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Review Article

Meditation

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SUMMARY Meditation practices which have appeared across cultures and at different times are briefly described, as well as the mechanics of meditation practices in the West. The research problems which arise in examining the effects of meditation are outlined and the research literature reviewed under three headings: the psychophysiological correlates of meditation; personality change associated with learning and regularly practising meditation; the use of meditation as a therapy in psychiatric units, in cases of drug addiction, insomnia and hypertension. The dangers of meditation practice and possible explanations of the effects of meditation are described, together with a suggestion for the direction of future research.

Meditation is being used as a clinical tool within psychiatric units in both Europe and North America and efforts are now being made by a number of pressure groups to have meditation made available as a treatment within the National Health Service. There is also a persisting public interest in meditation, some 92,000 people in Britain having learned the technique privately. There is therefore a need for information about what meditation is, what the patterns of response to meditation practice are, whether its claimed effects can be objectively verified, and what diagnostic groups, if any, are most likely to benefit from it.

Meditation

Meditation is an exercise which usually involves the individual in turning attention or awareness to dwell upon a single object, sound, concept or experience. Historically, the goal of the exercise has been 'enlightenment' or direct experiential knowledge of an absolute such as God, Being, Unity, Brahma or 'The One'. Meditation has been practised for at least 2,500 years and probably very much longer; the most common form involves holding the attention on a sound or 'mantra'. The mantra is often a sound perceived by the teacher of meditation to be particularly suitable or powerful, or it can be the name of a spiritually revered person. The practitioner is generally taught to maintain awareness of the mantra, excluding other thoughts, external influences and desires. Subjects of meditation can also be visual (a candle flame, the picture of a teacher or 'guru', a mandala) or repetitive movements can be the central experience. A simple example of the latter is the repetitive touching of the tips of the four fingers individually with the thumb. Buddhism has amongst its meditation practices one reputedly used by the Buddha on the night he reached 'Nirvana' or achieved enlightenment. It consists of focussing the attention on the breath at the point at which it enters and leaves the nostrils. After practice of this breathing meditation, Zen Buddhist disciples are taught the practice of 'zazen' or sitting meditation, which involves maintaining 'simply a quiet awareness, without comment, of whatever happens to be here and now' (Watts, 1962).

There exist a variety of other meditation practices which appear in many different cultures. American Indians practise a form of meditation remarkably similar to zazen. In Africa, in the Kalahari desert, the people of the Kung ZHu/twasi practise a form of ritual dancing (like Islamic Sufi dancing) which activates a postulated energy source and

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produces an 'ecstasy' experience (Katz, 1973). Many tribal groups practise such ritual dancing coupled with chanting to produce altered states of consciousness (Sargant, 1973). Freuchen (1959) describes how the Eskimo would sit facing a large soft stone and using a small, hard hand-stone would carve a circle in the large stone continuously to produce a trance state.

These techniques of meditation are not confined to the religions of the East and of 'primitive' peoples, however. Meditation has long been used within the Christian religion and many of the Christian techniques are identical to those used in other religions, cultures and times.

Transcendental Meditation

Recently, meditation has been enthusiastically received in the United States of America and Europe by large numbers of people who have seen it as an answer to the 'stresses of modern life'. One of the better known of the techniques to be introduced in the West is Transcendental Meditation or 'TM'. Unfortunately, enthusiasm for TM has tended to lead to biased presentations and misleading explanations. Sensational research results have failed to receive the necessary critical examination and it is only now, after some ten years of intensive research activity, that a clearer picture of the effects of meditation is beginning to emerge.

The technique of TM is a standardized form of mantra meditation which has been adapted for Western use from an Indian technique and consists of the individual sitting upright with eyes closed, silently repeating the mantra. This mental repetition is supposed to be effortless, the meditator neither attempting to concentrate on the sound nor attempting to prevent his attention from wavering. There is no need to prevent thoughts during TM; the meditator is instructed merely to 'favour the mantra' and is frequently adjured to 'take it easily as it comes' during the period of instruction. It is recommended that TM is practised for twenty minutes in the morning and twenty minutes in the late afternoon, before breakfast and the evening meal. The major difference between TM and more traditional techniques of meditation is its essentially non-coercive, permissive nature—the meditator does not have to concentrate exclusively and strenuously upon his mantra.

