[General comment - in Freud’s model threatening sexual and aggressive id-impulses are repressed, stuffed down so that they are not conscious to the individual. Using the analogy of a censor (like those that decide which movies or books are fit for public consumption) Freud said there was a censor in the mind that determined whether certain impulses could enter into a person’s conscious awareness. Criticisms of Freud’s notion of the unconscious were made involving questions about how a person can be unconscious of having certain nasty impulses or motives while at the same time being conscious of them in order to first determine whether they were fit for conscious consumption, i.e., how can a person be both unconscious of something and yet conscious of it at the same time. Bowlby’s notion of “defensive exclusion” was an effort to translate Freud’s basic repressed-unconscious theory into terms familiar to psychologists working within the contemporary person-as-computer model. Bowlby’s goal was to defend the notion of a repressed unconscious (of sorts). However, in Bowlby’s model (i.e., the attachment theory view of the mind) it is not nasty biologically-based drives that are repressed but “information” (or “learnings”) about whether attachment figures are available to care for one and whether one is worth caring for (i.e., “do others love me and am worth loving). These are hard questions. In other words, the individual is defending themselves not against id-impulses but against blows to their self-esteem.] There are other reasons why this happens as well.

Chapter 4

An Information Processing Approach to Defence

A new approach

No understanding of responses to loss, whether they be healthy or pathological, is possible without constantly invoking concepts of defensive process, defensive belief and defensive activity - the three categories, I argue, into which defences are best grouped. In this chapter a sketch is given of how the phenomena observed and the processes postulated can be understood within the conceptual framework adopted [the person-as-computer model]. Although here and there comparisons are made between the present theory and certain of Freud's concepts of defence and mental structure, for reasons of space no systematic attempt is made to relate the two models.

The conceptual tools on which I draw have been made available by students of human information processing. These tools enable us to examine defensive phenomena from a new point of view, to collect data more systematically and to formulate hypotheses in a language shared by other behavioural scientists. These are great advantages. Nevertheless, there is clearly a long way to go before the theory sketched is within sight of doing justice to the wide range of defensive phenomena met with clinically. Until more work has been done, therefore, it will remain uncertain how successful the new approach is going to be.

Exclusion of information from further processing

In the first volume of this work, at the end of Chapter 6 and throughout Chapter 7, I have drawn attention to current work in neurophysiology and cognitive psychology that points to the central control of sensory inflow. Whether inflow derives from the environment through exteroceptors or from the organism itself through interoceptors, sensory inflow goes through many stages of selection, interpretation and appraisal before it can have any influence on behavior either immediately or later. This processing occurs in a succession of stages, all but the most
preliminary of which require that the inflow be related to matching information already stored long-term memory. All such processing is influenced by central control and is done at extraordinary speeds; and all but the most complex is done outside awareness.

For most purposes the inflow of interest to psychologists and the common man alike is that which, having been selected, interpreted and appraised, goes forward to influence mood and behaviour and/or to be stored in long-term memory. The fact that in the course of its being processed the vast proportion of initial inflow is routinely excluded for one of several reasons, is ignored. For the understanding of pathological conditions, by contrast, the interest lies in opposite direction, namely in what is being excluded, by what means it is excluded, and perhaps above all why it should be excluded [the psychologist like the detective is interested in what gaps there are in the story, what is NOT being stated].

In the ordinary course of a person's life most of the information reaching him is being routinely excluded from further processing in order that his capacities are not overloaded and his attention not constantly distracted. Most selective exclusion, therefore, is both necessary and adaptive. Like other physiological and psychological processes however, in certain circumstances selective exclusion can have consequences that are of doubtful or varying adaptive value. For example given certain adverse circumstances during childhood the selective exclusion of information of certain sorts may be adaptive. Yet, when during adolescence and adult life the situation changes, the persistent exclusion of the same sorts of information may become maladaptive. The defensive processes postulated by psychoanalysts [i.e., counterparts to Freud’s “censor” that keeps the sexual and aggressive id-impulses repressed and thus unconscious], I believe, belong in this category. To distinguish these unusual instances of selective exclusion, of only temporary adaptive value, from the overwhelming majority of adaptive instances it is convenient to refer to `defensive exclusion'.

