively associated with levels of dissociation) were analysed using Pearson's (r) correlations.

Results

Group characteristics

Table I shows descriptive characteristics and t-tests comparing groups on the Mill-Hill Vocabulary Scale, the BITE, the DES and the IBS scores for the non-clinical and bulimic women. There were no significant differences in age or vocabulary / intellectual abilities between the groups. Therefore, it can be assumed that these factors did not influence the results. There were significant differences between the groups on the BITE (symptom scale), and on the DES and IBS scores.

Insert Table I about here

Cognitive avoidance

Table II shows the anagram solution times for the non-clinical and bulimic women, compared using t-tests. The 'difference' score is calculated by subtracting the mean neutral anagram time from the mean ego-threat anagram time. Larger difference scores indicate greater cognitive avoidance. There were no significant differences between the non-clinical and bulimic women on neutral, ego-threat, or difference-score anagram times. Therefore, the first hypothesis, which stated that bulimic women would be slower than a control group to complete the threat-related strategic processing task, was not supported.

Insert Table II about here

Dimensional associations

Table III shows the correlations between the anagram task scores and age, Mill Hill Vocabulary Scale and the BITE, for non-clinical and bulimic women. As could be expected, there was a negative correlation between vocabulary / intellectual ability and anagram solution times. There were no significant associations between BITE scores and anagram solution times for either the non-clinical or bulimic women. Therefore, the second hypothesis, which stated that cognitive avoidance of threat-related information would be positively associated with greater use of bulimic behaviours, was not supported.

Insert Table III about here

Table III also shows the correlations between the anagram task scores and the IBS scores. There were no significant associations between the anagram task scores and the three IBS scores for either the non-clinical or the bulimic group. Therefore, the third hypothesis, which stated that there would be a positive association between levels of impulsive behaviour and cognitive avoidance of threat-related information, was not supported.

Finally, Table III also shows the correlations between the anagram task scores and the DES scores for the non-clinical and bulimic women. There was a significant association between DES scores and ego-threat and anagram-difference scores, but only in the bulimic group. Therefore, hypothesis 4 (greater levels of cognitive avoidance are associated with higher levels of dissociation) was supported, but only in the bulimic group. There was also a significant association between solution times for the neutral anagrams and DES scores in the non-clinical group.

Categorical differences in levels of impulsivity

The non-clinical and bulimic groups were each split into those engaging in high levels of impulsive behaviours and those engaging in low levels of impulsive behaviours, based on a median split on their IBS scores (non-clinical = 1.3, bulimic = 2.2). This median split is a standard method of dividing a population to determine differences between those displaying more severe pathology with those displaying less severe pathology. There were no differences in scores on age or the Mill-Hill

Vocabulary Scale for either those with low or high levels of either form of impulsive behaviour.

Table IV compares differences in scores on the psychometric measures between those engaging in low levels of externally-directed impulsive behaviours and those engaging in high levels of externally-directed impulsive behaviours. Within both the non-clinical and bulimic groups, there was a significant difference between those engaging in low and high levels of externally-directed impulsive behaviours on levels of dissociation. This suggests that women who engage in greater levels of externally-directed impulsive behaviours are more likely to have higher dissociative scores. However, there was no such difference on measures of bulimic behaviours (BITE) or cognitive avoidance (anagram task).

Insert Table IV about here

Table V compares differences in scores on the psychometric measures between those engaging in low levels of internally-directed impulsive behaviours and those engaging in high levels of internally-directed impulsive behaviours. Within the bulimic group there were no differences on any of the psychometric assessments between those engaging in low and high levels of internally-directed impulsive behaviours. However, within the non-clinical group there was a significant difference between those engaging in low versus high levels of internally-directed impulsive behaviours in terms of scores on the dissociation measure (DES) and levels of bulimia (scores on the BITE symptom scale).

Insert Table V about here

Discussion

The results indicate that bulimic women were not slower than non-clinical women on completing a threat-related strategic processing task. Nor was cognitive avoidance associated with greater use of bulimic behaviour. Therefore, the first two hypotheses were not supported. There was also no significant association between use of impulsive behaviours and cognitive avoidance of threat-related information. However, there was a significant association between the two measures of schema avoidance (anagram task, DES) in the bulimic group. This suggests that in a clinical population, individuals engaging in one type of schema-avoidance behaviour are also likely to engage in other forms of schema avoidance.

Previous studies have demonstrated that bulimic women do engage in cognitive avoidance of ego-threats (e.g., Meyer et al., under consideration). However, this study does not support these findings. It is possible that this inconsistency reflects a weakness within the model, which states that bulimic women avoid processing ego-threat information. Alternatively, the failure to replicate previous findings may indicate a weakness in the anagram task as a measure of cognitive avoidance, in that it is not sensitive enough to detect changes. However, as cognitive avoidance was associated with dissociation, the likelihood of these two explanations is lessened. Therefore, a third explanation might be that the different results reflect differences in the populations studied. The population studied by Meyer et al. (under consideration) consisted primarily of women falling within the secondary tier service level, whereas in the present study the majority were obtained from tertiary tier and tier 4 services. Therefore, results from previous studies may have limited generalisability and relate only to less severe cases.

Further research would be required to test this explanation. It is important to note that the screening of the control group for a history or current diagnosis of an eating disorder was reliant upon accurate self-report. It is possible that participants may not have recognised or have been willing to report such information. Therefore, the possibility of the results being influenced by participants within the control group having some form of eating disorder cannot be excluded.

Previous studies on impulsive behaviours suggest that they serve a 'blocking' function (e.g., Baumeister, 1989; Baumeister et al., 1994; Steele & Josephs, 1990). A number of authors suggest that bulimic and impulsive behaviours serve a similar function (e.g., Holderness et al., 1994). It is difficult to provide further clarification on this, based on the present results. It is possible that bulimic and other impulsive behaviours do serve a similar function. However, these results do not support the notion that this function is an escape from aversive self-awareness. Both types of behaviour may still serve a 'blocking' function, but the material they are blocking does not appear to be threats to the self. Supplementary analysis of the data split impulsivity into internally-directed and externally-directed behaviours. A comparison of those bulimics engaging in low versus high levels of externally-directed impulsive behaviours indicated significant differences in levels of dissociation. This suggests that women who engage in greater levels of externally-directed impulsive behaviours are more likely to have higher dissociative scores. Within the non-clinical group, those who engage in low levels of internally-directed impulsive behaviours differed significantly from those who engage in high levels of internally-directed impulsive behaviours, on the DES and BITE-symptom scores. Due to their relatively low levels of impulsivity, we need to be cautious in interpreting this result. However, it is possible that different types of

impulsive behaviour (e.g., internally-directed, externally-directed) serve different functions.

The results of this study are also inconsistent with existing conventional models of bulimia. For example, the starvation model (Fairburn, 1981; Fairburn & Cooper, 1989) suggests that low self-esteem is the precipitating factor to an over-concern with body, weight and shape. However, if this were the case then it might be expected that there would be differences between a bulimic and non-clinical group in the processing of ego-threats. These results also fail to support current 'escape from awareness' models (e.g., Heatherton & Baumeister, 1991; Lacey, 1986; Root & Fallon, 1989). According to these models, perceived threat should result in a narrowing of awareness or a 'blocking' of negative stimuli, thus suggesting higher levels of schema avoidance. Again, it is possible that bulimic and impulsive behaviours do serve this function, but that the triggers to these escape behaviours are not threats to self-esteem.

These results suggest a number of areas for further research. Firstly, the distinction between internally-directed and externally-directed impulsive behaviours appears to be a useful one. It is possible that these two types of impulsive behaviour serve different functions, and consequently are associated with different types of schema-avoidance. It would be useful to determine the link between different constructs of dissociation (e.g., somatisation, derealisation) and different types of impulsive behaviour. It would also be useful to consider the relationship between internally-directed and externally-directed impulsive behaviours and schema-avoidance within other clinical groups. Given the small sample size, it was not possible to compare different eating-disordered groups (e.g., bulimia nervosa, bulimic anorexia, binge-eating disorder), although it would be

useful to do so in further research. The results from this study do not support the notion that threats to the self result in an active process of avoidance. It would be useful, therefore, to examine the schematic content of bulimic women further, to determine whether alternative schemas are associated with avoidance and impulsive behaviours.