Research Problems

Much of the research carried out on meditation has concentrated on TM, largely because of the availability of TM meditators and partially because people who learn TM are all taught in the same way, regardless of teacher or area. However, the process of learning TM subjects the individual to a variety of pressures, which create difficulties for interpreting research results. Throughout the process of learning, the individual's expectation of benefits is fuelled and fanned. There are social pressures upon the individual to experience and report benefits, and the payment of a large fee to the TM teacher is likely to deter the subject from believing he or she has gained nothing. Within the experimental situation, therefore, a variety of confounding variables are introduced. The subject has some predisposition to change anyway (hence taking up meditation) and there is the danger that he or she will view the experiment as an opportunity to prove that meditation works. There is also the problem that some experimenters may themselves be TM teachers or practitioners and so their motivations may have some effect on the outcome of the experiment. Finally, the demand characteristics of the meditation experiment are fairly explicit, since it is usually fairly obvious that the aim of the experiment is to discover the effects of meditation.

A partial solution to these problems has been the development of non-cultic techniques of meditation by psychiatrists and psychologists (e.g. Benson's Relaxation Response; Benson, 1975; Woolfolk's Breathing Meditation: Woolfolk, 1976) which reduce placebo and expectancy effects though for experimental purposes they cannot overcome the problems entirely. One of the more carefully developed and thorough of these techniques is a taped instruction course called 'Clinically Standardized Meditation', which has been developed by Carrington (1978) and which includes detailed instructions for learning and teaching the technique. Carrington also includes three one-

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hour cassette lectures dealing with the use of meditation in clinical conditions and special circumstances.

Research into Meditation

Research into the effects of meditation to date can usefully be divided into three major areas dealing respectively with the psychophysiological correlates of meditation, the effect of meditation on personality variables and the use of meditation as a therapy. Though there is a tendency for some reports to fit into two categories, the experimental approaches used in these categories have tended to be of a type which is generally specific to that category. However, by far the greatest research interest, as evidenced by the number of published reports, has been in the investigation of the psychophysiological correlates of meditation.

Psychophysiological Correlates of Meditation

The earliest research interest in meditation centred on the psychophysiological changes that occurred during its practice (Das and Gastaut, 1955; Bagchi and Wenger, 1957; Kasamatsu *et al*, 1957) and subjects of the experiments were expert practitioners, i.e. Indian yogis and Zen monks. Indeed, Bagchi and Wenger transported recording equipment to caves in different areas of India so that they might gather data from expert subjects. The techniques these subjects practised, however, were diverse and the experimenters carried out different measurements on different subjects. As a result, the experiments lacked the control and sophistication of later work. Nevertheless, they do represent an attempt to evaluate meditation *in situ* among the accomplished yogis of India and the Zen masters of Japan.

The first well controlled study of meditation was conducted by Fenwick in 1960. Fenwick's subjects were Westeners who had been taught a technique of mantra meditation (almost identical to TM). The subjects were asked to meditate for thirty minutes and to drowse for thirty minutes (randomized order of presentation). The author reported that the EEG records of subjects showed an increase in alpha amplitude at the beginning of meditation, accompanied later in meditation by bursts of theta. In another careful study, Kasamatsu and Hirai (1966) selected 48 priests and disciples from the Soto and Rinzai sects in Japan, with meditation experience ranging from one to more than twenty years. The EEG during Zazen (Zen meditation) was characterized by the initial appearance of 11 cps alpha, followed by an increase in alpha amplitude, and a decrease in alpha frequency in the central and frontal regions. Occasionally, rhythmical theta trains of 6–7 cps appeared. The authors reported a direct relationship between the length of time their subjects had practised meditation and the nature of the EEG changes during meditation. Those with long experience always exhibited theta trains.

Subsequent studies (Wallace *et al*, 1971; Banquet, 1972, 1973; Williams and West, 1975) have confirmed previous findings and a summary of work on EEG activity reveals the following generally agreed changes during meditation:—

(1) On beginning meditation, alpha amplitude increases and in some cases alpha frequency slows by 1–3 cps.

(2) Later in meditation, trains of theta activity occur, often intermixed with alpha (especially when the subjects are experienced at meditation).

(3) During deep meditation or 'samadhi', bursts of high frequency beta of 20 to 30 or 40 cps can occur.

(4) At the end of meditation, alpha sometimes persists, even with eyes open.

In 1970, when Wallace published the results of a study of the physiological effects of TM on fifteen subjects, his work received great publicity and subsequent publications (Wallace *et al*, 1971) suggested that the meditation state was characterized by significant and dramatic decreases in heart rate, respiration rate, oxygen consumption and skin conductance. With the passing of time and the advent of more careful evaluations of meditation, the general trend of decreases on these parameters has been confirmed:

(1) A decrease in heart rate—Wallace *et al*,

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1971; Vassiliadis, 1973; Dhanaraj and Singh, 1975; Woolfolk, 1975; West, 1978.