The basic concept in the theory of defence proposed is that of the exclusion from further processing of information of certain specific types for relatively long periods or even permanently. Some of this information is already stored in long-term memory, in which case defensive exclusion results in some degree of amnesia. Other information is arriving via sense organs, in which case defensive exclusion results in some degree of perceptual blocking. As is made clear later in this volume, the many other phenomena described by clinicians as defensive, notably certain types of belief and certain patterns either of activity or inactivity together with their associated feeling, can be understood within this framework as being the profound consequences of certain significant information having been excluded. Correspondingly, analytic therapies can be understood as procedures aimed at enabling a person to accept for processing information that hitherto he has been excluding [i.e., “making the unconscious, conscious,” or “achieving insights into one’s otherwise and apparently irrational behavior”], in the hope that the consequences of his doing so will be equally profound [i.e., a person is able to consciously re-direct their life in more adaptive directions or chose not to act in a certain way any longer].

In presenting the theory, attention is given first to the basic questions of how information, of any sort, can first be selected and then deliberately excluded. Next we consider briefly the nature of the specific information that is liable to be selected for prolonged and defensive exclusion. Only after that do we broach the two further questions: what are the causal conditions that lead certain information to be excluded for long periods of time? and what are the advantages and disadvantages of doing so? In proceeding thus we move from the less controversial questions to the most.
As regards findings from experimental work, it happens that, up to date, more light has been shed on the selective exclusion of information during the processing of sensory inflow than has been shed on the selective exclusion of information already in store. For that reason prior attention is given to studies of subliminal perception and perceptual defence. Since, however, no perception is possible without the interpretation of sensory inflow in terms of matching information already in store, it is plausible to suppose that the mechanisms employed for preventing certain information from being retrieved from store bear some resemblance to the mechanisms employed for excluding from further processing information of similar or related import arriving through the sense organs. Given this, what is known about subliminal perception and perceptual defence can be taken as a paradigm.

**Subliminal perception and perceptual defence**

The notion that information of certain meaning could be selectively excluded from perception met with considerable scepticism when first proposed around 1950. How, it was asked, can a person selectively exclude a particular stimulus unless he first perceives the stimulus which he wishes to exclude [i.e., how can a person be both conscious of something they wish to repress and at the same time it being repressed and thus not conscious to the person]? At first sight this might seem a conclusive argument, especially if it is assumed that perception is some sort of singular event which either happens or fails to happen. But, as Erdelyi points out, the objection ceases to have any force once perception is conceived as a multi-stage process [a computer processes information in stages: sensory store, short-term memory, long-term memory at the most simplest]. For during processing through a sequence of stages it would be at least possible for certain information to be excluded before it reaches some final stage associated with consciousness. There is now abundant evidence that this can happen.

After some decades of controversy and steadily improving experimental techniques a multi-stage theory of perception is now widely accepted. Some features of it relevant to a theory of defence can be summarized.

[First feature] The recognition of pattern as it occurs during perception proceeds in two directions simultaneously. On the one hand, the arrival of a sensory stimulus triggers an automatic series of analyses that start at the sense organs and continue centrally far up the chain of processing stages. On the other hand and simultaneously, the situation in which the sensory events are occurring triggers expectations based on past experience and general knowledge [i.e., seeing leads to believing, but what we see in a situation, what we attend to is a function of what we know, what we are interested in. Believing is seeing.]. These expectations produce conceptually driven processing in which guesses are made about what the input probably means. As the two forms of processing merge the guesses are checked against the data and the task completed.

By proceeding in both directions simultaneously the process of recognition is greatly accelerated. Yet by relying so much on expectations derived from past experience and knowledge the possibility of error is much increased. For example, because it lies outside experience a black three of diamonds when seen briefly is commonly misperceived as a three of spades. Findings of this type cast light on several characteristics common in responses to loss [i.e., loss of a person close to one].

A second feature of a modern theory of perception is that sensory inflow can be processed outside a person's awareness to a stage sufficient for much of its meaning to be determined.
Thereafter it can influence his [or her] subsequent behaviour, including his verbal responses, without his [or her] being aware of it. Experiments using the technique of dichotic listening illustrate these points.

