

# Cognitive psychopathology: The role of emotion

MICHAEL J. POWER (\*)

## INTRODUCTION

In the field of therapy, cognitive science has given us the many and varied cognitive and cognitive-behavioural therapies. Following the earlier age of American Behaviorism, of course we should be grateful to be given back our *thinking* minds. At least the cognitive and cognitive-behavioural therapies acknowledge that we have thoughts and beliefs and assumptions and schemas. It often makes sense to our clients that they may overvalue one thought at the expense of another, or they may have a mistaken belief about their own worthlessness as people, or they may believe that they are about to die of a heart attack when they are not. We know as clinicians that many of our clients can be helped by examining their cognitions and by examining the possibility that alternative cognitions would be more functional and would help them improve their well-being and general life satisfaction.

Cognitive science and cognitive-behavioural therapies can absolutely be congratulated for the benefits that they have brought to academics, to clinicians, and to clients. But unfortunately something has been left out in these great strides forward – and that is *emotion*. There is a

beginning recognition in the past twenty years or so that cognition is not enough. We may now be able to produce computers that can play a good game of chess, but we have not yet seen a computer commit suicide because it was rejected in love, or take out a gun and shoot someone because of an insult to its mother (or perhaps motherboard?). Much of what we do as humans is motivated by emotion. We build a monument to the person we have loved and lost because we are overwhelmed with grief and want to find a way to express that love and that grief. We strive for wealth, fame, and success because we believe these things will make us happy – whether or not they will, if or when we ever achieve them. We move to another country and learn to speak Russian because we fall in love. We avoid leaving the house at a certain time of day because we hate our neighbours, who in turn leave rubbish in our drive-way because they hate us! We teach our children to look right and left as they cross the road because we are terrified of what might happen to them if they carelessly forget. The list of things that we do that is motivated by emotion is endless; emotions are constantly with us and guiding us. For that is the purpose of emotion. When emotions are functioning well and properly, they are there to help us prioritise, to help us work when we would rather play, to help us choose between otherwise impossible choices, and to help us avoid situations and objects that might be

---

(\*) Clinical and Health Psychology, Edinburgh University & Department of Psychology, Tromsø University. E-mail: mjpower@staffmail.ed.ac.uk

dangerous or unhealthy or disease-ridden. The well-functioning emotion system is there to guide and protect – emotions are the ten commandments of the psychological world. But like any powerful system, the emotion system can run out of control. Danger can be signalled when there is no objective danger – the harmless spider in the bath really does not warrant that level of panic and disgust. Or the person can be so overwhelmed by feelings of despair and self-disgust that they would rather be dead. Or the driver cutting in front of us instantly fills us with an inexplicable feeling of road rage that causes us to put lives in danger.

The purpose of this paper therefore is to continue driving the tide of work that is beginning to appear on the importance of emotion. Our own view is that emotion and cognition, thinking and feeling, are intimately and inextricably tied together (Power & Dalgleish, 2008). However, we believe that the cognitive and cognitive-behavioural therapies would benefit immensely from putting emotion back in place, from putting the horse back in front of the cart, otherwise the cart is simply going to sit there but it is not going to go anywhere. Every cart needs its horse, just as every cognitive system needs its emotion. The horse drives the cart, and emotion drives the cognitive system. Those old enough to remember will recall that this was the original complaint made by American Behaviorists about the cognitive approach – that it left the organism lost in thought. But instead of leaving the organism behaving mindlessly, which is what the behaviorists offered us, the current approach focuses on the motivational role of emotion within the cognitive system. So we have labelled this approach to therapy as *Emotion-focussed cognitive therapy* because whilst we are arguing for the importance of the horse, we also acknowledge the importance of the cart and do not want the horse to run off without it.

However, the relationship between the experience of everyday emotions and their role in psychopathology has been little explored. Most theories of normal everyday emotions are developed in the absence of a consideration of emotional disorders, whereas most theories of emotional disorders focus primarily on single

diagnostic or quasi-diagnostic categories such as “depression”, “anxiety”, and “obsessive-compulsive disorder” (e.g., Power & Dalgleish, 2008). Nevertheless, a brief review of the diagnostic categories in the Diagnostic and Statistical Manual (DSM-IV; American Psychiatric Association, 1994) shows that many of the defining symptoms refer, in one way or another, to problematic emotion states either in their experienced excess (as in “panic”, “mania”, and “delusional guilt”) or in their near-absence (e.g., “flattened affect”) (see Plutchik, 2000, for a detailed analysis). There would seem therefore to be a considerable need both for theories that explore the overlap between normal and abnormal emotion states, and for empirical research that evaluates predicted overlaps between the two (e.g., Power, 2004).

As a precursor to such an exercise however, it must be warned that there can be no simple one-to-one mapping between a diagnosis that referred to a category such as “depression” and the theoretically constituent emotion states that are being referred to here. For example, the DSM-IV category of Major Depressive Episode includes key symptoms of depressed mood, loss of pleasure, feeling sad, feeling empty, irritable mood, inappropriate guilt, feelings of worthlessness, and suicidal feelings. Such a broad range of symptoms clearly emanate from a wide range of potential emotion states and, indeed, contrasting sub-sets may be given the same diagnostic label of “Major Depressive Episode” whilst sharing little in common with each other. In fact, an emotion state analysis, as proposed here, can suggest new diagnostic divisions on theoretical grounds; thus, our analysis of “obsessive-compulsive disorder” suggested two categories, one originating as an anxiety-based problem and one as a disgust-based problem (Power & Dalgleish, 1997), a distinction for which there are now some supportive empirical data (Mancini, Gragnani, & Olimpico, 2001; Phillips, Senior, Fahy, & David, 1998; Sprengelmeyer et al., 1997).