(2) A decrease in respiration rate and oxygen consumption—Bagchi and Wenger, 1957; Sugi and Akutsu, 1968; Allison, 1970; Dhanaraj and Singh, 1973; Treichell *et al*, 1973; Beary *et al*, 1974; Woolfolk, 1975; Elson *et al*, 1977; Malec and Sipprelle, 1977; West, 1978.

(3) A decrease in skin conductance—Bagchi and Wenger, 1957; Woolfolk, 1975; Walrath and Hamilton, 1975; Elson *et al*, 1977; West, 1978.

However, this research has generally also shown that the decreases in arousal observed during meditation are not significantly different from decreases in arousal observed in other relaxing practices. Fenwick *et al* (1977) used a control group who listened to music for 20 minutes, and they compared mean oxygen consumption in this group with the consumption in a group of meditators practising meditation. Both groups exhibited decreases in oxygen consumption, but the differences between the groups were not statistically significant. Treichell, Clinch and Cran (1975) also failed to demonstrate a significant difference between groups resting and meditating. It is perhaps noteworthy that in most within-subject comparisons, i.e. where the same subjects both meditate and perform the task set in the control condition, more significant decreases have always been found during meditation (e.g. Wallace *et al*, 1971; Beary, Benson and Klemchuk, 1974). This may be explained by the variety of methodological artefacts associated with research into meditation, described above. Very great changes in respiration and energy metabolism during meditation reported by Sugi and Akutsu (1968) were observed in Zen masters of some years' experience and, whilst they may be indicative of the results of the long-term intensive practice of meditation, they are not necessarily representative of changes in the novice practitioner.

Little research has been carried out to assess the long-term psychophysiological effects of the regular practice of meditation. There is some evidence to suggest that regular practice of meditation results in lowered heart rate and more Sleep Stage 1 EEG during meditation (Vassiliadis, 1973; Otis, 1973), and Orme-Johnson (1973) has reported differences between long-term meditators and non-meditators on habituating the galvanic skin response. However, this work is open to criticism on a number of methodological points (Smith, 1975).

West (1979) found a significant decrease in spontaneous skin conductance responses (a measure correlated with trait anxiety—Lader and Wing, 1964) outside of meditation, in a group who learned and regularly practised a system of meditation for six months. Again, this study can be criticised because no placebo treatment was used and indeed, no satisfactory control treatment for meditation appears as yet to have been devised. There is some support for West's finding however in the work of Goleman and Schwartz (1976). These experimenters reported that a group of experienced meditators showed significantly greater increases in skin conductance and heart rate prior to seeing a stressful film than a control group, but they also showed far more rapid recovery immediately following the stressful incident in the film, as measured by spontaneous skin conductance responses and heart rate. After the film was over, they did not display the signs of tension still measurable in the control group.

The evidence suggests, therefore, that there are decreases in arousal during meditation which do not appear to be significantly different from decreases in arousal observed during other relaxing activities. There is some slight evidence which suggests that regular meditation practice produces decreases in arousal and arousability outside of meditation itself. Studies of the effect of meditation on scores from personality questionnaires give some support for this suggestion.

Meditation and Personality

A cursory reading of the literature dealing with the effects of meditation on personality would lead one to the conclusion that its practice is accompanied by decreases in neuroticism, depression, anxiety and irritability, and increases in internal self-control, self-actualization and happiness (Lesh, 1970; Seeman *et al*,

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1972; Shelly, 1973; Linden, 1973; Nidich *et al*, 1973; Hjelle, 1974; Fehr, 1976; Fehr and Torber, 1976; Williams *et al*, 1976; Ferguson and Gowan, 1976; Dillbeck, 1977). However, many of these studies have employed inadequate or no controls for the effects of placebo, cognitive dissonance, social pressures, demand characteristics and subjects' expectations. The usual experimental paradigm has employed the following regimen:—