In this type of experiment two different messages are transmitted to a person, one message being received in one ear and the other in the other. The person is then told to attend to one of these messages only the one being received by the right ear. To ensure he gives it continuous attention he is required to 'shadow' that message by repeating it word for word as he is hearing it. Keeping the two messages distinct is found to be fairly easy, especially when they are spoken by different voices. At the end of the session the subject is usually totally unaware of the content of the unattended message. There are, however, certain exceptions. For example, if his own name or some other personally significant word occurs in the unattended message, he may well notice and remember it. This shows at once that, even though unattended, fairly advanced processing of the unattended message must be taking place.

The results of two experiments that used this technique illustrate how information derived from the unattended message can influence thought and/or autonomic responses even though the message never reaches consciousness?

In one such experiment subjects were required to attend to and to shadow ambiguous messages of which the following is an example:

*they threw stones towards the bank yesterday*

Simultaneously with this message either the word ‘river’ was presented in the unattended ear or else the word ‘money’. Later, subjects were presented with a recognition test for the meaning of the sentence in which they were asked to choose between the following:

(a) they threw stones towards the side of the river yesterday; (b) they threw stones towards the savings and loan association yesterday.

Subjects who had had the word `river' presented to the unattended ear tended to select (a) as the meaning, whereas subjects who had had `money' in the unattended ear tended to select (b). None of the subjects remembered what word had been presented to the unattended ear and were unaware also that their subsequent judgement of meaning had been influenced.

Clearly, in order for the word presented to the unattended ear to have the effect it did in this experiment, it must have undergone sufficient processing for its meaning to have been recognized. A similar conclusion emerges from another experiment that also used the technique of dichotic listening.

Before the experiment proper the subjects went through a few training sessions during which they were exposed to an electric shock when any one of a set of selected words was spoken to them. As a result subjects became conditioned to the word-shock combination so that whenever one of the selected words was heard it was responded to by a change in the GSR (a measure of sweating [i.e., physiological arousal as in anxiety]). In the experiment proper the subjects were required to attend to and shadow a message in one ear while a list of words was presented to the other, unattended, ear. Words in that list were of three kinds: neutral words, some of the words that had been conditioned to shock, and both synonyms and homonyms of those words. Despite the fact that no shocks were given during the experiment itself there was an appreciable rise in the GSR whenever a conditioned word was presented in the unattended ear. Of even greater interest is that there was also a substantial, though lesser, rise when the homonyms and
synonyms were presented [the words along with its homonyms/synonyms are stored in close proximity to one another in an associative memory network]. Here again the findings indicate that every word presented in the unattended ear must have undergone considerable processing and its meaning established.

From these findings it is but a short step to infer that, just as a person's judgement and his autonomic responses can be influenced by cognitive processing outside awareness, so also can his mood. Once that is assumed, a mechanism becomes available in terms of which certain changes of mood otherwise inexplicable can be explained.

On the basis of findings such as those described cognitive psychologists propose that an analytical mechanism exists that performs a series of tests outside awareness on all incoming messages. As a result of these tests information can undergo one of several fates amongst which the following are easily specified:

- it can be excluded without leaving trace

- it can be retained long enough outside consciousness in a temporary buffer store for it to influence judgement, autonomic responses and, I believe, mood

- it can reach the stage of advanced processing associated with consciousness, and in so doing influence the highest levels of decision making and also become eligible for long-term storage.

The criteria by which during the series of tests information is judged for allocation are clearly numerous and range from broad and simple to specific and complex. Furthermore, many of these criteria, perhaps all, can be changed by central control. Some such changes, we know well, are a result of conscious and voluntary control as for example when, after receiving a new instruction, attention is shifted from one ear to another or from one voice to another. Other changes, we also know, occur involuntarily and outside awareness as for example when a person's attention shifts to the other voice when he hears his own name mentioned by it.

Once the possibility of subliminal perception is accepted, theoretical objections to the idea of perceptual defence and its counterpart, perceptual vigilance, drop away. For what the findings from the many hundreds of experiments undertaken in this field show is that, in addition to its being able to influence judgement and autonomic responses, the processing of sensory inflow for meaning outside awareness can influence also the further inflow of that very information itself. Either the inflow may be reduced, as in perceptual defence, or it may be enhanced, as in perceptual vigilance. Examples of these findings are drawn from Dixon's (1971) detailed examination of the evidence.