One of the most promising lines of analysis for an exploration of the overlap between emotion states and psychopathology has been through the adaptation of structural models of emotion (e.g., Ekman, 1982; Izard, 1971; Oatley

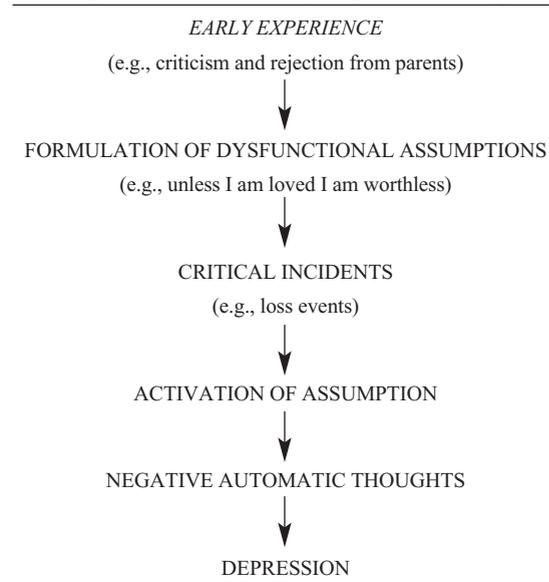
& Johnson-Laird, 1987; Plutchik, 1962, 1990). These theories have espoused a view that there are a limited number of basic emotions from which more complex emotions are derived. Unfortunately, however, there has been no agreement between different theorists about what such a list might be and the proposal itself has of course not been without its critics (e.g., Ortony & Turner, 1990). To give a couple of examples, Ekman's list includes the emotions of anger, sadness, surprise, disgust, happiness, anxiety, and contempt, whereas Izard (1971) also includes the emotions of guilt, interest and shame. Whatever list is (if ever) finally agreed, there does now seem to be agreement that the emotions of anger, disgust, anxiety, happiness and sadness should be included as basic (Oatley & Johnson-Laird, 1987; Power & Dalgleish, 1997). Furthermore, if there are a limited set of basic emotions, then more complex emotions can be derived from these either through "cognitive elaboration" of the relevant basic emotion (e.g., "irritation" or "annoyance" when derived from the basic emotion of "anger"; see Johnson-Laird & Oatley, 1989), or through combinations of basic emotions (e.g., "nostalgia" derived from the basic emotions of "sadness" and "happiness"). One of the purposes therefore of our so-called "Basic Emotions Scale" (BES; Power, 2006) has been to produce a rationally derived scale from these five basic emotions, together with a set of more complex emotions that are based primarily on these emotions. The development and psychometric properties of the BES have been described elsewhere (Power, 2006), though the data presented in that paper were collected from a student population. One of the main descriptive or exploratory purposes of the present paper is to consider briefly a recent paper in which we present data from a primarily clinical population that showed an interesting range of diagnostic categories that might primarily be labelled "emotional disorders" and that would thereby offer interesting analyses of emotion state profiles and their relevance for cognitive psychopathology (see Power & Tarsia, 2007). Before though we consider a specific example of how emotion can be used to improve our understanding of cognitive psychopathology, we will present an overview of the cognitive

approach to psychopathology, in particular, as represented within Beck's influential approach.

*Early or "standard" cognitive-behaviour therapy*

FIGURE 1

*Original Beck model of cognitive therapy*



The early cognitive therapy model of depression presented in Figure 1 is based on Beck, Rush, Shaw, and Emery (1979). The model assumes that early childhood experiences such as critical parents, emotional neglect, and so on lead to the formation of underlying dysfunctional assumptions or schema of the type "I must do everything well in order to be a good person" and "Unless I am loved by everybody, I am worthless". The model assumes that these schemas can remain dormant or latent for many years into adulthood or even older adulthood. However, they can be activated by a matching life event or difficulty that leads to the activation of the schema. For example, a young woman's first serious love affair as a teenager ends in disaster and leaves her feeling completely rejected. Her underlying assumption that she must be loved by everybody otherwise she is worthless is now activated and she becomes preoccupied with thoughts of being a worthless person. Such "negative automatic thoughts" as

Beck calls them, can appear automatically and out of the blue and they lead to downturns in mood and to subsequent depression. The crucial process for the development of depression within the early model is therefore the occurrence of these negative automatic thoughts (NATs) that lead to depression.

Beck initially developed his Cognitive Therapy approach as a short-term here-and-now focussed treatment for depression. Much of the therapeutic focus in early Cognitive Therapy was therefore on the identification and subsequent challenging of these NATs. And for many practitioners, and neophyte Cognitive Therapists, the use of diary sheets on which to record NATs remains at the core of their therapeutic work. The problem however is that depression is far more complex than the swatting of NATs would have us believe; and many new therapists can eventually despair of the complex issues that can be lost behind a wall of diary sheets (that is, if the diaries have been completed in the first place). Let us briefly consider a clinical example:

“Peter was a 33-year old dustman who had been referred by his GP following the break-up of his marriage. He had arrived home unexpectedly one day and found his wife together with the father of a schoolfriend of his daughter’s. He had walked out and vowed never to return. He felt overwhelmed by feelings of disgust and anger especially when he realised that his wife had been having sex with both him and her lover for some months. These realisations left Peter overwhelmed by *feelings* of shame, disgust, and humiliation.”

As part of the initial therapeutic work with Peter, a three-column diary record was implemented; thus, the diary asked Peter to record during the week any difficult situation that he was in, what thoughts occurred to him in that situation, and what his feelings were. The first week he returned to therapy but with a blank diary sheet. He explained that because he knew from the *Coping With Depression* booklet that he had read the week before how important the NATs were, that he had not completed the diary sheet because he had no such thoughts.

The basic principles of Cognitive Therapy were explained to Peter again, and again he went away fully determined to capture any NATS that came his way. The following week Peter returned to therapy with plenty written in his diary sheet apart from in the column “Irrational Thoughts”. For example, he described waking up in the morning and instantly feeling overwhelmed with nausea, humiliation and anger but without having *thought* about anything first. These feelings seemed to be there as he awoke and they did not appear to be triggered by NATs.

It is hard to know from the literature on cognitive therapy how often Cognitive Therapists have patients like Peter whose emotions and moods do not appear to be triggered by reportable NATs. But whether the answer is that there are very many or very few of such NAT-free cases, the fact that a proportion of any Cognitive Therapist’s caseload must consist of such cases raises the question of what therapists do when this happens. Perhaps the comment about Freudian patients that they always came to have Freudian dreams and Jungian patients came to have Jungian dreams might be applicable; perhaps, clients may be suggestible enough to begin to have NATs if you persist long enough pursuing them as a therapist. Of course, we know from the work on false memories that the therapeutic encounter is an extremely powerful one, and that some clients may even falsely recollect memories of abuse, alien abduction, or whatever, if that is the line being pushed by the therapist (e.g., Power, 2002). So having a few negative thoughts is relatively minor compared to alien abduction or imagined abuse.

