

*Emotion concepts and learning theory 1:**Theories of emotion and the nature of emotional reactions**Psychological Theories of Emotion*

Among the various theories of the 'nature' of emotion which have been put forward by psychologists we may distinguish three main varieties:

- (1) those which construe an emotion as a form of *conscious experience*,
- (2) those which construe an emotion in terms of objectively observable *behaviour*; and
- (3) those which construe emotion in terms of *physiology*.

Emotion as experience

Among those theories of emotion in which emotion is construed as a form of conscious experience we may differentiate

- (a) those in which emotion is thought of as a raw or uninterpreted experience, that is, as a pattern of sensory experiences or sensations, as in the case of the James-Lange theory (8), or as an uninterpreted raw experience of a kind to be differentiated both from sensation and from mental imagery, as proposed by Wundt (21) and
- (b) those which construe emotion in terms of the way in which experiences which are not in themselves intrinsically emotional are interpreted or understood by the individual. This type of theory is typical of the *phenomenological* approach to emotion as illustrated by the work of Sartre (18).

Emotion as behaviour

Among behavioural theories of emotion we may likewise distinguish two sub-types

- (a) those like that of Watson (19) in which emotions are regarded as innate pattern reactions consisting partly of overt expressions of fear, rage and love and partly of implicit visceral and glandular reactions

- (b) theories in which emotions are construed as dispositions or propensities to behave in certain publicly observable ways which may or may not manifest themselves overtly in the type of behaviour in question.

The most explicit statement of the latter view is to be found in the work of philosophers of mind like Ryle (17) and Bedford (2). There is however, a similar tradition within psychology itself which can be traced back to the early work of Breuer and Freud (3) who construed the emotional outburst which they call the *abreaction* in terms of a release of repressed psychic energy. From this is derived what has been called the 'dynamic' theory of emotion which emphasizes the close conceptual connection between emotion and motivation. Within this tradition we find, not only mentalists, like Lewin (10) who conceived emotion in terms of the tension between two conflicting motivational forces or valences within the psychological life space or Leeper with his 'motivational' theory of emotion (9) but also S-R behaviourists like N.E. Miller (12) and O.H. Mowrer (13) who developed the notion of fear as a 'response-produced drive' within a conceptual framework derived from that of Hull (7). Hull's concept of *drive* (*D*) has two aspects or components. On the one hand it has a behavioural arousal component by virtue of which it combines with habit strength (*sH_n*) to determine the excitatory potential (*sE_n*) for the elicitation of a particular response by a particular stimulus; but since on Hull's theory it is the reduction of a drive state which reinforces stimulus-response connections, it also has an important function in determining what patterns of behaviour are acquired and maintained. Although Hull's concept of 'drive' has been severely and rightly criticised as an account of motivation, which is what it was intended to be, the theory of emotional reactions as response-produced drives, has a lot to be said for it, as we shall see, particularly as an account of high arousal emotional reactions like excitement, anger and fear and distress.

Physiological theories

Physiological theories of emotion are of three main types

- (a) *peripheral theories*, such as Cannon's (4) earlier theory which identified emotion with patterns of glandular and visceral smooth muscle responses controlled by the autonomic nervous system whose

function, in the case of those controlled by the sympathetic branch of that system is to prepare the organism for "flight or fight",

- (b) *subcortical theories*, such as the later Cannon-Bard theory (1) which identifies emotion with the activity of the centres in the hypothalamus which are known to play an important part in the control both of the autonomic nervous system and of organised patterns of 'emotional' motor behaviour like the rage reaction exhibited by the decorticate cat (1), and
- (c) *cortical theories*, such as that of Hebb (6b) which construes emotion in terms of the disruption of 'phase-sequences' in terms of which on-going behaviour is assumed to be organised at the cortical level.

The question at issue

In attempting to decide between these different theories, or rather, in deciding how to reconcile what is right in each of them so as to produce a general theory of emotion which will incorporate the virtues of all of them, it is important to begin by distinguishing three different questions to which these different theories can be construed as offering an answer:

- (1) the question - 'what do emotion words mean?' - 'what are we saying about someone when we describe him as relieved, pleased, excited, angry, frightened, distressed, disgusted, miserable or bored?'
- (2) the question - 'what it is that produces a particular emotional reaction in a person?' - 'what makes him relieved, pleased, excited, angry, frightened, disgusted, miserable or bored as the case may be?'
- (3) the question - 'what is the underlying categorical basis of an emotional state?' or 'what does an emotional reaction consist in when it is analysed in molecular or micro-reductive terms?'