Clinically, the results of this study highlight the importance of clinicians assessing levels and types of impulsive behaviour within bulimic clients. There are significant differences in levels of impulsive behaviour between a non-clinical and bulimic group. Although this study cannot clarify the function of these impulsive behaviours, therapists should conduct detailed individual assessments to formulate such behaviours. Therapists also need to be aware that certain impulsive behaviours (externally-directed) are associated with greater levels of dissociation in bulimics. Therefore, clinical individuals who engage in externally-directed impulsive behaviours may be more likely to engage in strategies to avoid triggering maladaptive schemas (e.g., not answering questions, inability to speak / find words, inaccessible memory, 'blanking-off'). In these cases, it may be necessary for treatment to incorporate strategies aimed at increasing awareness and tolerance of affective states and developing coping skills to deal with negative affect, including techniques from Dialectical Behaviour Therapy (Linehan, 1993; Marcus, McCabe & Levine, 1999; Telch, 1997).

References

Arnow, B., Kenardy, J., & Agras, W. S. (1992). Binge-eating among the obese: A descriptive study. Journal of Behavioural Medicine, 15, 155-170.

Arnow, B., Kenardy, J., & Agras, W. S. (1995). The Emotional Eating Scale: The development of a measure to assess coping with negative affect by eating. International Journal of Eating Disorders, 18, 79-90.

Baumeister, R. F. (1989). Masochism and the Self. Hillsdale, NJ: Erlbaum.

Baumeister, R., Heatherton, T., & Tice, D. (1994). How and Why People Fail at Self-Regulation. London: Academic Press.

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. Behaviour Research and Therapy, 35, 49-58.

Beebe, D. W. (1994). Bulimia nervosa and depression: A theoretical and clinical appraisal in light of the binge-purge cycle. British Journal of Clinical Psychology, 33, 259-276.

Ben-Tovim, D. I., Walker, M. K., Fok, D., & Yap, E. (1989). An adaptation of the Stroop test for measuring shape and food concerns in eating disorders: A quantitative measure of psychopathology? International Journal of Eating Disorders, 8, 681-687.

Carlson, E. B., & Putnam, F. W. (1993). An update on the Dissociative Experiences Scale. Dissociation, 6, 16-27.

Cooper, M. J., & Fairburn, C. G. (1992). Selective processing of eating, weight, and shape related words in patients with eating disorders and dieters. British Journal of Clinical Psychology, 31, 363-365.

Cooper, M. J., Anastasiades, P., & Fairburn, C. G. (1992). Selective processing of eating, shape, and weight related words in persons with bulimia nervosa. Journal of Abnormal Psychology, 101, 352-355.

Craighead, L. W., & Agras, W. S. (1991). Mechanisms of action in cognitive-behavioural and pharmacological interventions for obesity and bulimia nervosa. Journal of Consulting and Clinical Psychology, 59, 115-125.

Demitrack, M. A., Putnam, F. W., Brewerton, T. D., Brandt, H. A., & Gold, P. W. (1990). Relation of clinical variables to dissociative phenomena in eating disorders. American Journal of Psychiatry, 147, 1184-1188.

Everill, J. T., Waller, G., & Macdonald, W. (1995). Dissociation in bulimic and non-eating-disordered women. International Journal of Eating Disorders, 17, 127-134.

Fairburn, C. G. (1981). A cognitive behavioural approach to the treatment of bulimia. Psychological Medicine, 11, 707-711.

Fairburn, C. G., & Cooper, P. (1989). Eating Disorders. In K. Hawton, P. M. Salkovskis, J. Kirk, & D. M. Clark (Eds), Cognitive Behaviour Therapy for Psychiatric Problems (pp. 277-314). Oxford: Oxford Medical Publications.

Fairburn, C. G., Jones, R., Peveler, R. C., Hope, R. A., & O'Connor, M. (1993). Psychotherapy and bulimia nervosa. Archives of General Psychiatry, 50, 419-428.

Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. Psychological Bulletin, 99, 20-35.

Foa, E. B., Feske, U., Murdock, T. B., Kozak, M. J., & McCarthy, P. R. (1991). Processing of threat related information in rape victims. Journal of Abnormal Psychology, 100, 156-162.

Garner, D. M., Rockert, W., Davis, R., Garner, M. V., Olmsted, M. P., & Eagle, M. (1993). Comparison of cognitive-behavioural and supportive-expressive therapy for bulimia nervosa. American Journal of Psychiatry, 150, 137-146.

Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. Psychological Bulletin, 110, 86-108.

Henderson, M., & Freeman, C. P. L. (1987). A self rating scale for bulimia: The BITE. British Journal of Psychiatry, 150, 18-24.

Holderness, C. C., Brooks-Gunn, J., & Warren, M. P. (1994). Co-morbidity of eating disorders and substance abuse. Review of the literature. International Journal of Eating Disorders, 16, 1-34.

Hsu, L. K. G. (1990). Experimental aspects of bulimia nervosa: Implications for cognitive behavioural therapy. Behaviour Modification, 14, 50-65.

Keele, P. K., & Mitchell, J. E. (1997). Outcome in bulimia nervosa. American Journal of Psychiatry, 154, 313-321.

Lacey, J. H. (1986). Pathogenesis. In L. J. Downey & J. C. Malkin (Eds), Current Approaches: Bulimia Nervosa (pp. 17-27). Southampton, UK: Duphar.

Lacey, J. H., & Evans, C. D. H. (1986). The impulsivist: A multi-impulsive personality disorder. British Journal of Addiction, 81, 641-649.

Linehan, M. M. (1993). Cognitive-Behavioural Treatment of Borderline Personality Disorder. London: Guilford Press.

Long, C. J., Hinton, C., & Gillespie, N. K. (1994). Selective processing of food and body size words: Application of the Stroop test with obese restrained eaters, anorexics, and normals. International Journal of Eating Disorders, 15, 279-283.

Mahamedi, F., & Heatherton, T. F. (1993). Effects of high calorie preloads on selective processing of food and body shape stimuli among dieters and non-dieters. International Journal of Eating Disorders, 13, 305-314.

Marcus, M., McCabe, E., & Levine, M. (1999). Dialectical Behaviour Therapy (DBT) in the Treatment of Eating Disorders. Paper presented at the 4th London International Conference on Eating Disorders, London: UK.

Mathews, A. (1990). Why worry? The cognitive function of anxiety. Behaviour Research and Therapy, 28, 455-468.

Mathews, A., & MacLeod, C. (1985). Selective processing of threat cues in anxiety states. Behaviour Research and Therapy, 23, 563-569.

Meyer, C., Serpell, L., Waller, G., Murphy, F., Treasure, J., & Leung, N. (under consideration). Cognitive avoidance in the strategic processing of ego threats: Evidence from eating disordered patients. Cognitive Therapy and Research.

Meyer, C., Waller, G., & Waters, A. (1998). Emotional states and bulimic psychopathology. In H. Hoek, J. Treasure & M. Katzman (Eds), Neurobiology in the Treatment of Eating Disorders (pp. 263-281). New York: John Wiley & Sons.

Milligan, R. J., & Waller, G. (in press). Anger and impulsivity in non-clinical women. Personality and Individual Differences.

Peñas LLedó, E., & Waller, G. (in press). Bulimic psychopathology and impulsive behaviour among non-clinical women. International Journal of Eating Disorders.

Raven, J., Raven, J. C., & Court, J. H. (1998). Advanced Progressive Matrices. Oxford: Oxford Psychologists Press.

Rieger, E., Schotte, D. E., Touyz, S. W., Beumont, P. J. V., Griffiths, R., & Russell, J. (1998). Attentional biases in eating disorders: A visual dot probe detection procedure. International Journal of Eating Disorders, 23, 199-205.

Root, M. P. P., & Fallon, P. (1989). Treating the victimised bulimic. Journal of Interpersonal Violence, 4, 90-100.