One of the responses of the cognitive therapy community has been an attempt to de-emphasise NATs and re-focus instead on the putative dysfunctional schemas that were meant to be driving the whole process. Jeff Young (e.g., 1999) took this notion one step further and developed a *Schema-Focused Cognitive Therapy* in which the underlying schemas became the focus of therapy in place of the identification and challenging of NATs. But there is no inherent reason why if NATs have failed to provide the whole story, why schemas should provide the whole story either. Again, there is no question

but that some clients will be helped by the identification and challenging of such underlying schemas, but then when these in turn fail to provide the whole story, cognitive therapists can chase perhaps larger cognitive representations. In fact, Beck (e.g., 1996) has taken this route with the suggestion in anxiety disorders of *Modes*. The point that we wish to make is that there are many strengths to the cognition-focussed approach, but there may be many limitations because of the failure to give emotion its rightful place. Before however we look at modern multi-level theories of emotion, we will first consider a second generation of “sophisticated” CBT models, in which the causal role of emotion has come to be increasingly emphasised.

*“Sophisticated” cognitive therapy*

FIGURE 2(a)

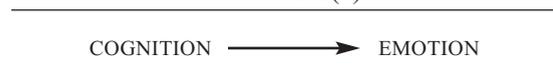
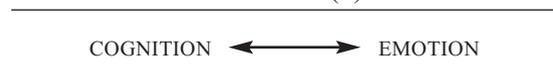


FIGURE 2(b)



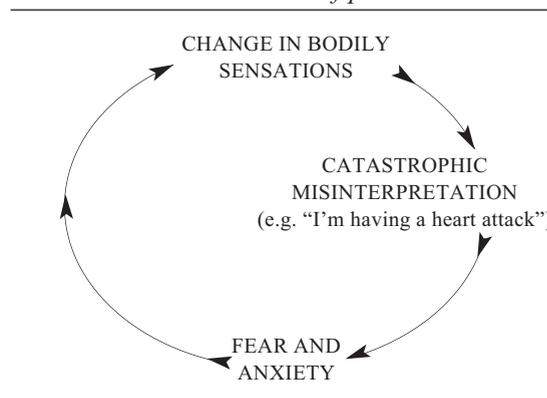
The pioneering work of researchers such as John Teasdale (1983) and Gordon Bower (1981) began to open the cognitive-behavioural world to the possibility that cognition and emotion, thinking and feeling, interact with each other; that sometimes feeling states make us more likely to think in a particular way, just as, in early cognitive therapy, thinking can lead us to feel in a particular way. Figure 2 expresses these ideas very simply: the initial cognitive therapy model considered a linear causal chain shown in 2(a) in which cognition causes emotion, but subsequent work suggested that cognition and emotion may interact with each other rather than one take causal priority over the other. So, for example, Gordon Bower (1981) demonstrated that if someone is in a sad mood they may be less likely to recall positive memories and more

likely to think about negative memories. Although there have been some problems in replicating some of the detail of these early studies (see Power & Dalglish, 2008), nevertheless, the work was important because it suggested possibilities for the emotional disorders such as in depression and anxiety disorders. What if, in vulnerable individuals, they are sometimes unable to protect themselves against certain types of thoughts or thinking once they enter a particular feeling state?

In response to such developments, the cognitive therapy model of depression began to change along the lines shown in Figure 2(b). The earlier model (see Figure 1 above) was still incorporated into the new model, but now positive feedback loops were added in that recognised the interplay between NATs, mood state, physiology, and behaviour. A classic example in depression would be that as the person’s mood deteriorates, he or she begins to withdraw from everyday activities and stay longer and longer in bed – mood and behavioural changes that would also lead to further physiological changes and to increased thoughts of personal inadequacy. One of the key therapeutic interventions with such inactive depression is therefore to break into the vicious cycle that is maintaining the system and thereby keeping the person in a state of chronic depression. The use of graded tasks at which the person can achieve some success is an important method for breaking into this inactivity cycle in certain types of depression.

FIGURE 3

*Clark’s model of panic*



A second example of the introduction into cognitive-behavioural therapies of cognition-emotion cycles is in David Clark's (1986) cognitive model of panic illustrated in Figure 3. The cognition-emotion cycle in this model is typically started with awareness of a physical change such as heart beating faster. If this physical change is interpreted in a catastrophic way, for example "I am having a heart attack", then a vicious cycle commences that can lead into the experience of a full-blown panic attack. David Clark and his colleagues (e.g., Clark & Salkovskis, 1991) have shown that a number of different types of panic attacks can be accounted for in this way: physical constriction around the throat can lead to panic about suffocation; light-headedness can lead to panic about brain haemorrhaging; and feelings of psychic anxiety can lead to feelings of loss of control and madness. Similar to the treatment of depression, the key to the treatment of panic attacks is to find an appropriate point to intervene in the vicious cycle that is seen to cause the panic. As in the early Cognitive Therapy model, the preferred point is to attack the NAT, or the "catastrophic misinterpretation" as it has been re-labelled, so perhaps we should now say attack the CAT (i.e., the Catastrophic Automatic Thought).

There is no doubt that Clark's cognitive therapy for panic attacks has some success and there are now randomised controlled trials that demonstrate its effectiveness, certainly when David Clark and his colleagues carry out the treatment (e.g., Clark et al., 1994). However, the NAT problem that we raised for the early Cognitive Therapy model of depression is still there or the NAT-CAT problem as we should now call it. That is, although Clark's model may be effective for the treatment of panic attacks in which there are catastrophic misinterpretations, many panic attacks are not preceded by conscious propositional statements of the form "I am having a heart attack". The existence of such non-catastrophic thought panic attacks means that the Clark model is of limited applicability, albeit useful for those panic attacks to which it does apply. Consider the following case example:

"John was a 25-year old postgraduate student who was taking longer with writing his thesis than planned. His grant had finished some

months before and he had run up debts in order to give himself time to complete his thesis before looking for paid work. Because of the pressure he was under, his relationship had recently finished and his girlfriend had moved out to live with someone else. In spite of all of these problems and pressures, John reported that he was working well, if perhaps too hard, and that he believed he would finish eventually and get his life back on track. The only problem was that for the past few weeks he had begun having night terrors in which he woke up sweating and shouting in absolute panic almost every night. He remembered having similar night terrors as a child and had been to see his GP and eventually the terrors had gone away. The theme of the current terrors was always similar, for example, he would start dreaming that he was being locked in a coffin and could not get out, or that he was being suffocated and could not breathe, or that he was trapped in a room or lift and no-one could hear his screams".

The night terror panic attacks experienced by John were typically preceded by a nightmarish dream, but on systematically recording their occurrence even then not all of them were preceded by recallable dreams: sometimes he simply woke up in terror. The existence of night terrors and other similar panic phenomena that are not clearly preceded by negative thoughts again provides a challenge for the second generation of more sophisticated Cognitive Therapy models. We believe (Power & Dalgleish, 1997, 2008) that the problem is that the basic theory is wrong and that it is too simple. The cognitive therapies over-emphasise the role of thought in the emotional disorders and they lack an adequate theory of emotion, as we will outline in the next section.