As soon as we separate out these different questions, it immediately becomes apparent that the physiological theories cannot be plausibly construed as answers to either of the first two questions. Since the man in the street who has no knowledge of physiology knows perfectly well how and when to apply concepts like, relief, pleasure, excitement, anger, fear, distress, disgust, misery and boredom both in his own case and in his interpretations of the behaviour of others, it cannot be plausibly maintained, as Hebb (6a)

has tried to argue, that what he is talking about when he uses these terms is some activity or state of the brain. Nor could it be plausibly argued that emotional reactions are reactions to states or processes in the brain except in so far as the various experiences which give rise to them turn out, when we give a micro-reductive account of them, to consist in some kind of brain activity. Clearly therefore, any physiological theory of emotion must be an attempt to explain the phenomena of emotion in micro-reductive terms. In other words, it must be an attempt to answer the third of the three questions we have distinguished.

However before we can answer questions about the categorical basis or composition of emotional phenomena, we must first of all be able to specify with some degree of precision the phenomena we are trying to explain by means of such a micro-reductive analysis. In other words we must be able to answer the first of the three questions we have distinguished, before we can hope to tackle the third question. Furthermore, although we can perhaps say something about the sorts of things which make people relieved, pleased, excited, angry, frightened, distressed, disgusted, miserable or bored on the basis of our ordinary understanding of these concepts without developing a systematic semantic analysis of them, we cannot hope to analyze the stimulus conditions for the occurrence of an emotional reaction experimentally without first deciding on the criteria we are going to use for the occurrence of a particular emotional reaction.

Now it is of course, open to the psychologist to adopt any kind of workable operational definition of the occurrence or non-occurrence of an emotional reaction he finds convenient in order to determine experimentally the precise stimulus and other conditions for the occurrence of an emotional reaction so defined. This is the procedure adopted by Estes and Skinner (5) when they set out to study the '*conditioned emotional response*' defined in terms of the suppression of ongoing operant responding. Such an arbitrary operationalisation of the concept of emotion, however is open to the objection that what is studied in such experiments is not what other psychologists or what the man in the street is talking about when he uses the concept of emotion and the various concepts subordinate to it. Consequently in order to defend a particular operational definition of emotion from such a charge, it is necessary to provide a conceptual analysis of the various emotion concepts as they are employed in ordinary language in order to show how the operational definition in question relates to our ordinary use of these terms, and hence to what extent, if at all, the results of experiments employing this operational definition can be taken as throwing light on the conditions under

which emotions, as we ordinarily understand them, occur. In other words before we can pursue the second of our questions experimentally, we must first be able to evaluate our operational criteria for the occurrence of an emotional reaction in terms of the answer that is given to the semantic problem posed by the first of our three questions.

Having identified the physiological theories as answers to the third of our three questions, and having seen that the first or conceptual question is basic to any answer we give to the other two, we may now go on to ask which of our three questions the experimental and behavioural theories of emotion are answers to. Once this problem is raised, it immediately becomes apparent that a theory which describes emotional states in terms of publicly observable behaviour cannot by any stretch of the imagination be construed as an answer to a question about the stimulus conditions for the occurrence of an emotional reaction. Nor, since publicly observable behaviour is the molar phenomena *par excellence* as far as psychology is concerned, can a behavioural theory of emotion be construed as providing a molecular or micro-reductive explanation of emotional phenomena. Such a theory has to be viewed as a possible answer to the first of our three questions, the problem about the semantics of our ordinary emotion concepts, which is of course, how it is viewed by the logical behaviourists who advocate this kind of view.

The experiential theories of emotion on the other hand, would appear to divide neatly into two types as far as the kind of question which they seek to answer is concerned. Theories, such as that of Wundt (2) and that of James (8) and Lange, which construe an emotion as a kind of raw or uninterpreted experience are evidently trying to answer our first question, the question about what it means to say of someone that he is in this or that emotional state. The phenomenological theories, like that of Sartre (18) on the other hand, are equally clearly concerned with answering our second question, since we are here concerned with the way in which the individual interprets his current experience and how these interpretations and consequent beliefs affect his emotional reactions to them.

If this is right it follows that the only genuine competition between the different theories I have mentioned is between the raw experience theories like the Wundtian and the James-Lange, on the one hand and the various behavioural theories like those of Watson, Ryle and the dynamic psychologists on the other, with respect to the kind of answer that is to be given to the first of our questions, the question what it means

to say of someone that he is in a particular emotional state. As far as our second question is concerned the only important conflict is between the phenomenological view which emphasizes the way the individual interprets his current experience as the primary determinant of his emotional response to it and the psycho-analytic view which emphasises the importance of early childhood experiences which the individual no longer consciously remembers in determining his emotional reactions in the here and now. As far as the third question is concerned, the competition in so far as it exists, is between the different physiological theories of emotion, each of which probably emphasises a different aspect of the whole story which will almost certainly turn out to be extremely complex, involving anatomical structures at a variety of different levels within the central nervous system. However, as I have already argued, until we can specify the nature of emotional phenomena in the conceptual sense, we shall not know what it is that the micro-reductive physiological theories are required to account for; and until we know *that*, we have no means of telling what parts of the physiology are and are not relevant to its explanation.