Rossotto, E., Yager, J., & Rorty, M. (1994). Impulsive and Self Harm Behaviours among Women with Bulimia Nervosa. Paper presented at the 6th International Conference on Eating Disorders, New York.

Steele, C. M., & Josephs, R. A. (1990). Alcoholic myopia: Its prized and dangerous effects. American Psychologist, 45, 921-933.

Striegel-Moore, R. H., & Huydic, E. S. (1993). Problem drinking and symptoms of disordered eating in female high school students. International Journal of Eating Disorders, 14, 417-425.

Telch, C. F. (1997). Skills training treatment for adaptive affect regulation in women with binge-eating disorder. International Journal of Eating Disorders, 22, 77-81.

Vanderlinden, J., & Vandereycken, W. (1997). Trauma, Dissociation, and Impulse Dyscontrol in the Eating Disorders. Bristol, PA: Brunner Mazel.

Vanderlinden, J., Vandereycken, W., van Dyck, R., & Vertommen, H. (1993). Dissociative experiences and trauma in eating disorders. International Journal of Eating Disorders, 13, 187-193.

Waller, G., & Meyer, C. (1997). Cognitive avoidance of threat cues: Association with Eating Disorder Inventory scores among a non-eating-disordered population. International Journal of Eating Disorders, 22, 299-308.

Waller, G., Ohanian, V., Meyer, C., & Osman, S. (in press). Cognitive content among bulimic women: The role of core beliefs. International Journal of Eating Disorders.

Waller, G., Quinton, S., & Watson, D. (1995). Processing of threat-related information by women with bulimic eating attitudes. International Journal of Eating Disorders, 18, 189-193.

Waller, N. G., Putnam, F. W., & Carlson, E. B. (1996). Types of dissociation and dissociative types: A taxometric analysis of dissociative experiences. Psychological Methods, 1, 300-321.

Wilson, G. T. (1999). Cognitive behaviour therapy for eating disorders: Progress and problems. Behaviour Research and Therapy, 37, S79-S95.

Young, J. E. (1994). Cognitive Therapy for Personality Disorders: A Schema-Focused Approach (2nd ed.). Sarasota, FL: Professional Resource Press.

Table I – Descriptive characteristics and scores on psychometric instruments for the non-clinical and bulimic women. Groups are compared using t-tests (equal variances assumed unless indicated otherwise).

	Group					
	Non-clinical		Bulimic		t-test	
	Mean	(SD)	Mean	(SD)	t	p
N	34		22			
Age	25.60	(4.72)	25.10	(4.81)	0.43	NS
Mill-Hill Scale	58.59	(3.30)	56.14	(8.58)	1.50	NS
Bulimic Investigatory Test						
Symptom scale	3.35	(2.33)	24.00	(2.79)	29.90	.001
Severity scale	-	-	13.18	(4.76)	-	-
Dissociative Experiences Scale						
Total[1]	6.23	(4.17)	29.48	(20.66)	5.21	.001
Taxon[1]	2.13	(2.66)	27.22	(22.25)	5.26	.001
Impulsive Behaviour Scale						
Total[1]	1.30	(0.15)	2.31	(0.66)	7.01	.001
Internally-directed[1]	1.32	(0.15)	2.48	(0.84)	6.42	.001
Externally-directed[1]	1.29	(0.17)	2.18	(0.63)	6.46	.001

[1] Equal variances not assumed

Table II – Anagram solution times (secs) for the non-clinical and bulimic women. Groups are compared using t-tests (equal variances assumed unless indicated otherwise).

	Group					
	Non-clinical		Bulimic		t-test	
	Mean	(SD)	Mean	(SD)	t	p
Anagram solution times						
Neutral [1]	6.17	(4.37)	8.73	(6.34)	1.66	NS
Ego-threat	12.17	(9.37)	13.76	(10.28)	0.60	NS
Difference score	6.00	(7.72)	5.03	(6.92)	0.48	NS

[1] Equal variances not assumed

Table III – Association (one-tailed Pearson's r) of schema avoidance (performance on anagram tasks) with age and with scores on the Mill Hill Vocabulary Scale and on measures of bulimic pathology (BITE), impulsivity (IBS), and dissociation (DES).

	Group					
	Non-clinical (N = 34)			Bulimic (N = 22)		
Anagram task	Neutral	Ego-threat	Difference	Neutral	Ego-threat	Difference
Age	-0.03	0.15	0.20	-0.21	0.13	0.39
Mill Hill Scale	-0.29 *	-0.56 **	-0.52 **	-0.25	-0.32	-0.25
BITE symptom	0.02	-0.10	-0.13	-0.02	-0.06	-0.06
BITE severity	-	-	-	0.20	0.09	-0.05
IBS total	0.19	0.01	-0.10	0.15	0.24	0.22
IBS internally-directed	0.05	0.00	-0.26	0.15	0.20	0.16
IBS externally-directed	0.26	0.01	-0.13	0.13	0.24	0.25
DES Total	0.46 **	0.06	-0.19	0.28	0.42 *	0.36 *
DES Taxon	0.64 **	0.23	-0.09	0.35	0.53**	0.46 *

* $p < .05$; ** $p < .01$

Table IV – Descriptive characteristics and scores on psychometric instruments for those with low versus high levels of externally-directed impulsive behaviour. Groups are compared using t-tests (equal variances assumed).

	Low externally-directed IBS		High externally-directed IBS		t-test	
Non-clinical group	Mean	(SD)	Mean	(SD)	t	p
N	21		13			
BITE symptoms	3.05	(2.18)	3.85	(2.58)	0.97	NS
DES-Total	5.24	(3.34)	7.83	(4.96)	1.82	.04
DES-Taxon	1.79	(2.61)	2.69	(2.74)	0.97	NS
Anagram: neutral	5.67	(3.85)	6.98	(5.18)	0.85	NS
Anagram: ego-threat	12.81	(9.37)	11.14	(9.65)	0.50	NS
Anagram: difference	7.14	(7.53)	4.16	(7.98)	1.01	NS
Bulimic group						
N	11		11			
BITE severity	13.36	(5.07)	13.0	(4.67)	0.18	NS
BITE symptoms	23.09	(2.81)	24.91	(2.59)	1.58	NS
DES-Total	20.03	(17.96)	38.93	(19.42)	2.37	.03
DES-Taxon	18.75	(19.23)	35.68	(22.64)	1.89	NS
Anagram: neutral	8.35	(5.72)	9.10	(7.16)	0.27	NS
Anagram: ego-threat	13.25	(8.92)	14.27	(11.90)	0.23	NS
Anagram: difference	4.89	(5.02)	5.17	(8.68)	0.09	NS

Table V – Descriptive characteristics and scores on psychometric instruments for those with low versus high levels of internally-directed impulsive behaviour. Groups are compared using t-tests (equal variances assumed).

	Low internally-directed IBS		High internally-directed IBS		t-test	
Non-clinical group	Mean	(SD)	Mean	(SD)	t	p
N	18		16			
BITE symptoms	2.67	(2.30)	4.13	(2.19)	1.89	.03
DES-Total	4.70	(3.20)	7.95	(4.54)	2.43	.01
DES-Taxon	2.08	(2.71)	2.19	(2.68)	0.11	NS
Anagram: neutral	6.51	(5.01)	5.78	(3.66)	0.48	NS
Anagram: ego-threat	14.10	(11.67)	9.99	(5.42)	1.34	NS
Anagram: difference	7.59	(8.54)	4.22	(6.50)	1.28	NS
Bulimic group						
N	11		11			
BITE severity	12.27	(3.72)	14.09	(5.65)	0.89	NS
BITE symptoms	23.45	(3.14)	24.55	(2.42)	0.91	NS
DES-Total	23.34	(21.44)	35.62	(18.80)	1.43	NS
DES-Taxon	21.59	(23.38)	32.84	(20.59)	1.20	NS
Anagram: neutral	7.43	(3.03)	10.02	(6.65)	0.96	NS
Anagram: ego-threat	12.70	(10.40)	14.82	(10.55)	0.47	NS
Anagram: difference	5.23	(4.47)	4.80	(8.97)	0.16	NS

Cognitive process in bulimic disorders: The role of schema avoidance and impulsivity

Critical review of the dissertation

The present dissertation developed out of a general interest in the eating disorders. A number of authors have reported that treatments based on traditional cognitive behavioural models of bulimia (focusing on issues of food, weight and shape) are effective in only 50% of cases. This suggests that current models of bulimia and its treatment need to be revised. It has also been reported that a high prevalence of bulimic women engage in other impulsive behaviours, and that this combination of bulimia and other impulsive behaviours is predictive of poor outcome. However, there appeared to be a gap in our knowledge as to the impact of multiple impulsive behaviours on bulimia. Recent research has highlighted the role of negative emotion as an antecedent to bulimic behaviours. It was hypothesised that both bulimic and other impulsive behaviours serve to avoid triggering or experiencing such emotions. However, there was little evidence of this schema-avoidance within bulimic populations.