#### *Dual process models in psychology*

We should not be too harsh on Cognitive Therapy and make it sound like it suffers from terrible inadequacies when similar problems have been evident in other areas of psychology as well. Let us take the example of attitude and attitude change from the area of social

psychology as a telling example (see Chaiken & Trope, 1999, for more detail). The majority of fair-minded individuals would like to think of themselves as free of prejudice and that they support non-racist non-sexist and non-ageist views and policies. That is, their stated or *explicit* attitudes demonstrate what fair-minded and liberal individuals they are. However, the truth tends to be less straightforward and more complex; when it comes to measures of behaviour, automatic perceptual processes, reaction time measures, and psychophysiology there may well be indicators of prejudice and bias that the individual would consciously reject (Chaiken & Trope, 1999). In other words, people's *implicit* attitudes may sometimes conflict with their explicit attitudes. Such a system that leads to conflicting attitudes occurring in parallel with each other cannot be readily accommodated in the Cognitive Therapy models that we have considered so far because the models do not allow for parallel processes that potentially conflict with each other and produce different outcomes.

Our main point of departure therefore from extant models in Cognitive Therapy is in the need for two distinct sets of conscious and unconscious or automatic processes that sometimes act in a synergistic manner but at other times produce conflicting outputs. In addition to the evidence for two such routes or sets of processes that we have briefly cited from areas such as social cognition and psychoanalysis, there is also increasing evidence from research in neuroscience that two such separate routes exist. For example, Joseph LeDoux's (e.g., 1996) work on the acquisition and maintenance of fear in rats clearly shows the need for a fast fear-based system that operates through the amygdale in the mid-brain (or what used to be known as the limbic system), and a higher route through the cortex. These two routes can operate in tandem and synergistically or can produce conflicting outputs depending on the exact conditions and circumstances. LeDoux's work in animals together with similar work in human neuroscience points to the need for more complex multi-level systems in order to understand emotion reactions in humans. In the next section therefore, we will outline our own

SPAARS model of emotion and demonstrate the need for more complex models that do justice to the phenomena under consideration and provide a richer basis for the therapeutic endeavours needed to work with a range of emotional disorders.

### *Depression and anxiety*

The decision about which group of emotional disorders to focus on was influenced by the rich theoretical and empirical debate about the overlap between the diagnostic categories of depression and anxiety. An important observation is that there are high levels of comorbidity between anxiety and depression, which is reflected typically with correlations of around 0.7 between symptom severity measures across a range of studies (e.g., Clark & Watson, 1991; Goldberg & Huxley, 1993). This high comorbidity can be interpreted in a number of ways: first, that depression and anxiety may share common antecedents even though they are in principle separate disorders; second, that the diagnostic symptoms have not been specified clearly enough so that the overlap is an artefact of the system of diagnosis; third, that depression could be secondary to the experience of anxiety (and possibly vice versa) in the way that it can be secondary to other disorders; and, fourth, that depression and anxiety may share a common core such as of "negative affectivity" (e.g., Clark & Watson, 1991). Each of these possibilities should be testable through the measurement of emotion states in a range of diagnostic categories of depression and anxiety. For example, Watson and Tellegen (1985) originally claimed that positive and negative affect were independent of each other, whereas more recent researchers have claimed that positive and negative affect are not independent but show bipolarity (e.g., Russell & Carroll, 1999). Finally, as a further diagnostic complication that could arise from any of the four possibilities listed above, DSM-IV has included an "appendixed" (i.e., a possible future diagnostic category for further consideration) category of "mixed anxiety depression". This category is meant to capture sub-syndromal levels of both anxiety and depression that are commonly found in outpatient samples, but

which do not meet criteria for a diagnosis of one of the depression or anxiety categories. The present paper will summarise a recent study that we carried out to explore the emotion-state profiles across a range of clinical disorders of depression and anxiety, to test whether the emotion profiles differed between depression, anxiety, and mixed anxiety depression, and to test the relationship between positive affect, negative affect, and basic emotions (Power & Tarsia, 2007). In summary, the Power and Tarsia (2007) study was designed to explore the profile of emotions reported by outpatients presenting with depressive, anxiety, or mixed anxiety depression disorders. It was reasoned that the profile of emotions obtained in each of these states would provide evidence as to the possible relationship between the diagnostic concepts of depression and anxiety. In addition, the study was also designed to test further the findings from a student population (Power, 2006), which found evidence in favour of a five basic emotion structure for emotional experience when compared to other models based on the Positive Affect and Negative Affect approach.

In the study itself, there were four different groups of participants utilised in a between-groups design. (1) A group of clinically depressed participants (2) a group of anxious participants (3) a group of mixed anxious depressed and (4) a group of normal controls. All groups completed a set of self-report measures that assessed depression, anxiety, and experienced emotions, therefore a number of correlational analyses were also carried out in order to examine the relationship between the self-report measures.

*Basic Emotions Scale* (BES; Power, 2006). In a similar fashion to the Spielberger STAI (Spielberger, Gorsuch, & Lushene, 1983), the BES has a State-like version and a Trait version. The state version assesses emotions experienced over the “past week”, so therefore refers to a slightly different timescale than that of the STAI, though the Trait version assesses emotions “in general”. The scale consists of 20 emotion terms rated on a scale from 1 to 7 labelled from “not at all” to “all of the time”. The emotion terms are derived from the five basic emotions of “Anger”, “Sadness”, “Disgust”, “Fear”, and “Happiness” that have been described in detail elsewhere

(Oatley & Johnson-Laird, 1987; Power & Dalgleish, 1997). The actual emotion terms used in the scale were derived in part from the linguistic analyses carried out by Johnson-Laird and Oatley (1989) with further modifications based on Power and Dalgleish (1997). Each “basic emotion” is therefore represented by four different emotion terms as follows:

- 1) Anger, Frustration, Irritation, Aggression
- 2) Despair, Misery, Gloominess, Mournful
- 3) Shame, Guilt, Humiliated, Blameworthy
- 4) Anxiety, Nervousness, Tense, Worried
- 5) Happiness, Joy, Loving, Cheerful.