In the light of these considerations, the strategy I propose to adopt in developing my own account of this complex matter is to begin with our first question that is with a conceptual analysis of the emotion concepts of ordinary language. From this I shall hope to discover the kinds of operational definitions of emotion which come closest to providing a measure of those aspects of experience and behaviour to which we advert when we employ this group of concepts in ordinary language. Having done this I propose to proceed in the next lecture to discuss the different environmental contingencies which characteristically give rise to different emotional responses, in other words, an answer to the second of our questions. The third question, which concerns the physiological micro-reduction of emotional phenomena, I do not propose to discuss specifically, since I have already presented an outline theory of what I take to be the categorical basis of a state of emotion in the form of the *servo mechanism* described in the previous lecture [lecture 24].

The vocabulary of feeling and emotion

In developing a conceptual analysis of the emotion concepts of ordinary language, we need to begin with a classification of the words and expressions which are used in ordinary language which we recognise as describing the emotional reactions of the individual following the procedure we used in Lecture 17 in

dealing with ordinary language psychological concepts in general. If we adopt this procedure with those words and expressions which fall under the general rubric of emotion words, we find I suggest, the following varieties:

1. *Mental Process words*

- (a) Mental activity verbs: 'enjoying' and 'enduring' or 'putting up with something'.
- (b) Secondary quality adjectives qualifying environmental objects and sensations perceived by the individual: 'soothing', 'pleasant', 'attractive', 'interesting', 'stimulating', 'exciting', 'irritating', 'infuriating', 'frightening', 'terrifying', 'distressing', 'painful', 'unpleasant', 'repulsive', 'sombre', 'depressing', 'boring' and 'uninteresting'.
- (c) Nouns of feeling: 'feeling a glow of pleasure', a 'thrill of excitement', 'a surge of anger', 'a chill of fear', a 'thud of disappointment'.
- (d) Noun phrases of intro-perception and sensation: 'feeling one's heart beating faster', 'one's hair standing on end', 'a cold sweat', 'one's flesh creeping', an empty feeling in the pit of one's stomach'.

2. *Mental Event words*

Passive mental act verbs: 'was relieved' or 'pleased at', 'amused', 'stimulated', 'excited', 'irritated', 'surprised', 'startled', 'frightened', 'terrified' or 'distressed by', 'disgusted' or 'disappointed at' and 'depressed by something'.

3. *State of Mind words*

- (a) short-term state of mind adjectives: 'bored', 'relieved', 'pleased', 'amused', 'interested', 'excited', 'elated', 'angry', 'afraid', 'terrified', 'distressed', 'disgusted', 'disappointed', 'miserable'.
- (b) long-term state of mind adjectives-mood words: 'listless', 'apathetic', 'calm', 'relaxed', 'happy', 'jocular', 'elated', 'excited', 'irritable', 'anxious', 'nervous', 'touchy', 'upset', 'unhappy', 'depressed'.

4. *Mental Disposition Words*

- (a) Adjectives of Temperament: 'apathetic', 'calm', 'stable', 'happy', 'jolly', 'excitable', 'irascible', 'bad-tempered', 'nervous', 'neurotic', 'difficult to please', 'melancholy'.
- (b) Object specific emotional disposition verbs: 'wanting', 'not wanting', 'liking' and 'disliking something'.

Emotional activities, experiences, reactions, states and dispositions

This classification is based partly on the conventional grammatical classification into nouns, active verbs, passive verbs and adjectives and partly on the classification into different existential categories based upon it and upon a more detailed study of the logical behaviour of the words and expressions in question as described in Lecture 8 and as applied to the psychological concepts of ordinary language in general in Lecture 17. I pointed out in Lecture 8 that activity verbs are distinguished by the fact that in English they take definite continuous tenses and are thus something which the individual can be said to be engaged in doing. I further suggested in Lecture 18 that the mental activities referred to by mental activity verbs are characterised by the control that is exercised by the individual over his own private experiences and that it is to these private conscious experiences that the mental process nouns refer. The secondary quality adjectives which qualify environmental features and sensations experienced and perceived by the individual also serve to characterise his private experience at the time. Mental Events, I argued in Lecture 17, are distinguished from mental processes by the fact that though they occur at specific points in time, they are not extended in time. They constitute, as suggested in Lecture 20, the interface between a mental process or activity and a mental state. As is suggested by the fact that the list of past participles of the passive verbs used to refer to mental events of the emotional type is largely coextensive with the list of adjectives referring to what I have called short-term states of mind, the mental events constituted by emotional reactions consist primarily in the initiation of one of these short term states of mind or *emotional states*, as I propose to call them.