Based on this theoretical background, the literature review (*Threat processing in women with bulimia*) addressed the question of how women with bulimia process threatening material. A useful model for understanding threat processing (Beck & Clark, 1997) was reviewed, and its application to bulimia was discussed. The model highlighted two processes involved in the maintenance of pathology – attentional biases and schema avoidance. A review of the literature revealed a large body of evidence for attentional biases, but much less on schema-

avoidance (and particularly cognitive avoidance). The empirical literature that does exist suggested that bulimic and impulsive behaviours result from, or enable, an 'escape from negative self-awareness'. However, there remains a gap in our knowledge as to the cause of this negative self-evaluation. This led directly to the questions addressed in the empirical paper, which assessed whether bulimic women with low and high levels of impulsivity engage in schema avoidance of threats to the self.

While the literature review addresses the point of binge-eating, the empirical paper focused on women with eating disorders where bingeing was a diagnostic symptom. This shift from behavioural to diagnostic considerations was due to the pragmatics of accessing a bingeing population of an eating disorder service. Therefore, the findings of this study appear to relate to diagnosable disorders (bulimia nervosa, binge eating disorder and anorexia with binge-purge subtype), but it cannot be assumed that it can be applied to those who binge but do not meet diagnostic criteria. The empirical paper (*Cognitive process in bulimic disorders: Schema avoidance in low-impulsive and high-impulsive cases*) compared bulimic women (with low and high impulsivity) with a non-clinical population on levels of schema-avoidance for ego-threats. Data analyses also compared women who engage in internally-directed (e.g., self-harm) and externally-directed (e.g., sexual promiscuity) impulsive behaviours. The results indicated that there were no differences between the clinical and non-clinical groups in levels of cognitive avoidance and there was no association between cognitive avoidance and general levels of impulsivity. However, a comparison of internally-directed and externally-directed impulsivity did reveal significant differences in levels of schema avoidance (dissociation).

The data could have been analysed using a 2-way anova test rather than independent t-tests. However, since we had stated very clear hypotheses, we would have used planned comparisons anyway. Therefore, we used only independent t-tests. It was anticipated that a larger number of bulimic women would be recruited for the study. However, due to uncontrollable circumstances in one of the services (clinicians leaving the service, or on long-term sick leave, reducing the number of clients seen with eating disorders), larger numbers were not possible. Therefore, the relatively small number of clinical participants reduces the extent to which the results from the empirical study can be generalised. It was also not possible to break down the clinical group into specific bulimic disorders (e.g., bulimia nervosa, binge-eating disorder). Thus, it was not possible to determine differences between these diagnostic categories.

Women in the control group were screened for a history of eating disorders by the interviewer. However, it is possible that some participants may have had an eating disorder, which had not been previously diagnosed, and/or they were not willing to disclose to the interviewer. Therefore, the possibility of the results being influenced by participants within the control group having some form of eating disorder cannot be excluded. Originally, it was intended to analyse the data in terms of uni-impulsive (i.e., bulimia only) and multi-impulsive (i.e., bulimia and other impulsive behaviours) behaviours. However, a review of the literature revealed disparities in what was considered multi-impulsivity. Therefore, to enhance replicability of this study the data were not analysed in this way. Instead, the women were split into those with low and high levels of impulsive behaviour (based on a median split), including internally-directed and externally-directed impulsive behaviours. These splits produced some interesting results, which are

likely to have clinical utility. However, a weakness in grouping these behaviours in this way is that functions cannot be attributed to individual impulsive behaviours.

Finally, the anagram task was used as a measure of cognitive avoidance. However, like many measures of information processing, it can only be hypothesised that this task actually measures cognitive avoidance. Therefore, we have to be cautious in attributing differences in scores on the anagram task to cognitive avoidance. However, the significant correlation between dissociation and the anagram task scores suggests that avoidant behaviours are being measured by this task.

I have learned many things from conducting this research. In particular, I have understood the value of having a supervisor who is interested and knowledgeable in my research area, the need to stay focused in writing up the dissertation (particularly the literature review, in which it was tempting to explore a number of avenues), and the importance of accepting results that do not fit with your original hypotheses. I have (for the most part) enjoyed conducting this research, and look forward to expanding on some of these ideas in the future.

Appendices

Appendix A

Clinical Psychology Review – Instructions to authors

CLINICAL PSYCHOLOGY REVIEW

INSTRUCTIONS TO AUTHORS

AIMS AND SCOPE: *Clinical Psychology Review* publishes substantive reviews of topics germane to clinical psychology. Its purpose is to help clinical psychologists keep up-to-date on relevant issues outside of their immediate areas of expertise by publishing scholarly but readable reviews. Papers cover diverse issues, including: psychopathology, psychotherapy, behavior therapy, behavioral medicine, community mental health, assessment, and child development.

Reviews on other topics, such as psychophysiology, learning therapy, and social psychology, often appear if they have a clear relationship to research or practice in clinical psychology. Integrative literature reviews and summary reports of innovative ongoing clinical research programs are also sometimes published. Reports on individual research studies are not appropriate.

SUBMISSION REQUIREMENTS: All manuscripts should be submitted to Alan S. Bellack, The University of Maryland at Baltimore, Department of Psychiatry, 737 W. Lombard St., Suite 551, Baltimore, MD 21201, USA. Submit three (3) high-quality copies of the entire manuscript; the original is not required. Allow ample margins and type double-space throughout. Papers should not exceed 50 pages (including references). One of the paper's authors should enclose a letter to the Editor, requesting review and possible publication; the letter must also state that the manuscript has not been previously published and has not been submitted elsewhere. One author's address (as well as any upcoming address change), telephone and FAX numbers, and E-mail address (if available) should be included; this individual will receive all correspondence from the Editor and Publisher.

Papers accepted for *Clinical Psychology Review* may not be published elsewhere in any language without written permission from the author(s) and publishers. Upon acceptance for publication, the author(s) must complete a Transfer of Copyright Agreement form.

COMPUTER DISKS: Authors are encouraged to submit a 3.5" HD/DD computer disk to the editorial office. Please observe the following criteria: (1) Send only hard copy when first submitting your paper. (2) When your paper has been refereed, revised if necessary, and accepted, send a disk containing the final version with the final hard copy. If the disk cannot be converted, the hard copy will be used. (3) Specify what software was used, including which release, e.g., WordPerfect 6.0a. (4) Specify what computer was used (IBM compatible PC, Apple Macintosh, etc.). (5) The article file should include all textual material (text, references, tables, figure captions, etc.) and separate illustration files, if available. (6) The file should follow the general instructions on style/arrangement and, in particular, the reference style of this journal as given in the Instructions to Contributors. (7) The file should be single-spaced and should use the wrap-around end-of-line feature, i.e., returns at the end of paragraphs only. Place two returns after every element such as title, headings, paragraphs, figure and table call-outs. (8) Keep a back-up disk for reference and safety.

TITLE PAGE: The title page should list (1) the article; (2) the authors' names and affiliations at the time the work was conducted; (3) a concise running title; and (4) an unnumbered footnote giving an address for reprint requests and acknowledgments.

ABSTRACT: An abstract should be submitted that does not exceed 200 words in length. This should be typed on a separate page following the title page.