Many experiments have been done using a tachistoscope which enables words or pictures to be shown either at different speeds or else at different light levels [it flashes words or pictures on a screen so fast they can not be consciously discerned]. Since these speeds and light levels include those that are either too fast or too dim for perception to be possible, a common procedure is to start by showing a word or a picture at a speed or light level known to be impossible, and then gradually to reduce speed or increase light until the subject becomes able to identify the stimulus. A well-attested finding from experiments using this technique is that, when words or pictures known to be emotionally arousing or anxiety provoking are presented, the time taken before they are correctly identified differs significantly from that taken to identify neutral words or pictures. To demonstrate that these results are due to changes in the sensory channels and not in the response channels, other experiments have been done. In some of these a significant change of
sensitivity for the sensory inflow being received through one sense modality, say sight, is found to occur when the stimulus being presented through another modality, say hearing, is changed from an emotionally arousing one to a neutral one, or vice versa. [Bowlby goes on to argue from other examples such as hypnosis where a person acts in a way suggested to them by the hypnotist but then later are unable to report what happened. Bowlby also discusses differences in type of long-term memory - episodic vs. semantic memory).

**Some consequences of defensive exclusion**

Whenever information that would normally be accepted for further processing because of its significance to the individual is subjected to defensive exclusion for prolonged periods the consequences are far-reaching. Among them, I believe, are most, perhaps all, of the very diverse array of phenomena that at one time or another have been described in the psychoanalytic literature as being defences.

Of the many possible consequences there are two major ones, each with certain contingent consequences, to which at this point I wish to draw attention:

(a) One or more behavioural systems within a person may be deactivated, partially or completely [for example amongst individuals classed as avoidant who deactivate their attachment systems]. When that occurs one or more other activities may come to monopolize the person's time and attention, acting apparently as diversions.

(b) One or a set of responses a person is making may become disconnected cognitively from the interpersonal situation that is eliciting it, leaving him unaware of why he is responding as he is. When that occurs the person may do one or more of several things, each of which is likely to divert his attention away from whoever, or whatever may be responsible for his reactions:

- He may mistakenly identify some other person (or situation) as the one who (which) is eliciting his responses. [misattribution]

- He may divert his responses away from someone who is in some degree responsible for arousing them and towards some irrelevant figure, including himself. [angry towards someone other than a neglectful parent]

- He may dwell so insistently on the details of his own reactions and sufferings that he has no time to consider what the interpersonal situation responsible for his reactions may really be.

**The Deactivation of a System: Repression**

A behavioural system becomes active only when the necessary combination of inflows, from exteroceptors and/or interoceptors and/or memory stores reaches it. Should such inflows be systematically excluded it follows that the system must be immobilized, together with the thoughts and feelings to which such inflows give rise, and that it must remain so until such time as the necessary inflow is received. In traditional terms the system thus deactivated is said to be repressed. Or, put the other way about, the effects of repression are regarded as being due to certain information of significance to the individual being systematically excluded from further processing. Like repression, defensive exclusion is regarded as being at the heart of psychopathology. Only in their theoretical overtones is it necessary to make any distinction between the two concepts.
The exclusion of significant information, with the resulting deactivation of a behavioural system [of which the attachment system is one], may of course be less than complete. When that is so there are times when fragments of the information defensively excluded seep through so that fragments of the behaviour defensively deactivated become visible; or else feeling and other products of processing related to the behavior reach consciousness, for example in the form of oods, memories, day dreams or night dreams, and can be reported. These psychological phenomena have given rise in traditional psychoanalytic theory to concepts such as the [Freudian] dynamic unconscious and the return of the repressed….

In this chapter I have tried to indicate the lines along which it may be possible to develop a theory of defence using concepts derived from recent studies of human information processing. In the chapters to follow I attempt to use these ideas to shed light on responses to loss.

[Bowlby will proceed to use the example of the experience of grief where there is the loss of an intimate other, and then apply this to what happens when parents are emotionally unavailable to the child.]