In Lecture 17 I drew a distinction among mental states between *mental dispositions* which affect the way the individual behaves and the controls his experiences only when the relevant topic or issue arises and *states of mind* which, although they do not imply the occurrence of any specific form of behaviour or experience at the moment to which reference is made, nevertheless affect the whole character of a man's experience and behaviour during the period of time over which they apply. I also suggested that states of mind in this sense are invariably emotional in character. However, as is implied by the above classification, not all mental states which involve emotion are states of mind. On the one hand there are temperamental characteristics whereby individuals differ permanently from one another in the readiness with which they

exhibit different types of emotional reaction, the predication of which does not imply that the individual concerned is currently in the mental state in question. On the other hand there are the mental dispositions of liking, disliking, wanting and not wanting whereby the individual is prone to react emotionally in a particular way to the anticipation or perception of the events or states of affairs which he likes, dislikes, wants or does not want, which likewise do not affect his experience and behaviour in the continuous and all embracing way that a mood or short term emotional state does.

Temperamental characteristics are distinguished from what we may call the emotional complexes of liking, disliking, wanting and not wanting by the generality of the former as compared with the specificity of the latter with respect to the nature of the stimulus which elicits the emotional reaction in question. A similar lack of specificity also distinguishes long term states of mind or moods from the short term states of mind which are initiated by specific stimulus events or by particular interpretations of those stimuli and their resultant experiences on particular occasions. A man who is in an irritable mood is one whose threshold for anger-provoking stimuli is temporarily lowered. He is distinguished from the man of irascible temperament by the fact that the latter, unlike the former, has a threshold for anger which is permanently much lower than that of his non-irascible fellows who may nevertheless develop moods of irritability from time to time. There is a sense of course, in which the state of mind of the man in an irritable mood is continuously changed in a characteristic way only during those periods when he is actively angry about some specific event that has evoked his anger. To that extent, a mood is closer to a permanent mental disposition like a temperamental characteristic, than it is to the state of mind of someone who is actively angry. However since it appears to be a principle of human, if not of animal psychology, that the elicitation of a particular emotional reaction has the effect of temporarily lowering the threshold for subsequent elicitation of the same reaction by other stimuli, it is usually extremely difficult to specify the point in time when the short term state of mind elicited by an emotional reaction gives way to a mood characterised by a lowered threshold for subsequent reactions of the same type.

Experience and Emotion

The upshot of this discussion is that as far as emotional states and dispositions are concerned the basic concept is the short-term state of mind or emotional state whose initiation constitutes the mental event we have referred to as an emotional reaction. Although, as Wittgenstein (20) has pointed out, such states of mind are continuous in the sense that they affect the whole character of an individual's behaviour and experience throughout their period of operation, they are nevertheless dispositional in the sense that to say that an individual is in a given emotional state is to specify a range of behaviour patterns and experiences which he is liable to exhibit; it does not assert either that any one of these expressions of the emotion is actually occurring at the time in question, or that there exists some kind of internal categorical state of the person on which this liability depends. Furthermore, although being in a given emotional state undoubtedly includes the liability to experience certain characteristic experiences such as a glow of pleasure, a thrill of excitement or a thud of disappointment, and although such experiences undoubtedly play an important part in the individual's discrimination of his own emotional state, to say that someone is in an emotional state does not entail that he is currently having such experiences or even that he is liable to have them. If a man exhibits the kind of behaviour that is characteristic of someone who is pleased, angry or afraid, we are perfectly justified in concluding that he *is* pleased, angry or afraid regardless of what he may say about the experiences he is currently having.

One way of describing such a case where there is a discrepancy between the way a man behaves and the experiences he is having is to say that, although he actually *is* pleased, angry or afraid, he does not *feel* pleased, angry or afraid. In other words his being *in* the emotional state in question is a matter of how he behaves or is liable to behave; his experiences are relevant only in so far as they enable him to diagnose his own emotional state correctly. This conceptual primacy of behaviour over experience in the definition of emotional states is also demonstrated by the fact that when we try to describe the experiences that are characteristic of a given emotional state, we find ourselves having to distinguish between those glows, thrills, surges and thuds which are characteristic of emotional states and other glows, thrills, surges and thuds which are mere sensations without emotional significance; and in order to do this we have to specify the emotional state of which the experience in question is characteristic, which in turn implies that the emotion is something (behavioural) over and above the experience that is typical of it. My conclusion therefore, is that while the

James-Lange theory provides a plausible account of those experiences which are characteristic of someone's being in a given emotional state and hence of what it means for someone to feel pleased, angry, afraid etc., it provides no account of what it means to say that someone actually *is* in such an emotional state. To be in an emotional state is to be defined, I suggest, primarily in behavioural terms.

The view for which I have argued, according to which emotional experiences are visceral and kinaesthetic sensations which are characteristic, rather than constitutive of emotional states does not however, exhaust the role of experience in emotion. Another factor to which our use of secondary quality adjectival predicates as applied to experiences and sensorily discriminated features of the environment draws attention, is the role of experience and its interpretation in the involuntary elicitation of emotional reactions. Clearly something can only be said to be soothing, pleasant, attractive, interesting, stimulating, exciting, irritating, infuriating, frightening, terrifying, distressing, painful, unpleasant, repulsive, sombre, depressing, boring or uninteresting in so far as

- (a) it is experienced or perceived by someone, and
- (b) elicits or fails to elicit an appropriate emotional reaction from him or her.