Testing—Meditation instruction and practice—Retesting. 'Control groups' whose members had no training or treatment have been used as comparisons. Not surprisingly, therefore, these studies have produced results showing a wholly beneficial effect of meditation upon personality. However, in a few studies, some of these problems have been partially overcome. Fehr (1976) compared regular and irregular meditators' scores on the Freiburger Personality Inventory over one year from the date of their learning meditation. Twelve subjects discontinued meditation and served as a control group for the 25 subjects who persisted. This comparison is in many ways more meaningful than simply comparing meditators and non-meditators, since some baseline differences are eradicated (e.g. predisposition to change, attraction to meditation). Fehr observed no significant differences between the two groups at baseline. After one year of practice (a considerably longer experimental period than in most of the other experiments cited), the experimental group were significantly less nervous, depressed, tense and neurotic, and significantly more sociable and extravert. In a similar study, Williams *et al* (1976) found that regular meditators were significantly less neurotic after a six month period than irregular meditators (as measured on Eysenck's PEN) and decreases in neuroticism correlated significantly with regularity of meditation.

In a number of studies, authors have reported that those attracted to meditation are significantly more anxious (Rogers and Livingston, 1977) and neurotic (Fehr, 1976; Williams *et al*, 1976) than the normal population. This interesting finding has largely been overlooked, apparently in the enthusiasm over decreases in undesirable personality traits that meditation practice appears to produce. The author has examined this finding, using a larger sample of subjects than has previously been used (West, 1978) and found that the mean neuroticism score of a group of people who had learned TM in one geographical area was significantly higher than the norm score for the general population. Those who continued with meditation were significantly less neurotic than those who had given up their practice. The results of this survey also suggested that a significant proportion give up meditating (42.9 per cent) and that the subjective experience of meditation is similar to that of the hypnagogic state. Most respondents (including those who had given up meditation) reported that psychological benefits, such as calmness and relief of tension, and physical benefits, such as relaxation and better sleep resulted from their practice of meditation.

There are therefore some indications that learning and practising meditation is associated with decreases in measured anxiety and increases in subjective feelings of relaxation. These indications, coupled with the findings from studies examining the psychophysiological correlates of meditation, have led some researchers to the hypothesis that meditation is effective as a therapy.

Meditation as Therapy

(a) *Meditation and drug abuse*

One of the reasons why meditation rapidly became an object of research interest early in the 1970s was the widely reported finding that practitioners of TM stopped or dramatically decreased their usage of non-prescribed drugs (Benson and Wallace, 1971; Otis, 1972; Shafii *et al*, 1974; Shafii *et al*, 1975). Unfortunately, a major methodological problem was overlooked in all of these studies. All practitioners of TM are required to abstain from using non-prescribed drugs for 15 days prior to their learning the technique. As only those who are less severely addicted are likely to achieve this, the samples in these studies have been biased. Secondly, those who take up TM and who use non-prescribed drugs like marijuana and heroin may well have a predisposition to reduce their drug usage anyway, since TM is advertised as an alternative to drugs.

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Of the studies reported in this area, most have been retrospective questionnaires, administered to meditators on residential training courses where TM is practised more frequently than the usual twice daily and where teaching in the philosophy behind TM is given. It is safe to assume that those who attend such courses are fairly committed to the practice of TM in that they have continued to pursue their interest beyond simply learning the technique and continuing to practice. Furthermore, those who go on such courses are not representative of those people who take up TM and then, shortly afterwards, give up practising the technique. It may be, for example, that those who persevere with TM are the kind of people who are more likely to decrease their drug usage anyway. Finally, continuing drug usage is frowned upon in TM 'centres' and the activity of drug abuse is condemned as a hindrance to deepening one's experience of TM. Indeed, those meditators who use non-prescribed drugs are seen as presenting a threat to the public image of TM and there is therefore social pressure on new meditators to give up drug usage. That these pressures would be increased on meditation courses is likely, and so results from retrospective questionnaires administered on such courses are likely to be distorted by all these pressures.

Nevertheless, the possibility that meditation is useful in achieving a decrease in the non-medical use of drugs (and the results of all studies to date have suggested this) is one which deserves careful investigation. Accompanied by the drug-user's motivation to give up using drugs, meditation may be an effective tool in the treatment of what is commonly viewed as a social ill. It may be (as Brautigam, 1971, suggests) that the adoption of a new social role and a new self-concept of 'meditator' would provide the drug user with some extra motivation.

(b) *Meditation in psychiatry*

Meditation has become increasingly popular as a therapy over the last twenty years within psychiatry, and a number of theoretical papers have appeared in journals comparing, for example, Zen and Psychotherapy (Sato, 1958; Fromm, 1959; Becker, 1961; Van Dusen, 1961; Berger, 1962; Haimes, 1972; Dean, 1973). Details of single case studies have also been published, describing the use of meditation in cases of obesity (Berwick and Oziel, 1973), claustrophobia (Boudreau, 1972) and anxiety neurosis (Girodo, 1974; Shapiro, 1976). More detailed examples of the use of meditation as an adjunct to psychotherapy have also appeared (Shafii, 1973; Carrington and Ephron, 1975; Carrington, 1977).