Preliminary analyses of a student sample have shown that the scale has good internal reliability and has good validity (Power, 2006). A subsidiary purpose of the study was however also to report on its properties in a non-student clinical sample. The participants were recruited and tested individually with a clinical interview. The clinical interview plus self-report measures took an average of one hour to complete. The participants also took part in additional experimental tasks but these will be reported elsewhere. The five basic emotion sub-scales from the BES were summed to give total scores for “Anger”, “Sadness”, “Disgust”, “Fear” and “Happiness” (there were no missing values for any of the measures). The means and standard deviations for each sub-scale for each group are shown in Table 1.

TABLE 1

*Profiles of basic emotion sub-scales (state version) by diagnosis. Subscripts indicate differences in sub-scale means across diagnostic groups*

	Depressed	Anxious	Mixed	Control
Anger	14.5 (5.6)a	13.8 (4.9)a	17.5 (5.2)a	9.0 (3.8)b
Sadness	16.3 (3.6)ab	11.0 (4.8)b	18.2 (5.5)a	5.8 (3.0)c
Disgust	13.6 (5.4)ab	10.3 (5.9)bc	16.8 (7.3)a	5.0 (1.6)c
Fear	19.6 (3.7)a	21.7 (2.5)a	23.0 (5.2)a	10.8 (5.6)b
Happiness	9.9 (3.9)ab	14.3 (3.5)b	9.5 (3.6)a	20.1 (3.3)c

Table 1 shows the values for the State version of the BES. An overall MANOVA that included all sub-scales gave a significant effect of Group [ $F(15,192)=6.42, p<.001$ ] thereby justifying one-way ANOVAs to be carried out for the four

groups for each sub-scale; post-hoc comparisons are reported using Dunnett's C (see Table 1), which is an appropriate post-hoc test where there are unequal variances between the groups. In summary, the results for "Anger" showed that the clinical groups did not differ significantly from each other, but all scored significantly higher than the control group. The "Sadness" sub-scale analyses showed that again all clinical groups scored higher than the controls, and that the Mixed group were significantly higher than the Anxious group with the Depressed group at an intermediate value between. The "Disgust" sub-scale analyses showed that the Depressed and Mixed groups were significantly higher than the Controls, with the Anxious group at an intermediate value between the Controls and the Depressed. The "Fear" sub-scale analyses showed that all the clinical groups did not differ from each other but scored significantly higher than the Controls. The "Happiness" sub-scale analyses showed that, as expected, the Controls scored higher than the clinical groups, though in addition the Anxious group scored significantly higher than the Mixed group, with the Depressed group at an intermediate point between the two.

#### *Correlation and multiple regression analyses*

Although the total number of participants across the four groups ( $N=70$ ) falls slightly short of recent recommendations for multiple regression analyses (e.g., Tabachnick & Fidell, 2001), nevertheless, it was considered that an examination of the predictive effects of the emotion sub-scales for the BDI-II symptom measure might be useful even if interpretation needed to be done cautiously. The zero-order correlations between the BES sub-scales, the BDI-II, the STAIS and the STAIT were all substantial and ranged from  $r=0.569$  to  $r=0.854$  for the BES state sub-scales, and ranged from  $r=0.523$  to  $r=0.814$  for the BES trait sub-scales.

*Prediction of BDI scores:* The analyses for the best equation for predicting BDI scores from BES sub-scales are summarised in Table 2 (Age and Gender were included as background variables in this and all subsequent regression equations, but for simplicity are not shown in the tables).

TABLE 2

*Final multiple regression equation for the prediction of BDI scores from BES sub-scales (state version)*

Variable	Stand. Beta	Sig. T
Sadness	.379	.002
Disgust	.185	.055
Fear	.159	.041
Happiness	-.299	.001

Note. Mult.  $R^2=0.808$ ; Adj.  $R^2=0.786$ .

Table 2 shows that significant contributions are made from the Sadness, Disgust (at borderline significance), Fear, and Happiness sub-scales in the prediction of BDI scores for all participants. Tables 3 and 4 show however the effects of including just the highest zero-order correlation *individual* emotion terms (as opposed to the sub-scale total scores). "Gloominess" (or "Misery") provide the highest predictors from the Sadness sub-scale; the only additional significant terms that account for further significant variance are "Guilt" and "Shame" from the Disgust sub-scale, but if both of these emotions are included in the regression equation, then the effect of "Guilt" is no longer significant in the prediction of depression symptomatology (Table 4).

TABLE 3

*Final multiple regression equation for the prediction of BDI scores from individual emotion terms (state version)*

Variable	Stand. Beta	Sig. T
Gloominess	.656	.001
Guilt	.210	.033

Note. Mult.  $R^2=0.694$ ; Adj.  $R^2=0.675$ .

TABLE 4

*Final multiple regression equation for the prediction of BDI scores from individual emotion terms (state version)*

Variable	Stand. Beta	Sig. T
Gloominess	.633	.001
Guilt	.009	ns
Shame	.269	.023

Note. Mult.  $R^2=0.718$ ; Adj.  $R^2=0.696$ .

*Prediction of STAI state scores:* The best equation for the prediction of the State anxiety scores from BES sub-scales is shown in Table 5. Once the Fear sub-scale scores are included, then only the Sadness sub-scale explains any further significant variance, though, interestingly, it appears to account for a greater proportion of the variance than does the Fear sub-scale.

TABLE 5

*Final multiple regression equation for the prediction of STAI-State scores from BES sub-scales (state version)*

Variable	Stand. Beta	Sig. T
Fear	.208	.05
Sadness	.605	.001

Note. Mult.  $R^2=0.595$ ; Adj.  $R^2=0.563$ .

Again, if individual emotion terms are include instead of sub-scales, then the same pattern of Fear terms (“Nervousness”) and Sadness terms (“Gloominess” or “Misery”) provide strong predictors of State anxiety, but in addition the specific emotion term “Happiness” (that is, the lack of it) also accounts for further significant variance (see Table 5).

## DISCUSSION

The results for the profiles of emotion states across the diagnostic categories showed interesting patterns of similarities and differences. If the basic emotion sub-scales are considered separately to begin with, then the patterns do not suggest that we are dealing with a common underlying core of “negative affectivity” or the like. First, the Anger sub-scale did not discriminate between the diagnostic groups, though all were elevated in comparison to the Control group. Given the history from Freud (1917) onwards of linking depression and retroflective anger, it may be surprising that no differences between the clinical groups were found for anger. However, this predicted link has been questioned both within later subsequent psychoanalytic approaches (e.g., Bibring, 1953)

and within other approaches to depression (e.g., Beck et al., 1979), so the absence of a link is consistent with these later models.