Such descriptions, although they usually assume that everyone reacts emotionally in much the same way to the objects or events which are so described, are based primarily on the emotional reactions of the speaker to these objects and events. Consequently no one would describe something as pleasant, irritating or repulsive if

- (a) he was not himself pleased, irritated or repelled by it, and
- (b) he was not aware that he was so pleased, irritated or repelled; in other words, if he did not feel pleased, irritated or repelled by it, as well as actually *being* pleased, irritated or repelled.

Thus experience has a double role in assessing the secondary qualities of an object. In the first place the individual must experience or perceive the distinctive characteristics of the object or event in question; but he must also discriminate the character of his own emotional reaction and hence the experiences characteristic of the emotional state induced by the experience of the object or event itself are crucial.

Enjoying and enduring

Finally something needs to be said in this connection about the nature of the emotional activity words 'enjoying' and 'enduring' and about the role of conscious experience in such activities. The verb 'to enjoy' takes the continuous aspect in English and is something in the doing of which someone can be continuously engaged over a period of time. It is therefore, unquestionably an activity verb. Moreover 'enjoying' is one of the mental activity verbs which Ryle (17) refers to as 'heed concepts' in *The Concept of Mind* and for which, as we saw in Lecture 19, he attempted to provide a dispositional analysis by means of the concept of the 'mongrel categorical expression' (17, pp.135-149). This theory accounts for the fact that these heed concepts are expressed by means of what are undoubtedly activity verbs on the supposition that what is attended to, looked at, listened to, or enjoyed is always some publicly observable activity of the person which imparts its activity logic, as it were, to the verb which qualifies the activity in question. What is expressed by such a locution, according to Ryle could be less misleadingly stated by means of an adverb or adverbial expression qualifying the verb referring to the publicly observable activity concerned. In other words, instead of saying that he attended to, concentrated on or enjoyed what he was doing, what we ought to say is that he did what he did attentively, with intense concentration or with enjoyment. Having eliminated the mental activity verbs by this device, Ryle is now in a position to give a dispositional analysis of the resultant adverbial expression which is held to characterise the manner in which the publicly observable activity in question is performed which, in the case of doing something with enjoyment, is a matter of doing something without being inclined or tempted to desist from so doing and "without lecturing or adjuring himself to do so". (17, p.108).

In my paper 'the concept of heed' (16) I criticised this theory of Ryle's, as it applied to verbs like 'attending', 'concentrating', 'looking', 'listening' and 'observing' on the grounds

- (a) that one can be said to attend to, concentrate on, look at, listen to and observe many things besides the publicly observable activities which one is simultaneously performing, and
- (b) that no coherent account can be given, in the case of doing something attentively or with concentration, of the behavioural dispositions in which these adverbial expressions are supposed by Ryle to consist.

I, therefore, argued in favour of a return to the traditional view which I presented in Lectures 18 and 19 according to which mental activity verbs refer to the part muscular, part intra-psychic activity whereby the individual controls and generates his own private conscious experiences.

In his paper 'The Logic of Pleasure' (15) Terence Penelhum applied the argument I had used in the case of 'attending' in criticising Ryle's analysis of 'enjoying'. However, while I would agree with Penelhum that Ryle is mistaken in claiming that it is only publicly observable activities that we can be said to enjoy, I would want to defend Ryle's mongrel categorical theory as it applies to 'enjoying' in a way that I would not want to defend it as applied to 'attending'. For it certainly does seem to me to be the case that enjoying is a verb which, like 'trying' and unlike 'attending', 'looking', 'listening' or 'observing' *does* invariably entail the occurrence of some other activity which one is enjoying doing. On the other hand, Penelhum seems to me to be entirely right, when he argues that there is in effect, only one kind of activity which we can be said to enjoy, namely some kind of mental activity such as looking, watching, listening, savouring, feeling, contemplating, thinking or dreaming. We can only enjoy performing some publicly observable activity, like playing golf, in so far as we pay attention to and experience the sensations which it produces in us.

Furthermore, when we ask what more there is to enjoying doing something over and above simply doing that thing, I would again agree with Penelhum in holding that to enjoy doing something is a matter of performing the mental activity in question in a certain frame of mind, namely, the frame of mind of wanting to continue doing whatever it is one is enjoying doing. But since I favour a Rylean dispositional analysis of 'wanting' this means that in my view, enjoying is nothing more than a way of performing a certain mental activity, performing it in such a way that if certain contingencies arise, certain consequences follow.