KEYWORDS: Authors should include up to six keywords with their article. Keywords should be selected from the APA list of index descriptors, unless otherwise agreed with the Editor.

STYLE AND REFERENCES: Manuscripts should be carefully prepared using the *Publication Manual of the American Psychological Association*, 4th ed., 1994, for style. The reference section must be double spaced, and all works cited must be listed. Avoid abbreviations of journal titles and incomplete information.

Reference Style for Journals:

Raymond, M. J. (1964). The treatment of addiction by aversion conditioning with apomorphine. *Behavior Research and Therapy, 3*, 287–290.

For Books:

Barlow, D. H., Hayes, S. C., & Nelson, R. O. (1984). *The scientist practitioner: Research and accountability in clinical and educational settings*. Elmsford, NY: Pergamon.

TABLES AND FIGURES: Do not send glossy prints, photographs or original artwork until acceptance. Copies of all tables and figures should be included with each copy of the manuscript. Upon acceptance of a manuscript for publication, original, camera-ready photographs and artwork must be submitted, unmounted and on glossy paper. Photocopies, blue ink or pencil are not acceptable. Use black india ink and type figure legends on a separate sheet. Write the article title and figure number lightly in pencil on the back of each.

PAGE PROOFS AND OFFPRINTS: Page proofs of the article will be sent to the corresponding author. These should be carefully proofread. Except for typographical errors, corrections should be minimal, and rewriting the text is not permitted. Corrected page proofs must be returned within 48 hours of receipt. Along with the page proofs, the corresponding author will receive a form for ordering offprints and full copies of the issue in which the article appears. Twenty-five (25) free offprints are provided; orders for additional offprints must be received before printing in order to qualify for lower publication rates. All coauthor offprint requirements should be included on the offprint order form.

COPYRIGHT: Publications are copyrighted for the protection of the authors and the publisher. A Transfer of Copyright Agreement will be sent to the author whose manuscript is accepted. The form must be completed and returned to the publisher before the article can be published.

Appendix B

Cognitive Therapy and Research – Instructions to contributors

Instructions to Contributors: Cognitive Therapy and Research

1. Manuscripts, in quintuplicate and in English, should be submitted to:

Dr. Rick E. Ingram
Editor, *Cognitive Therapy and Research*
San Diego State University
Doctoral Training Facility
6363 Alvarado Court #103
San Diego, California 92120

2. Submission is a representation that the manuscript has not been published previously and is not currently under consideration for publication elsewhere. A statement transferring copyright from the authors (or their employers, if they hold the copyright) to Plenum Publishing Corporation will be required before the manuscript can be accepted for publication. The Editor will supply the necessary forms for this transfer. Such a written transfer of copyright, which previously was assumed to be implicit in the act of submitting a manuscript, is necessary under the U.S. Copyright Law in order for the publisher to carry through the dissemination of research results and reviews as widely and effectively as possible.

3. Type double-spaced on one side of 8½ × 11 inch white paper using generous margins on all sides, and submit the original and four copies (including, where possible, copies of all illustrations and tables).

4. A title page is to be provided and should include the title of the article, author's name (no degrees), author's affiliation, and suggested running head. The affiliation should comprise the department, institution (usually university or company), city, and state (or nation) and should be typed as a footnote to the author's name. The suggested running head should be less than 80 characters (including spaces) and should comprise the article title or an abbreviated version thereof. For office purposes, the title page should include the complete mailing address, telephone number, and e-mail address (if applicable) of the one author designated to review proofs.

5. An abstract following APA guidelines is to be provided, preferably no longer than 75–150 words.

6. A list of 4–5 key words is to be provided directly below the abstract. Key words should express the precise content of the manuscript, as they are used for indexing purposes.

7. Illustrations (photographs, drawings, diagrams, and charts) are to be numbered in one consecutive series of Arabic numerals. The captions for illustrations should be typed on a separate sheet of paper. Photographs should be large, glossy prints, showing high contrast. Drawings should be prepared with india ink. Either the original drawings or good-quality photographic prints are acceptable. Identify figures on the back (lightly in pencil) with author's name and number of the illustration.

8. Tables should be numbered (preferably with Roman numerals) and referred to by number in the text. Each table should be typed on a separate sheet of paper.

9. List references alphabetically at the end of the paper and refer to them in the text by name and year in parentheses.

10. Use of footnotes should be minimal. When their use is absolutely necessary, footnotes should be numbered consecutively using Arabic numerals and should be typed on a separate sheet at the end of the paper. Use the appropriate superscript numeral for citation in the text.

11. In general, the journal follows the recommendations of the 1994 *Publication Manual* of the American Psychological Association (Fourth Edition), and it is suggested that contributors refer to this publication.

12. Authors are encouraged to condense reports as much as possible and to be ready to provide more extensive details upon request. To assist in the standardization of assessment and treatment replications, authors of clinical outcome studies are required to submit a copy of their treatment manual and specific scoring procedures with the manuscripts. Topical relevance, methodological accuracy, and clarity of reporting (for both procedures and outcome) are of critical importance in experimental studies. Particular attention should be given to such considerations as the maximization of internal and external validity, the optimal use of multimethod assessment, and a comprehensive reporting of results. Authors will be responsible for providing readers with copies of raw data, treatment and scoring manuals, and relevant experimental materials upon request (with incurred expenses accruing to the requestor). Case studies and brief reports should communicate important and heuristic observations, such as replication attempts, innovative techniques, and successful examples of how scientific research can be effectively integrated with clinical responsibilities.

13. Authors requesting blind review should submit the manuscript in a form appropriate to this process (see the APA *Publication Manual*). Every effort will be made to expedite feedback to the author and to effect rapid publication of accepted manuscripts.

14. After a manuscript has been accepted for publication and after all revisions have been incorporated, manuscripts may be submitted to the Editor's Office on personal-computer disks. Label the disk with identifying information—kind of computer used, kind of software and version number, disk format and file name of article, as well as abbreviated journal name, authors' last names, and (if room) paper title. Package the disk in a disk mailer or protective cardboard. The disk *must* be the one from which the accompanying manuscript (finalized version) was printed out. The Editor's Office cannot accept a disk without its accompanying, matching hard-copy manuscript. Disks will be used on a case-by-case basis—where efficient and feasible.

15. The journal makes no page charges. Reprints are available to authors, and order forms with the current price schedule are sent with proofs.

Appendix C (i)

University of Southampton ethical approval

University of Southampton

Department of Psychology

University of Southampton
Highfield
Southampton
SO17 1BJ
United Kingdom

Telephone +44 (0)23 8059 5000
Fax +44 (0)23 8059 4597
Email

FAO Chris Ainsworth
Clinical Psychology Department
University of Southampton
Highfield
Southampton

29th July 1999

Dear Chris,

I am writing to confirm you that your ethical application titled, "The relationship between cognitive avoidance and dissociation in bulimic women who exhibit uni-impulsive behaviours", has been given approval by the department.

Should you require any further information, please do not hesitate in contacting me on (01703) 593995.

Yours sincerely,

KMSmith

Kathryn Smith
Academic Secretary

Appendix C (ii)

Isle of Wight Health Authority ethical approval

ISLE OF WIGHT HEALTH AUTHORITY

LOCAL RESEARCH ETHICS COMMITTEE

Chairman: Mrs Denise Grannum

DG/sjb

16 August 1999

Mr C Ainsworth
Trainee Clinical Psychologist
The Gables
Halberry Lane
Newport
Isle of Wight
PO30

Dear Mr Ainsworth

PROTOCOL NO: 16/99 - COGNITIVE AVOIDANCE, DISSOCIATION AND IMPULSIVITY IN BULIMIA

Thank you for your above submission and attending the Ethics Committee meeting on Friday 13 August 1999. I confirm that the Committee gave their approval for your submission to proceed.

We wish you every success with your study and would ask you to inform us of the outcome in the future.

If, for any reason, you cannot undertake your study, please inform the Committee, quoting the protocol number and the date of approval.

I enclose a copy of the Ethics Committee Composition.