Second, the Sadness sub-scale was found to distinguish the diagnostic groups from the Controls, and the Mixed from the Anxious group with the Depressed group at an intermediate value in between. The same pattern was also obtained for the Disgust sub-scale with all diagnostic groups scoring higher than the Controls, and the Mixed scoring higher than the Anxious group with the Depressed at an intermediate value in between. Although our prior predictions would not have expected the Mixed group to be numerically higher than the Depressed, this finding may simply reflect the greater severity of disorders in this group given that both the depression and anxiety disorders are above threshold rather than below threshold in the proposed DSM category. This issue will be returned to when *individual* emotion terms are considered in the multiple regression analyses as opposed to the summary sub-scales. Suffice it to say that the fact that the Sadness and Disgust sub-scales were elevated in the Mixed and Depressed groups provides support for the proposal that depression may depend in part on the coupling of the emotions of sadness and disgust (Power & Dalgleish, 1997, 2008).

Third, the Fear sub-scale discriminated the clinical groups from the Controls, but did not distinguish the clinical groups from each other. Again this finding may reflect the severity of the disorders in the Depressed and Mixed groups given the high level of anxiety problems in all groups rather than the interpretation for this lack of difference that it may reflect the core “negative affectivity” that a number of researchers have referred to (e.g., Clark & Watson, 1991; Russell & Carroll, 1999). If it did reflect the latter interpretation, then it may demonstrate that if the net is cast too narrowly the appearance of similarity may be over-emphasised in the assessment of the emotional disorders; thus, the inclusion of physiological symptoms (e.g., trembling, palpitations, sweating, dizziness) would emphasise differences between anxiety and depression as the tripartite model suggests (Clark & Watson, 1991), but the failure to assess a broad enough range of emotion states that

covers aspects of sadness and disgust in particular will also give the illusion of a greater affective overlap between anxiety and depression than there actually is. Of course, it would be desirable to test a group of clinically depressed who did not have any co-morbid anxiety disorder and, equally, it would be useful to test a substantial range and number of different anxiety disorders other than GAD in further studies.

Fourth, the scores for the Happiness sub-scale showed that, as would be predicted, the Controls reported higher levels of happiness than the clinical groups, with the Mixed and Depressed groups scoring the lowest and the Anxious group intermediate. This finding is consistent with the characteristic anhedonia that is an important part of depression and which is emphasised both in the diagnostic systems and in most theoretical approaches to depression (especially in some of the earlier behavioural theories; see e.g., Hammen, 1997; Power, 2004). The fact that Happiness was also lower in the Anxious group may in part reflect the elevated depression scores in this group and the fact that certain types of fear have an inhibitory effect on the experience of happiness (cf. Bower, 1981; Bower & Cohen, 1982).

A related issue to that of the emotion profiles across the diagnostic groups concerns the multiple regression analyses for the BDI depression severity and the STAI anxiety severity self-report measures. Although ideally it would be preferable to run regression analyses for the four groups separately in order to compare regression models, the small sample sizes meant that it was only possible to consider all groups together. Nevertheless, there were interesting findings from these analyses. The prediction of the BDI scores showed that when the sub-scale scores were used, the four sub-scales of Sadness, Disgust, Fear and Happiness all contributed significantly accounting for approximately two-thirds of the variance in the BDI. Perhaps even more interestingly, when *individual* emotion terms rather than sub-scales were used, then either “Gloominess” or “Misery” explained the variance for the Sadness sub-scale, but only “Guilt” or “Shame” from the Disgust sub-scale explained any additional significant variance. Moreover, if both Guilt

and Shame were included in the same regression equation, then only Shame remained significant with no additional significant effect of Guilt. These findings emphasise a number of key aspects of depression. First, that the affective tone of the Sadness component in depression has a more aversive quality than simply sadness itself; that is, both of the terms “Misery” and “Gloominess” emphasise the aversive nature of the experienced affect. Second, the fact that Shame rather than Guilt is the more important emotion in depression emphasises the point that the diagnostic systems such as DSM (e.g., DSM-IV; APA, 1994) have mistakenly focussed on guilt rather than shame. It is clear from recent developmental and other studies (e.g., Andrews, 1995; Barrett, 1995; Tangney, 1999) that shame is the emotion more likely to be involved in psychopathology and that there is now beginning to be some agreement that it may be a key emotion in the development of depression (Power & Dalgleish, 1997, 2008).

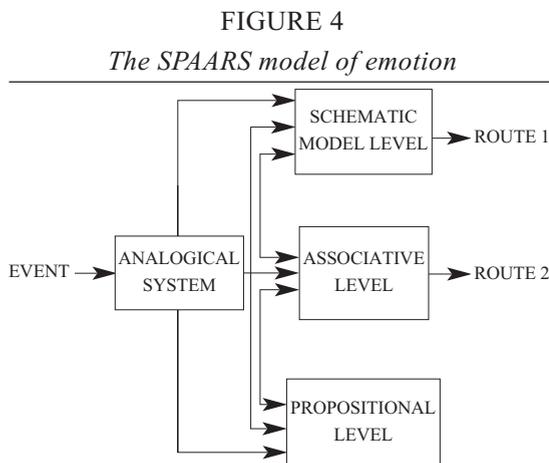
The Confirmatory Factor Analyses of the emotion scale provided further evidence in support of the earlier findings from a student sample (Power, 2006). It was clear from the model fit indices (see Power & Tarsia, 2007), first, that the emotion terms are related more than just through membership of a single semantic category of “emotion”; thus, the one factor model provided a poor fit for the data. Similarly, the models based on the two factor Positive Affect and Negative Affect approach also provided poor fits for the data both when the factors were considered separately (cf. Watson & Tellegen, 1985) and when they were allowed to correlate in the way that the more recent bipolarity approach would suggest (Russell & Carroll, 1999). Of course, it must be noted that the present emotion terms were not designed as a full test of the PA-NA model (which would for example have to include physiological terms as well), but the PA-NA models should have fitted the data better than they did if they represented something genuine about the self-reported experience of affect.

The best model fit was obtained for the five factor basic emotions model, but with the addition of a further higher order factor in which all of the basic emotions are allowed to correlate.

This fully correlated basic emotions model was significantly better than one in which the PA-NA valence of the basic emotions was incorporated. The comparisons of the models suggest that all basic (and more complex derived emotions) can potentially correlate with each other; that is, in the language of our previous analysis of emotion and emotional disorders (Power & Dalgleish, 1997), that emotions may come to be “coupled” with each other. Although our further prediction that such coupling would be particularly strong for certain emotions in the emotional disorders cannot be tested in these factor analyses because of the small Ns in each diagnostic category, the profiles of emotions across the different disorder groups discussed above provide additional evidence in favour of the coupling proposal, as proposed in the SPAARS model, to which we will now return.