Wanting as a state of mind

The analysis of enjoyment in terms of the performance of a mental activity in the frame of mind of wanting it to continue and not wanting it to stop, draws our attention to an important distinction which needs to be drawn between two senses or uses of the verb 'to want' and its contrary 'not to want'. In one of these senses, the one which we have been discussing hitherto in these lectures, 'wanting' and 'not wanting' refer to a particular kind of mental disposition which usually extends over long periods of time and whose exercises

or manifestations are often separated from another by long intervals within the period of time over which the desire or aversion in question extends. The other sense of 'wanting' and 'not wanting' which we have now encountered differs from the first in that it is a short term state of mind like an emotional state which seldom persists for more than a few minutes and at most for an hour or two. It also differs from the long term mental disposition sense of 'wanting' and 'not wanting' in that, whereas virtually any event or state of affairs can be the intentional object of someone's desires or aversions in the dispositional sense, 'wanting' and 'not wanting', *qua* states or frames of mind only take actions and activities as their intentional object. They are a matter, not of wanting or not wanting something to come about, but of wanting or not wanting to do something. Furthermore the kinds of action which one can be in a frame or state of mind of wanting or not wanting to do are limited to actions defined in terms of states of affairs which the agent is in a position to bring about immediately by his own unaided movements.

The distinction between these two senses of 'wanting' helps to resolve a curious problem about the conceptual relation of 'wanting' and 'emotion' which has perplexed me ever since I first began to think seriously about this problem nearly twenty years ago. As I pointed out in Lecture 13 it would seem to be the case that to say that someone *wants* something entails that he will be

- (a) *pleased*, if he thinks he has got or is about to get what he wants,
- (b) *worried* or *afraid*, if he thinks that he may not get it;
- (c) either *angry* or *depressed*, if he thinks he no longer has any hope of getting it.

Similarly, to say that someone *does not want* something entails that he will

- (a) be *worried* or *afraid*, if he thinks it is likely to come about,
- (b) *angry* or *distressed*, if it does come about or if he thinks it has, and
- (c) *relieved*, if he thinks it has not come about or is not now likely to come about.

At the same time, it also seems correct to say that to say of someone that he is *pleased by* or *relieved at* something entails that he does not or would not want it to be otherwise, that to say that he is *afraid of* something entails wanting to escape from, avoid or otherwise prevent it from happening, to say that he is *angry with* someone or something entails wanting to attack, hurt or destroy that something, that to say that he is *distressed at* something is to say that he wants to escape from the circumstances which are the occasion

of his distress, while to say that he is *depressed* or *miserable* is to say that there is little or nothing that he positively wants to do and much that he positively does not want to do.

This account yields what appears at first sight to be a vicious circle whereby we begin by defining 'wanting' and 'not wanting' in terms of a disposition to exhibit various emotional reactions under certain specifiable circumstances and then find ourselves needing to define those emotional reactions themselves in terms of the individual's coming to want or not to want certain other things. Given however, that there are these two different senses of 'wanting', one of which is a long term mental disposition, while the other is a short term state of mind, we are able to resolve the paradox by suggesting that it is 'wanting' and 'not wanting' in the long term dispositional sense which consists in the disposition to exhibit certain emotional reactions under certain specifiable circumstances and that it is 'wanting' and 'not wanting' in the short term state of mind sense which enters into the analysis of the emotional reactions and the emotional states they inaugurate.

This resolution of the paradox however, leaves us with the problem of giving some account of what it means to say that someone wants or does not want something in the short term mental state sense, which does not rely upon the notion of the disposition to react emotionally in certain ways under certain circumstances. This problem can be resolved, I suggest if we take our cue from the observation that what is wanted or not wanted, where this refers to a short term state of mind is always the initiation, continuation or completion of some current or immediately available action or activity of the person concerned, coupled with Ryle's suggestion that to enjoy doing something and hence, to do what one wants to do, is to do it without needing any external inducement or incentive to continue doing it, while requiring or strong external inducement or incentive to persuade one to stop doing it. In other words the suggestion is that 'wanting' and 'not wanting' in this short term state of mind sense are to be defined in terms of the external incentives and inducements required to dissuade someone from doing something which he requires no external incentive or inducement to do, or to persuade him to do what he needs no incentive or inducement not to do. What I am suggesting in effect is that we can define the notions of 'wanting' and 'not wanting' in this short term state of mind sense in terms of temporary changes in, what would be called in the language of operant psychology, the 'reinforcing effect' of certain actual and potential stimuli with respect to certain actual and

potential operant responses of the organism, including changes whereby the feedback from the emission of certain operants becomes *intrinsically reinforcing*. I am also suggesting that certain ordinary language concepts closely related to that of ‘wanting’ or ‘not wanting to do something’ in this short term state of mind sense, such as the notion of ‘an impulse to do something’, of ‘enjoying’ and ‘enduring’, and of ‘pleasantness’ or ‘unpleasantness’, can be similarly defined.

Emotional Reactions and Emotional States

We are now in a position to proceed to the discussion of the central problem in the analysis of emotion concepts, namely the analysis of the concept of an emotional reaction and the short term emotional states which are inaugurated thereby.

Proposed definition

An emotional reaction is an involuntary reaction of an organism to environmental stimulation or to the acquisition of interpretations of or beliefs about the state of the environment which results in a temporary change in the performance characteristics of the organism. The temporary state produced by an emotional reaction is known as an emotional state or affect. Emotional reactions produce changes in three performance variables or dimensions, differences with respect to which serve to differentiate one type of emotional state from another viz.