Yours sincerely

Denise P. Grannum

DENISE GRANNUM
Chairman - LREC

G:\LREC\PROTlett.DOC

Isle of Wight Local Research Ethics Committee, Isle of Wight Health Authority, Whitecroft, Sandy Lane, Newport, Isle of Wight, P030 3ED
Secretary: Mrs Shirley Butchers - 01983 535403

Appendix C (iii)

St George's Healthcare ethical approval

St George's Healthcare

St. George's Healthcare NHS Trust
St. George's Hospital
Blackshaw Road, London SW17 0QT
Telephone: 0181-672 1255
Fax: 0181-672 5304

Our Ref: IAS/jlr/99.96.1

5 January 2000

Mr Chris Ainsworth
Trainee Clinical Psychologist
Isle of Wight Healthcare NHS Trust
Island Clinical Psychology Service
The Gables, Halberry Lane
Fairlee, Newport
Isle of Wight PO30 2ER

Dear Mr Ainsworth,

Re: The relationship between cognitive avoidance and dissociation in bulimic women who exhibit uni-impulsive and multi-impulsive behaviours - 99.96.1

Thank you for your letter of 9 December, which satisfactorily answers the queries raised by the Committee. I am now happy to give final ethical approval for the above-named study to proceed.

Yours sincerely

Canon Ian Ainsworth-Smith
Chairman
Local Research Ethics Committee

Please Note: All research should be conducted in accordance with the guidelines of the Ethical Committee; the reference number allocated to the project should be used in all correspondence with the Committee and the Committee should be informed:

(a) when the project is complete.

(b) what stage the project is at one year from today's date.

(c) if any alterations are made to the treatment or protocol which might have affected ethical approval being granted.

(d) all investigators whose projects have been approved by this Committee are required to report at once any adverse experience affecting subjects in the study.

Appendix D (i)

Information sheet – clinical group

Isle of Wight Healthcare NHS Trust
Island Clinical Psychology Service
The Gables, Halberry Lane
Fairlee, Newport
Isle of Wight PO30 2ER

Tel: 01983 521464 or 525326
Fax: 01983 521427

Participant Information Sheet

Study Title: Cognitive avoidance, dissociation, and impulsivity in bulimia.

You are being invited to take part in research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives, and your GP if you wish. If there is anything that is not clear or if you would like more information, please feel free to contact me. Thank you for reading this.

I am a trainee clinical psychologist based at the University of Southampton. I am carrying out a study to investigate the relationship between cognitive avoidance and dissociation in women with bulimia.

Cognitive avoidance is a mechanism whereby an individual processes information more slowly or selectively. It usually occurs when the information is threatening to the individual. Cognitive avoidance therefore, aims to protect the individual by blocking this threat.

Dissociation describes a failure to integrate information, experiences and perceptions. Parts of consciousness that would normally be integrated are not associated with each other in the way that one would expect. This results in memory lapses, feeling 'detached' from the world, and becoming absorbed in activities or thought.

Dissociation is perfectly normal and is present to some degree in all of us. However, at very high levels it can be problematic. At these levels, it is found in many psychological and psychiatric problems.

As yet, we do not know whether cognitive avoidance and dissociation are related processes. The aim of this study is to determine the relationship of these processes in females with bulimic and other impulsive behaviours. This will enable more effective assessment and treatment procedures to be developed.

You have been chosen to take part in this research because you have recently attended the eating disorder clinic at St. Georges Hospital. All patients attending the clinic are being asked if they would like to participate in this research.

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This will not affect the standard of care you receive.

If you agree to take part in this research, you will be required to complete a simple anagram task and questionnaires, which shouldn't be distressing in any way. An anagram is a word that is formed by rearranging the letters of another word. For example, 'OPHS' can be rearranged to form the word 'SHOP'. The tasks should take approximately 30-40 minutes.

If you require any further information, or wish to know the results of this study please contact:

Chris Ainsworth
Training Course in Clinical Psychology,
University of Southampton,
Southampton, SO17 1BJ
Tel: 01703 595320

Appendix D (ii)

Information sheet – non-clinical group

Isle of Wight Healthcare NHS Trust
Island Clinical Psychology Service
The Gables, Halberry Lane
Fairlee, Newport
Isle of Wight PO30 2ER

Tel: 01983 521464 or 525326
Fax: 01983 521427

Participant Information Sheet

Study Title: Cognitive avoidance, dissociation, and impulsivity in bulimia.

You are being invited to take part in research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with friends, relatives, and your GP if you wish. If there is anything that is not clear or if you would like more information, please feel free to contact me. Thank you for reading this.

I am a trainee clinical psychologist based at the University of Southampton. I am carrying out a study to investigate the relationship between cognitive avoidance and dissociation in women with bulimia.

Cognitive avoidance is a mechanism whereby an individual processes information more slowly or selectively. It usually occurs when the information is threatening to the individual. Cognitive avoidance therefore, aims to protect the individual by blocking this threat.

Dissociation describes a failure to integrate information, experiences and perceptions. Parts of consciousness that would normally be integrated are not associated with each other in the way that one would expect. This results in memory lapses, feeling 'detached' from the world, and becoming absorbed in activities or thought.

Dissociation is perfectly normal and is present to some degree in all of us. However, at very high levels it can be problematic. At these levels, it is found in many psychological and psychiatric problems.

As yet, we do not know whether cognitive avoidance and dissociation are related processes. The aim of this study is to determine the relationship of these processes in females with bulimic and other impulsive behaviours. This will enable more effective assessment and treatment procedures to be developed.

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

If you agree to take part in this research, you will be required to complete a simple anagram task and questionnaires, which shouldn't be distressing in any way. An anagram is a word that is formed by rearranging the letters of another word. For example, 'OPHS' can be rearranged to form the word 'SHOP'. The tasks should take approximately 30-40 minutes.

If you require any further information, or wish to know the results of this study please contact:

Chris Ainsworth
Training Course in Clinical Psychology,
University of Southampton,
Southampton, SO17 1BJ
Tel: 01703 595320

Appendix E

Consent form

Isle of Wight Healthcare NHS Trust
Island Clinical Psychology Service
The Gables, Halberry Lane
Fairlee, Newport
Isle of Wight PO30 2ER

Tel: 01983 521464 or 525326
Fax: 01983 521427

Consent Form

Study Title: The relationship between cognitive avoidance and dissociation in bulimic women who exhibit uni-impulsive and multi-impulsive behaviours.

Participants are free to withdraw from this study at any time. This will not influence any current or future treatment.

Please complete the following:

	Circle Response
Have you read the participant information sheet?	Yes / No
Have you had opportunities to ask questions and discuss the study?	Yes / No
Have you received enough information about the study?	Yes / No
Do you agree to your GP being informed that you are taking part in this research? (GP's will not be informed of individual results).	Yes/No
Do you agree to take part in this research?	Yes / No

Signed ..... Date .....

Name (in Block Capitals) .....

Appendix F

Bulimic Investigatory Test, Edinburgh

BITE

Instructions

Please complete the questionnaire, by circling either YES or NO, based on your feelings and behaviour over the past three months.