#### *The SPAARS approach*

My colleague Tim Dalgleish and I have developed the SPAARS model over the past decade or so (Power & Dalgleish, 1997; 2008). There have been a number of illustrious and influential multi-level theories of emotion prior to our model, in particular, the work of Howard Leventhal and Klaus Scherer (1987) and of John Teasdale and Phil Barnard (1993) must be highlighted. We hope that we have incorporated only the best aspects of these models into our own SPAARS approach and left out some of the weaker aspects.



The SPAARS model is presented in Figure 4. The first aspect of the model to emphasise is that we propose that there are a number of different types of representation and processing systems as follows:

- 1) *The analogical system* – The analogical system refers to a collection of primarily sensory-specific systems that include vision, hearing, taste, smell, touch, and kinaesthetic systems. These sensory systems provide the initial processing of external events that are often emotion-provoking and for that reason often become directly incorporated into perception and memory of emotional events.
- 2) *The associative system* – This system typically operates automatically and outside awareness; it includes the innate-based starting points for the emotion and other systems that develop over time according to associative learning mechanisms; skills-based actions and repeated sequences also increase in their automaticity and become represented at this level, such that frequently repeated appraisal-emotion sequences can eventually occur automatically and outside awareness.
- 3) *The propositional system* – This system is the one beloved of Cognitive Therapy in which verbal-linguistic statements (propositions) are represented. However, in contrast to Cognitive Therapy we do not believe that propositions directly cause emotions, but propositions such as NATs and CATs must be further processed either through the Associative System or through the Schematic Model System in order to generate emotion.
- 4) *The schematic model system* – This is the high-level system in which dynamic and ever-changing models of the self and the world are constructed and which provides overall executive control. In relation to emotion, effortful appraisal of events and situations leads to schematic models that generate emotions; appraisals typically evaluate events and situations in relation to key goals, both personal and interpersonal, with the appraisal outcomes generating different emotions.

These four proposed systems combine to produce two routes to emotion as illustrated in Figure 4 above. There is a high-level effortful

appraisal based route that operates through the Schematic Model System and there is a low-level typically automatic route that occurs through the Associative System. The operation of the two systems can be observed under many different circumstances and for many different emotions. A very simple example is the stepping-into-the-road reaction when a fleeting movement out of the corner of one's eye causes a sudden jump back as you orient towards whatever was apparently moving towards you; further slower attentional processing via the Schematic Model System confirms that indeed it was a bus moving rapidly towards you and the feeling of panic increases because of the near-miss. Alternatively, full attentional processing reveals that it was just a leaf blowing in the wind so we laugh it off and make a joke about it to our companion. This simple example illustrates one of the functions of the automatic Associative System – the immediate interruption of current activity when the organism may have come under sudden and unexpected threat, which the slower Schematic Model system provides more detailed and elaborative processing of so that emotion and action become synergistic.

There are many possible examples of how the two routes to emotion generation within SPAARS can be in conflict with each other, but it is still useful to illustrate this point at this stage with a relatively common and persuasive example. Individuals who suffer from simple phobias can often report conflicting experiences about the phobic object as in the following example:

“Jane was a nurse who had worked in hospitals all her adult life, but her job was just about to change and she was being moved into the community. She was referred for help because she was on the verge of giving up her career because she was terrified that she would come across dogs in the community, including when visiting people in their homes if they owned dogs and she would not be able to enter their homes. She had experienced a phobia of dogs from a very young age, as had her mother, though on assessment she was unable to recall any traumatic or other negative experiences with dogs. In fact, when she thought carefully about dogs, she understood that people could

be very fond of them and even have dogs as their best friends. The problem was however that she began to panic if ever she saw a dog, especially if one unexpectedly ran towards her or jumped up at her.”

Jane's mixed reaction is not uncommon amongst simple animal phobias: on the one hand, she reacted with panic if ever a dog was near her (i.e., emotion generated via the Associative Route), but when she thought carefully about dogs she could feel mildly positive about them and certainly understand other people's strongly positive reactions to dogs (i.e., effortful appraisal occurring via the Schematic Model Route leading to a mildly positive reaction). Many animal and other simple phobic individuals often report that they know that their fears are “irrational” (a Schematic Model appraisal), but they are completely unable to do anything about their fear or panic because it is automatically generated via Associative Route mechanisms. Such fears and phobias provide dramatic examples of how the two routes to emotion generation can provide different and even conflicting outcomes (“I love you, but I also hate you!”).

#### FINAL COMMENTS AND CONCLUSIONS

In order to understand cognitive psychopathology, we have argued in this paper that traditional models of psychopathology such as Beck's Cognitive Therapy have been too simplistic in their understanding of the relationship between cognition and emotion, nor have they provided adequate models of how cognition and emotion relate to each other. In this paper, it has been argued that multi-level models such as that of SPAARS provide more powerful and more clinically useful models of cognition and emotion with which cognitive psychopathology and the emotional disorders can be understood. An example has been provided of an emotion analysis from a recently published study in which we investigated the emotions experienced by groups of people with clinical depression, anxiety, depression and anxiety, and a group of healthy controls. Emotion profile analyses of these disorders reveal, for example, that shame is

a more powerful predictor of depression severity rather than guilt, and that both shame and sadness combine in depression. We have also shown how the proposal for five basic emotions can be used to provide a solid foundation from which to understand psychopathology.