The studies evaluating the effectiveness of meditation in treating psychiatric patients have generally failed to overcome the methodological problems which dog research in this area. In one sense, though, clinicians are less strict in evaluating programmes than the experimentalist. The former tend to ask whether or not the patient is improved, whilst the latter is perhaps more interested in isolating the factors responsible for change.

Vahia *et al* (1973) reported a study which appears to have controlled for most (though not all) of the contaminating variables discussed earlier. They report the results of a study of the effects of yoga and meditation in the treatment of psychoneurosis. Ninety-five out-patients, diagnosed as psychoneurotic, acted as subjects in the study; all had failed to show improvement as a result of previous treatments. Half of the patients were taught yoga and meditation, and they practised these techniques for one hour of each day for four to six weeks. The other half of the sample was given a pseudo-treatment, consisting of exercises resembling yoga 'asanas' (postures) and breathing practices ('pranayama'). The control subjects were asked to write all the thoughts that came into their minds during treatment, as a control for the meditation. This group followed the same daily schedule as the experimental group. Both groups were given the same support, reassurance and placebo tables and were assessed clinically before, during and after treatment.

Following treatment, the experimental group exhibited a significant mean decrease in anxiety, measured on the Taylor Manifest Anxiety Scale. The control group exhibited no significant change on this scale. Overall, 74 per cent of the experimental group were judged to be clinically improved after treatment as against

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only 43 per cent of the control group (improvement in the control group being attributed to a combination of involvement in research and therapist time). The authors conclude that meditation and yoga were significantly more effective than a pseudotherapy in the treatment of psychoneurosis.

More recent investigations into the use of meditation in the psychiatric setting, also producing positive results, have been less well controlled and conducted. Candelent and Candelent (1975) and Glueck and Stroebel (1975) have described the results of their studies of the use of meditation in psychiatric hospitals and both suggest that it might be a useful therapy. Unfortunately, in both cases, meditation was taught indiscriminately to patients representing a broad range of diagnostic categories. Whilst it is necessary to criticize these studies for their lack of specificity with regard to diagnostic groups, in one study (Glueck and Stroebel) a comparison group, whose members were unaware of their status as controls, was used and the members of this group continued to receive normal treatment. Glueck and Stroebel found that when patients learned and practised meditation, they showed significantly greater improvement than the comparison group. Ultimately, improvement is the goal of any treatment and it does not necessarily matter to the clinician that the specific agents of the improvement are unidentified; his or her concern is often simply with the fact of improvement (Jackson, 1967).

Not surprisingly, some attention has also been focussed on the effectiveness of meditation in the treatment of stress-related disorders such as insomnia, hypertension and headaches (Woolfolk *et al*, 1976; Patel, 1977; Benson, Klemchuk and Graham, 1974).

(c) *Meditation and insomnia*

Woolfolk *et al* (1976) recruited 24 chronic insomniacs for their study, on the basis that there was considerable evidence that placebos are ineffective in the treatment of severe insomnia. Meditation was compared with progressive relaxation and a waiting list as treatments for insomnia and analysis of the data showed both meditation and progressive relaxation to be superior to no treatment in reducing latency of sleep onset. The meditation and progressive relaxation treatments did not differ significantly in effectiveness. In a follow-up study, six months later, both the treatment groups showed significant improvement over pre-treatment levels on latency of sleep onset, while pre-treatment and follow-up means for the control group were not significantly different. Credibility of treatments was also assessed by asking subjects and college students to rate their belief in the potential effectiveness of the treatments. These ratings also did not differ either between treatments or between subjects and students.

(d) *Meditation and hypertension*

The application of meditation as a treatment in hypertension has received more careful investigation than has been afforded other areas in this research field. Of the studies published to date, all show a positive and significant effect of meditation in reducing elevated blood pressure (Patel, 1973; Benson *et al*, 1974a; Benson *et al*, 1974b; Datey *et al*, 1969; Patel and North, 1975; Blackwell *et al*, 1976; Pollack *et al*, 1977) though two of these (the Blackwell and the Pollack studies) demonstrated only a short-term improvement in symptoms. In both of these latter studies, significant decreases in blood pressure levels over a three month period of meditation practice were observed, but the decreases were non-significant at the end of six months. One possible explanation for this finding is that it is merely a placebo effect, showing diminishing returns over time. Alternatively, it is possible that both the motivation to practise meditation evoked by the experimenters in their patients and individual differences in response to meditation could have been responsible, to an extent, for the differing results.