---

1. Do you have a regular daily eating pattern? YES NO

2. Are you a strict dieter? YES NO

3. Do you feel a failure if you break your diet once? YES NO

4. Do you count the calories of everything you eat, even when you are not on a diet? YES NO

5. Do you ever fast for a whole day? YES NO

6. If yes how often is this? (Circle number)

5	4	3	2	1
Every second day	2-3 times a week	Once a week	Now and then	Have once

7. Do you do any of the following to help you lose weight? (circle number)

	Never	Occasionally	Once a week	2-3 times a week	Daily	2-3 times a day	5+ times a day
Take diet pills	0	2	3	4	5	6	7
Take diuretics	0	2	3	4	5	6	7
Take laxatives	0	2	3	4	5	6	7
Make yourself vomit	0	2	3	4	5	6	7

8. Does your pattern of eating severely disrupt your life? YES NO

9. Would you say that food dominated your life? YES NO

10. Do you ever eat and eat until you are stopped by physical discomfort? YES NO

11. Are there times when all you can think about is food? YES NO

12. Do you eat sensibly in front of others and make up for it in private? YES NO

13. Can you always stop eating when you want to? YES NO

14. Do you ever experience overpowering urges to eat and eat and eat? YES NO

15. When you are feeling anxious do you tend to eat a lot? YES NO

16. Does the thought of becoming fat terrify you? YES NO

18. Are you ashamed of your eating habits? YES NO

19.Do you worry that you have no control over how much you eat? YES NO

20. Do you turn to food for comfort? YES NO

21. Are you able to leave food on the plate at the end of a meal? YES NO

22. Do you deceive people about how much you eat? YES NO

23. Does how hungry you feel determine how much you eat? YES NO

24. Do you binge on large amounts of food? YES NO

25. If yes, do such binges leave you feeling miserable? YES NO

26. If you do binge, is this only when you are alone? YES NO

27. If you do binge, how often is this? (Circle number)

1	2	3	4	5	6
Hardly ever	Once a month	Once a week	2-3 times a week	Daily	2-3 times a day

28. Would you go to great lengths to satisfy an urge to binge? YES NO

29. If you overeat, do you feel very guilty? YES NO

30. Do you eat in secret? YES NO

31. Are your eating habits what you would consider to be normal? YES NO

32. Would you consider yourself to be a compulsive eater? YES NO

33. Does your weight fluctuate by more than 5 pounds in a week? YES NO

Appendix G

Impulsive Behaviour Scale

Impulsive Behaviour Scale

Please, answer the following questions for any time in the past :

		Never	Once	On occasion (2-3 times)	Sometimes (4-20 times)	Regularly (+ than 20)
1	Have you ever overdosed on prescription or illegal drugs ?	1	2	3	4	5
2	Have you been sexually "promiscuous" ?	1	2	3	4	5
3	Have you had any self-mutilation thoughts and impulses (without taking action) ?	1	2	3	4	5
4	Have you had times when you've consumed too much alcohol for your own good ?	1	2	3	4	5
5	Have you had sex with someone you didn't necessarily want to have sex with ?	1	2	3	4	5
6	Have people told you that you're a daredevil type or that you take too many risks ?	1	2	3	4	5
7	Have you had any suicide gestures (non - lethal) ?	1	2	3	4	5
8	Have you been to the doctor or hospital as a result of a self-harm incident ?	1	2	3	4	5
9	Have you had abused laxatives, diuretics or diet pills ?	1	2	3	4	5
10	Have you stolen personal items or money from acquaintances, friends or family ?	1	2	3	4	5
11	Have you driven under the influence of drugs and/or alcohol ?	1	2	3	4	5
12	Have you made any suicide attempts ?	1	2	3	4	5
13	Have you engaged in unsafe sex ?	1	2	3	4	5
14	Have you been accident prone, that is been in accidents regularly ?	1	2	3	4	5
15	Have you had any suicidal thoughts and impulses (without taking action) ?	1	2	3	4	5
16	Have you eaten food in a grocery market before having the chance to pay for it ?	1	2	3	4	5
17	Have you times when you've taken too many recreational drugs ?	1	2	3	4	5
18	Have you been known to put yourself physically to the limit ?	1	2	3	4	5
19	Have you driven reckessly ?	1	2	3	4	5
20	Have you stolen material goods (such as clothes or jewellery) from a store or vender ?	1	2	3	4	5
21	Have you hurt yourself regularly, even if you didn't mean to (e.g. falling, bruising) ?	1	2	3	4	5
22	Have you impulsively spent money on clothes, jewellery or other items ?	1	2	3	4	5
23	Have you self-mutilated (e.g., cutting, pinching, burning yourself) ?	1	2	3	4	5
24	Have you often enjoyed taking risks or engaging in somewhat dangerous activity ?	1	2	3	4	5
25	Have you stolen food ?	1	2	3	4	5

Appendix H

Dissociative Experiences Scale

DES

Eve Bernstein Carlson. Ph. D. Frank W. Putnam. M. D.

Directions

This questionnaire consists of twenty-eight questions about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you **are not** under the influence of alcohol or drugs.

To answer the questions please determine to what degree the experience described in the question applies to you and circle the number to show what percentage of the time you have the experience.

Example

0% (never)	10	20	30	40	50	60	70	80	90	100% (always)

Age: _____

1. **Some people have the experience of driving or riding in a car or bus or subway and suddenly realising that they don't remember what has happened during all or part of the trip. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

2. **Some people find that sometimes they are listening to someone talk and they suddenly realise that they did not hear part or all of what was said. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

3. **Some people have the experience of finding themselves in a place and having no idea how they got there. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

4. **Some people have the experience of finding themselves dressed in clothes that they don't remember putting on. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

5. **Some people have the experience of finding new things among their belongings that they do not remember buying. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

6. **Some people sometimes find that they are approached by people they do not know who call them by another name of insist that they have met them before. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

7. **Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves do something and actually see themselves as if they were looking at another person. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

8. **Some people are told that they sometimes do not recognise friends or family members. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

9. **Some people find that they have no memory for some important events in their lives (for example a wedding, or graduation). Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

10. **Some people have the experience of being accused of lying when they do not think that they have lied. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

11. **Some people have the experience of looking in a mirror and not recognising themselves. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

12. **Some people have the experience of feeling that other people, objects, and the world around them are not real. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

13. **Some people have the experience of feeling that their body does not seem to belong to them. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

14. **Some people have the experience of sometimes remembering a past event so vividly that they feel as if they were reliving that event. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

15. **Some people have the experience of not being sure whether things that they remember happening really did happen or whether they just dreamed them. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

16. **Some people have the experience of being in a familiar place but finding it strange and unfamiliar. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

17. **Some people find that when they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

18. **Some people find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

19. **Some people find that they are sometimes able to ignore pain. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

20. **Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

21. **Some people sometimes find that when they are alone they talk out loud to themselves. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

22. **Some people find that in one situation they may act so differently compared with another situation that they feel almost as if they were two different people. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

23. **Some people sometimes find that in certain situations they are able to do things with amazing ease and spontaneity that would really be difficult for them (for example, sports, work, social situations, etc.). Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

24. **Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

25. **Some people find evidence that they have done things that they do not remember doing. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

26. **Some people sometimes find writings, drawings, or notes among their belongings that they must have done but cannot remember doing. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

27. **Some people sometimes find that they hear voices inside their head that tell them to do things or comment on things that they are doing. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

28. **Some people sometimes feel as if they are looking at the world through a fog so that people and objects appear far away or unclear. Circle a number to show what percentage of the time this happens to you.**

0% 10 20 30 40 50 60 70 80 90 100%

Appendix I

Mill Hill Vocabulary Scale

Set A

In each group below, carefully fill in the circle like this ● next to the word that is **closest** in meaning to the word in heavy type above the group. Make sure you fill in one circle only. If you make a mistake, put a cross through the incorrect answer like this ⊗ and fill in the correct one. If you don't know the answer, have a guess or move on to the next question. The first one has been done for you as an example. Work downwards through each column.