- (1) behavioural and physiological arousal,
- (2) the reinforcement of antecedent, ongoing or subsequent operant responses, and
- (3) specific impulses.

Dimensions of Emotion

The analysis of emotion into three dimensions was originally suggested by Wundt (21). Wundt's dimensions were *excitement-depression*, *strain-relaxation*, and *pleasant-unpleasant*. Myers (14) has pointed out that Wundt's *excitement-depression* and *strain-relaxation* polarities are not true dimensions independent and orthogonal to the *pleasant-unpleasant* dimension. Thus *excitement* has a pleasant

connotation, while the connotation of *depression* is unpleasant. By the same token *strain* has an unpleasant connotation, while the connotation of *relaxation* is pleasant. The solution proposed by Myers is to collapse Wundt's *excitement-depression* and *strain-relaxation* into a single dimension of *enhanced activity-diminished activity* or, to use more up to date terminology, *high arousal-low arousal*. This gives us a two-dimensional space with two truly independent and orthogonal axes, the *high arousal-low arousal* dimension and the *pleasant-unpleasant* dimension. This is the analysis followed here.¹

Table illustrating the application of the bi-dimensional theory to specific emotions

A		<i>PLEASANT</i>	<i>MIXED</i>	<i>UNPLEASANT</i>
R	HIGH	Excitement Sexual arousal	Anger Awe	Fear Anxiety Distress
O				
U	MEDIUM	Pleasure Enjoyment Love	Nostalgia Pity	Disgust Shame Embarrassment
S				
A	LOW	Relief Relaxation	Weariness Apathy	Grief Misery Depression
L				

Impulses

Impulses to react in specific ways need to be introduced as a third variable (not a true dimension) in order to differentiate e.g. between disgust and embarrassment or sexual arousal and other forms of excitement which cannot be distinguished in terms of their position in this bi-dimensional space. An impulse may be defined as the incipient elicitation of an operant which becomes intrinsically reinforcing by virtue of the changes in reinforcement sensitivity brought about by the emotional reaction in question.

Examples

¹ For these purposes, the *pleasant-unpleasant* dimension is defined, as suggested above, in terms of the reinforcement of operant responding. A pleasant emotion is taken to be one involving reinforcement of the antecedent and ongoing operant responses. An unpleasant emotion is taken to be one in which an operant response is reinforced if it occurs immediately antecedent to an abrupt termination of the emotional state and its eliciting stimuli.

<i>Emotion</i>	<i>Impulsive response (Expression)</i>
Excitement	Jumping up and down
Sexual arousal	Embracing, etc.
Anger	Aggression
Fear	Escape
Love	Caressing, Fondling
Pleasure	Smiling
Nostalgia	Weeping
Pity	Succorance
Disgust	Vomiting
Shame	Abasement
Embarrassment	Hiding
Relief	Sighing, relaxing
Weariness	Resting, sleeping
Misery	Weeping

N.B. 1. Autonomic responses specific to particular emotions which are not susceptible to voluntary control e.g. erection in sexual arousal, blushing in embarrassment, salivation in gustatory pleasure and disgust are not impulsive responses in this sense.

N.B. 2. Verbal impulses (exclamations) tend to replace motor impulses as expressions of emotion in adult humans.

Measurement of Emotion

All these three aspects of emotional reactions and states are in principle susceptible to objective observation and hence to operational definition for purposes of measurement. However each dimension requires different observation and measurement techniques, all of which are difficult to apply outside controlled clinical or laboratory situations. They are virtually impossible to apply simultaneously, even under optimal conditions. Hence the importance of global clinical impressions and self-reports in the assessment of an individual's affective state.

Measurement of Arousal

The concept of arousal implies a systematic variation in the activity and re-activity of the physiological and behavioural system as a whole between deep sleep at the extreme low arousal end of the continuum and a varied assortment of conditions such as alert expectancy, intense concentration on an intellectual problem, extreme physical exertion, blind rage or terror and sexual orgasm at the high arousal end.

In practice the correlation implied by the concept between different measures of arousal is seldom found, and this has led to much criticism by physiologists and psycho-physiologists of the indiscriminate use made of this concept by many psychologists.

The various so called measures of arousal are as follows:

1. Cortical Arousal - the predominant rhythms of the E.E.G. varying between the 0.5-3 c.p.s. of the slow delta waves in deep sleep to the beta waves in the 14-30 c.p.s. range sometimes reported in anxious subjects.
2. Vigilance Measures - Critical flicker fusion (c.f.f.), two flash threshold (t.f.t.) and other sensory discrimination tasks.
3. Muscular tension - electro-myographic (e.m.g.) measures, mechanical measures of tremor (Luria technique.)
4. Measures of Drive - (*D*) in Hull's sense as a component of reaction potential (*sE_n*) - general activity measures of latency, amplitude and emission frequency of operant responding with reinforcement variables held constant.
5. Autonomic Measures - Electrodermal measures, G.S.R., skin potential, Cardiovascular measures, heart rate, blood pressure, peripheral blood flow, respiration.