Indeed, frequency of meditation may well be a crucial factor in longitudinal studies, particularly as it may reflect the success of the experimenter in motivating subjects to practise meditation regularly. This in turn may be a reflection of the belief of the experimenter in the treatment method. In the Patel and North study, in which patients were given a good deal

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of time, attention and motivation, the results were over-ridingly positive throughout the six month period for which the experiment ran. Perhaps only some hypertensive patients will benefit from learning and practising meditation and others will not. There may be significant differences between these groups of patients on measures such as age, sex, personality, IQ or aetiology of disorder (for a discussion of this see Davidson and Schwartz, 1976). A study attempting to discover reliable predictors of 'responders' and 'non-responders' to meditation would be of value in relation to both the treatment of hypertension and the use of meditation as a therapy.

(e) *The dangers of meditation*

The dangers of meditation have been referred to by a number of authors (Otis, 1973; Benson, 1975; Lazarus, 1976; Carrington, 1977). Otis reports that five subjects suffered a re-occurrence of serious psychosomatic symptoms after commencing meditation, and Lazarus reports cases of attempted suicide, severe depression and schizophrenic breakdown following TM instruction. Carrington believes that such cases are the result of over-meditation initially. This belief is supported by the reported findings that over-meditation of, for example, three hour sessions, can cause serious emotional disturbance and hallucinations (Benson, 1975; Carrington, 1977), though such over-meditation appears to be unusual.

Conclusions

There is some evidence from psychophysiological and personality studies that meditation practice is associated with decreases in arousal and anxiety, and the limited work which has been carried out to assess the usefulness of meditation as a therapy has provided grounds for cautious optimism. Nevertheless, no satisfactory experimental design has yet been devised which adequately tests the effectiveness of meditation. Psychotherapy and behaviour therapy are fields where similar problems for research are encountered. No experimental paradigm has yet been proffered which satisfies entirely the demands of the researcher for an objective test of the efficacy of these particular treatment methods. Similarly, until effects attributed to meditation can be distinguished from the effects of merely treating (no matter what the treatment) the answer to the research problem will not have been found.

It may be argued that there are fewer theoretical reasons why meditation should be effective, in comparison with psychotherapy, but there are a number of explanations for the apparent success of meditation as a treatment method, some of which draw upon the terminology of psychoanalysis. One such explanation is that meditation is a practice where adaptive regression takes place (Maupin, 1962; Shafii, 1973). Meditation may also be seen as a form of desensitization (Tart, 1971) since some suggest that during meditation, (which is accompanied by lower arousal) unfinished psychic material, pre-verbal emotional trauma and life-conflicts are dealt with. A number of authors have referred to the 'deautomatization' which is supposed to result from meditation practice (Deikman, 1963; Goleman, 1971; Carrington, 1977). They see meditation as a way of learning to experience without either categorizing or experiencing in any pre-determined way, likely to result from habit, set, selective inattention or selective perception. This deautomatization is proposed as an explanation for the increase in 'psychological differentiation' reported in some experimental studies of meditators (Linden, 1973; Pelletier, 1974). Measures of field dependence—independence, such as the Embedded Figures Test and the Rod and Frame Test have shown that meditators become more field independent following several months of meditation. The possible mechanisms mediating the therapeutic effects of meditation are reviewed in more detail by Shapiro and Giber (1978).

Whatever the explanation for the effects associated with meditation practice, the untrodden research ground remains extensive, but the possibility that a technique exists which is associated with increased relaxation and decreased anxiety is one which deserves more careful study and examination. With the advent of all new 'wonder cures' like meditation and biofeedback, initial enthusiasm can produce a plethora of hopes, claims and expecta-

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tions, which later are washed away by the results of careful research. It appears that as research into meditation continues, there remain beneficial effects which may have practical applications. Although we know that meditation may be an effective therapy, comparative studies have not been conducted and so our knowledge is still limited. Indeed, if there is one area of research into meditation which demands further exploration, it is this. The importance of beginning to compare meditation with other known treatment methods cannot be over-emphasized, given the ever present need for new, effective treatments of psychosomatic and psychiatric illnesses.

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