1 Rage
- ○ crease
- ○ invite
- ○ rain
- ○ love
- ● anger
- ○ hoist

2 Squabble
- ○ saw
- ○ bubble
- ○ mould
- ○ lift
- ○ photo
- ○ quarrel

3 Connect
- ○ join
- ○ lace
- ○ flint
- ○ field
- ○ bean
- ○ accident

4 Provide
- ○ harmonise
- ○ hurt
- ○ annoy
- ○ divide
- ○ commit
- ○ supply

5 Brag
- ○ choose
- ○ hope
- ○ lag
- ○ boast
- ○ stone
- ○ jerk

6 Shrivel
- ○ linger
- ○ volunteer
- ○ shiver
- ○ heed
- ○ wither
- ○ haunt

7 Mingle
- ○ interfere
- ○ mix
- ○ gamble
- ○ press
- ○ declare
- ○ remark

8 Stance
- ○ partition
- ○ glance
- ○ position
- ○ fixed
- ○ slope
- ○ grief

9 Verify
- ○ dedicate
- ○ chastise
- ○ correct
- ○ confirm
- ○ change
- ○ purify

10 Formidable
- ○ unexpired
- ○ feasible
- ○ tremendous
- ○ ravishing
- ○ orderly
- ○ remembrance

11 Thrive
- ○ think
- ○ thrash
- ○ blame
- ○ try
- ○ reap
- ○ flourish

12 Docile
- ○ meek
- ○ dominant
- ○ careless
- ○ passionate
- ○ homely
- ○ dumb

13 Virile
- ○ demanding
- ○ concise
- ○ vulgar
- ○ familiar
- ○ manly
- ○ barbarous

14 Surmount
- ○ mountain
- ○ concede
- ○ appease
- ○ overcome
- ○ descend
- ○ snub

15 Sultry
- ○ instinctive
- ○ sulky
- ○ trivial
- ○ solid
- ○ severe
- ○ muggy

16 Criterion
- ○ superior
- ○ certitude
- ○ clarion
- ○ critic
- ○ standard
- ○ crisis

17 Latent
- ○ delayed
- ○ potential
- ○ ingenious
- ○ discharged
- ○ overburdened
- ○ hostile

18 Dwindle
- ○ swindle
- ○ linger
- ○ diminish
- ○ pander
- ○ wheeze
- ○ compare

19 Construe
- ○ prophesy
- ○ contradict
- ○ scatter
- ○ interpret
- ○ collect
- ○ anneal

20 Efface
- ○ delete
- ○ disgust
- ○ adjoin
- ○ rotate
- ○ mark
- ○ ascend

21 Trumpery
- ○ etiquette
- ○ worthless
- ○ amusement
- ○ heraldry
- ○ highest
- ○ final

22 Perpetrate
- ○ appropriate
- ○ propitiate
- ○ commit
- ○ control
- ○ deface
- ○ pierce

23 Glower
- ○ scowl
- ○ disguise
- ○ aerate
- ○ shine
- ○ gloat
- ○ extinguish

24 Sensual
- ○ controversial
- ○ necessary
- ○ rational
- ○ careful
- ○ crucial
- ○ carnal

25 Obdurate
- ○ formidable
- ○ hesitant
- ○ exorbitant
- ○ permanent
- ○ stubborn
- ○ obsolete

26 Palliate
- ○ regenerate
- ○ alleviate
- ○ stimulate
- ○ qualify
- ○ imitate
- ○ erase

27 Adulate
- ○ increase
- ○ admire
- ○ flatter
- ○ waver
- ○ prosper
- ○ inflate

28 Felicitous
- ○ sincere
- ○ valedictory
- ○ voracious
- ○ faithful
- ○ altruistic
- ○ opportune

29 Ambit
- ○ talisman
- ○ armature
- ○ camber
- ○ confines
- ○ arc
- ○ ideal

30 Recondite
- ○ brilliant
- ○ vindictive
- ○ indifferent
- ○ effervescent
- ○ abstruse
- ○ wise

31 Cachinnation
- ○ guffaw
- ○ conclave
- ○ cunning
- ○ succour
- ○ conjunction
- ○ controversy

32 Exiguous
- ○ exhausting
- ○ indigenous
- ○ scanty
- ○ prodigious
- ○ esoteric
- ○ expedient

33 Putative
- ○ punishable
- ○ supposed
- ○ aggressive
- ○ computable
- ○ worthless
- ○ reconcilable

34 Manumit
- ○ manufacture
- ○ enumerate
- ○ accomplish
- ○ liberate
- ○ emanate
- ○ permit

GO STRAIGHT ON TO SET B

Set B

The first one has been done for you.
Work downwards through each column.

1 Malaria
- ○ basement
- ○ theatre
- ○ ocean
- ● fever
- ○ fruit
- ○ tune

2 Fascinated
- ○ ill-treated
- ○ poisoned
- ○ frightened
- ○ modelled
- ○ charmed
- ○ copied

3 Liberty
- ○ freedom
- ○ rich
- ○ forest
- ○ worry
- ○ serviette
- ○ cheerful

4 Stubborn
- ○ steady
- ○ obstinate
- ○ orderly
- ○ hopeful
- ○ hollow
- ○ slack

5 Precise
- ○ natural
- ○ faulty
- ○ stupid
- ○ exact
- ○ grand
- ○ small

6 Resemblance
- ○ memory
- ○ assemble
- ○ attendance
- ○ fondness
- ○ repose
- ○ likeness

7 Anonymous
- ○ applicable
- ○ insulting
- ○ nameless
- ○ magnificent
- ○ fictitious
- ○ untrue

8 Elevate
- ○ raise
- ○ revolve
- ○ waver
- ○ move
- ○ work
- ○ disperse

9 Task
- ○ horn
- ○ trap
- ○ problem
- ○ game
- ○ jail
- ○ job

10 Courteous
- ○ dreadful
- ○ polite
- ○ curtsey
- ○ proud
- ○ short
- ○ truthful

11 Prosper
- ○ imagine
- ○ succeed
- ○ punish
- ○ propose
- ○ beseech
- ○ trespass

12 Lavish
- ○ unaccountable
- ○ romantic
- ○ extravagant
- ○ selfish
- ○ lawful
- ○ praise

13 Immerse
- ○ frequent
- ○ reverse
- ○ rise
- ○ hug
- ○ dip
- ○ show

14 Conciliate
- ○ congregate
- ○ pacify
- ○ compress
- ○ reverse
- ○ radiate
- ○ strengthen

15 Envisage
- ○ enfeeble
- ○ surround
- ○ activate
- ○ contemplate
- ○ estrange
- ○ regress

16 Amulet
- ○ cameo
- ○ flirtation
- ○ charm
- ○ jacket
- ○ crest
- ○ savoury

17 Garrulous
- ○ talkative
- ○ massive
- ○ ridiculous
- ○ daring
- ○ ugly
- ○ fast

18 Libertine
- ○ profligate
- ○ farrago
- ○ regicide
- ○ rescuer
- ○ canard
- ○ missionary

19 Bombastic
- ○ democratic
- ○ bickering
- ○ destructive
- ○ anxious
- ○ cautious
- ○ pompous

20 Levity
- ○ parsimony
- ○ salutary
- ○ alacrity
- ○ frivolity
- ○ velleity
- ○ tariff

21 Whim
- ○ complain
- ○ tonic
- ○ wind
- ○ noise
- ○ fancy
- ○ rush

22 Ruse
- ○ limb
- ○ trick
- ○ colour
- ○ paste
- ○ burn
- ○ rude

23 Recumbent
- ○ fugitive
- ○ unwieldy
- ○ penitent
- ○ cumbersome
- ○ repelling
- ○ reclining

24 Querulous
- ○ astringent
- ○ petulant
- ○ inquiring
- ○ fearful
- ○ curious
- ○ spurious

25 Temerity
- ○ impermanence
- ○ nervousness
- ○ punctuality
- ○ rashness
- ○ stability
- ○ submissiveness

26 Fecund
- ○ esculent
- ○ profound
- ○ sublime
- ○ optative
- ○ prolific
- ○ salic

27 Abnegate
- ○ contradict
- ○ renounce
- ○ belie
- ○ decry
- ○ execute
- ○ assemble

28 Traduce
- ○ challenge
- ○ suspend
- ○ misrepresent
- ○ attenuate
- ○ establish
- ○ conclude

29 Vagary
- ○ vagabond
- ○ obscurity
- ○ evasion
- ○ caprice
- ○ vulgarity
- ○ fallacy

30 Specious
- ○ fallacious
- ○ palatial
- ○ nutritious
- ○ coeval
- ○ typical
- ○ flexible

31 Sedulous
- ○ rebellious
- ○ complaisant
- ○ seductive
- ○ dilatory
- ○ diligent
- ○ credulous

32 Nugatory
- ○ inimitable
- ○ sublime
- ○ numismatic
- ○ adamant
- ○ contrary
- ○ trifling

33 Adumbrate
- foreshadow
- detect
- elaborate
- protect
- eradicate
- approach

34 Minatory
- implacable
- belittling
- depository
- diminutive
- quiescent
- threatening