Measurement of Hedonic Tone (Operant reinforcement valency)

The pleasantness/unpleasantness of the emotion aroused by a stimulus can be objectively determined by studying the effect of putative emotion-arousing stimuli on the emission of operant responses. If the effect of a stimulus is to *reinforce and facilitate* antecedent and ongoing operant responses, it arouses a *pleasant* emotion. If the occurrence of the stimulus tends to *suppress* ongoing operant responding (Estes & Skinner (5)) and if its *offset* or failure to occur when otherwise expected tends to reinforce immediately antecedent operant behaviour, the emotion aroused is *unpleasant*

Measurement of Impulses

In order to observe and measure incipient impulsive responses, the social inhibitions which prevent complete overt expression of emotional impulses must be removed. This overt release of suppressed emotional impulses is the phenomenon known to the psychotherapists as '*abreaction*' or '*acting out*'.

Abreaction may be induced in one of three ways:

1. by inducing a trance state by means of some combination of monotonous and rhythmic stimulation with suggestion as in hypnosis.
2. by the use of barbiturates, hallucinogens or ether.
3. by progressive shaping of emotion-expressing behaviour through social reinforcement as in certain forms of psychotherapy, e.g. play therapy with children or psychodrama with adults.²

As normally practised all these techniques, including the use of drugs involve interaction between patient and therapist and hence the danger that the therapist will reinforce histrionic behaviour in line with his or her expectations rather than genuine emotional expression. What seems to be needed is an objective method of showing that a response has acquired *intrinsic reinforcing properties* and is not dependent on *extrinsic reinforcement* for its occurrence. Demonstrations that the opportunity to perform the relevant *impulsive* response acquires reinforcing properties in an emotional state have been made by Miller (12) who showed that rats will learn an operant reinforced by the opportunity to escape from a conditioned fear evoking environment, and by Azrin and his associates who showed in an unpublished experiment that angry pigeons will learn an operant reinforced by the appearance of an appropriate 'target' for attack behaviour.

References

1. P. Bard 'Neural mechanisms in emotional and sexual behaviour', *Psychosom. Med.*, 1942, 4, 171-2.
2. E. Bedford 'Emotions' *Proceedings of the Aristotelian Society*, 1956-7, LVII, 281-304
3. J. Breuer & S. Freud *Studien über Hysteria*, 1895.
4. W.B. Cannon *Bodily Changes in Pain, Hunger, Fear and Rage*, New York, Appleton-Century 1929.

² The induction of abreaction by social reinforcement is most conspicuously the principle at work in these forms of psychotherapy. It may be, however, that all forms of psychotherapy are to be understood in these terms.

5. W.K. Estes & B.F. Skinner 'Some quantitative properties of anxiety', *J. Exp. Psychol.* 1941, 29, 390-400
6. D.O. Hebb (a) 'Emotion in man and animal: an analysis of the intuitive process of recognition' *Psychol.Rev.* 1946, 53, 88-106
(b) *Organisation of Behavior*, New York, Wiley 1949
7. C.L. Hull *Principles of Behavior*, New York, Appleton-Century 1943
8. W. James 'What is emotion', *Mind* 1884, 9, 188-205
9. R.W. Leeper 'A motivational theory of emotion to replace "emotion as disorganised response"', *Psychol. Rev.* 1948, 55, 5-21
10. K. Lewin 'Behavior and development as a function of the total situation' in L.Carmichael, (ed.) *Manual of Child Psychology*, New York, Wiley 1946, pp. 791-844
11. A.R. Luria *The Nature of Human Conflicts* New York, Liveright 1932
12. N.E.Miller 'Studies in fear as an acquirable drive: I. Fear as motivation and fear reduction as reinforcement in the learning of new responses' *J. Exp. Psychol.* 1948, 38, 89-101
13. O.H. Mowrer *Learning Theory and Personality Dynamics* New York, Ronald 1950
14. C.S.Myers 'The evolution of feelings' *Australian Journal of Philosophy and Psychology* 1923.
15. T.Penellhum 'The Logic of pleasure' *Philos. and Phenom. Res.*, 1956-7, XVII 488-503
16. U.T. Place 'The concept of Heed' *Brit. J. Psychol.* 1954 XLV 243-255
17. G. Ryle *The Concept of Mind*, London, Hutchinson 1949
18. J.P. Sartre *Sketch for a Theory of Emotions*, London, Methuen 1962
19. J.B. Watson *Psychology from the Standpoint of a Behaviorist*, Philadelphia, Lippincott 1919.
20. L. Wittgenstein *Philosophical Investigations*, trans. G.E.M.Anscombe, Oxford, Blackwell 1953, p.59
21. W. Wundt *Grundriss der Psychologie*, Leipzig, Engelman 1896