#### REFERENCES

- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, D.C.: APA.
- Andrews, B. (1995). Bodily shame as a mediator between abusive experiences and depression. *Journal of Abnormal Psychology, 104*, 277-285.
- Barrett, K. C. (1995). A functionalist approach to shame and guilt. In J. P. Tangney & K. W. Fischer (Eds.), *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride*. New York: Guilford.
- Beck, A. T. (1996). Beyond belief: A theory of modes, personality, and psychopathology. In P. M. Salkovskis (Ed.), *Frontiers of cognitive therapy*. New York: Guilford Press.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression: A treatment manual*. New York: Guilford Press.
- Bibring, E. (1953). The mechanism of depression. In P. Greenacre (Ed.), *Affective disorders*. New York: International Universities Press.
- Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*, 129-148.
- Bower, G. H., & Cohen, P. R. (1982). Emotional influences on memory and thinking: Data and theory. In S. Fiske & M. Clark (Eds.), *Affect and cognition*. Hillsdale, NJ: Erlbaum.
- Chaiken, S., & Trope, Y. (Eds.). (1999). *Dual-process theories in social psychology*. New York: Guilford Press.
- Clark, D. M. (1986). A cognitive approach to panic. *Behaviour research and therapy, 24*, 461-470.
- Clark, D. M., & Salkovskis, P. M. (1991). *Cognitive therapy with panic and hypochondriasis*. Oxford: Pergamon Press.
- Clark, D. M., Salkovskis, P. M., Hackmann, A., Middleton, H., Anastasiades, P., & Gelder, M. (1994). A comparison of cognitive therapy, applied relaxation and imipramine in the treatment of panic disorder. *British Journal of Psychiatry, 164*, 759-769.
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology, 100*, 316-336.
- Ekman, P. (Ed.). (1982). *Emotion in the human face* (2nd ed.). Cambridge: Cambridge University Press.
- Freud, S. (1917/1984). *Mourning and melancholia*. Pelican Freud Library, Vol. 11. Harmondsworth: Penguin.
- Goldberg, D., & Huxley, P. (1993). *Common mental disorders: A bio-social model*. London: Routledge.
- Hammen, C. (1997). *Depression*. Hove: Psychology Press.
- Izard, C. E. (1971). *The face of emotion*. New York: Appleton-Century-Crofts.
- Johnson-Laird, P. N., & Oatley, K. (1989). The language of emotions: An analysis of a semantic field. *Cognition and Emotion, 3*, 81-123.
- LeDoux, J. E. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York: Simon & Schuster.
- Leventhal, H., & Scherer, K. (1987). The relationship of emotion to cognition: A functional approach to a semantic controversy. *Cognition and Emotion, 1*, 3-28.
- Mancini, F., Gagnani, A., & D'Olimpio, F. (2001). The connection between disgust and obsessions and compulsions in a non-clinical sample. *Personality and Individual Differences, 31*, 1173-1180.
- Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theory of emotions. *Cognition and Emotion, 1*, 29-50.
- Ortony, A., & Turner, W. (1990). What's basic about "basic" emotions? *Psychological Review, 97*, 315-331.
- Phillips, M. L., Senior, C., Fahy, T., & David, A. S. (1998). Disgust – The forgotten emotion of psychiatry. *British Journal of Psychiatry, 172*, 373-375.
- Plutchik, R. (1962). *The emotions*. New York: Random House.
- Plutchik, R. (1990). *The emotions* (2nd ed.). Chicago: University of Chicago Press.
- Plutchik, R. (2000). *Emotions in the practice of psychotherapy: Clinical implications of affect theories*. Washington, D.C.: American Psychological Association.
- Power, M. J. (2002). Integrative therapy from a cognitive-behavioural perspective. In J. Holmes & A. Bateman (Eds.), *Integration in psychotherapy*. Oxford: Oxford University Press.
- Power, M. J. (Ed.). (2004). *Mood disorders: A handbook of science and practice*. Chichester: Wiley.
- Power, M. J. (2006). The structure of emotion: An empirical comparison of six models. *Cognition and Emotion, 20*, 694-713.
- Power, M. J., & Dalgleish, T. (1997). *Cognition and emotion: From order to disorder*. Hove: Psychology Press.

- Power, M. J., & Dalgleish, T. (2008). *Cognition and emotion: From order to disorder* (2nd ed.). Hove: Psychology Press.
- Power, M. J., & Tarsia, M. (2007). Basic and complex emotions in depression and anxiety. *Clinical Psychology and Psychotherapy*, 14, 19-31.
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125, 3-30.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Sprengelmeyer, R., Young, A. W., Puntd, I., Sprengelmeyer, A., Calder, A. J., Berrios, G., Winkel, R., Vollmoeller, W., Kuhn, W., Sartory, G., & Przuntek, H. (1997). Disgust implicated in obsessive-compulsive disorder. *Proceedings of the Royal Society of London, Series B*, 264, 1767-1773.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.
- Tangney, J. P. (1999). The self-conscious emotions: Shame, guilt, embarrassment and pride. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion*. Chichester: Wiley.
- Teasdale, J. D. (1983). Negative thinking in depression: Cause, effect, or reciprocal relationship? *Advances in Behaviour Research and Therapy*, 5, 3-25.
- Teasdale, J., & Barnard, P. (1993). *Affect, cognition and change*. Hove: Lawrence Erlbaum Associates.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98, 219-235.
- Young, J. E. (1999). *Cognitive therapy for personality disorders: A schema-focused approach* (3rd ed.). Professional Resource Exchange.

#### ABSTRACT

This paper examines the role of emotion in the understanding of psychopathology. The influential Cognitive Therapy model of Beck is briefly reviewed and a number of limitations are considered. Two

particular weaknesses are highlighted in the understanding of cognitive psychopathology; namely, the importance of multi-level processing systems and the importance of emotion. The Power and Dalgleish (1997, 2008) SPAARS model is presented to show the advantages that arise from the inclusion of multi-level processes combined with a theoretical account of emotion. In order to illustrate the application of the SPAARS model to cognitive psychopathology, findings from a recent emotion profile analysis of clinical depression and anxiety are summarised. The analyses also illustrate the importance of shame-related emotions in depression in contrast to the guilt-related emotions that are highlighted in classification systems such as DSM-IV.

*Key words:* Cognition, Emotion, Psychopathology.

#### RESUMO

Neste artigo fazemos uma reflexão sobre o papel da emoção na compreensão da psicopatologia. Fazemos uma breve revisão e apontamos uma série de limitações. do influente modelo da Psicoterapia Cognitiva preconizado por Beck.

Dois pontos particularmente fracos são destacados na compreensão da psicopatologia cognitiva; nomeadamente, a importância dos sistemas de processamento multi-nível e a importância das emoções. Apresentamos o modelo SPAARS de Power e Dalgleish (1997, 2008), para mostrar as vantagens que resultam da inclusão de processos de multi-nível combinados com uma teoria relacionada com as emoções.

Com o objectivo de ilustrar a aplicação do modelo SPAARS à psicopatologia cognitiva.

Referimos, de forma sucinta, o que foi observado numa recente análise sobre o perfil da depressão e ansiedade clínicas.

Estas análises ilustram também a importância das emoções relacionadas com a vergonha na depressão, em contraste com as emoções relacionadas com a culpa que são destacadas em sistemas de classificação como o DSM-IV.

*Palavras chave:* Ansiedade, Depressão, Emoções, Modelo SPAARS, Psicoterapia cognitiva.