Audio-psycho-phonology at Potchefstroom: A review

Pieter E. van Jaarsveld* and Wynand F. du Plessis
Institute for Psychotherapy and Counselling, Potchefstroom University for Christian Higher Education, Potchefstroom 2520, Republic of South Africa

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Audio-psycho-phonology (APP) has been hailed by some critics as refreshingly new, dynamic, pioneering and revolutionary, whilst others question the theoretical principles and the therapeutic approach, *inter alia*, because of the strong accent on clinical observations and the lack of rigorous empirical backing. This article presents a short outline of the Tomatis APP approach as well as an overview of eight empirical studies conducted in South Africa on topics such as laterality, stuttering, anxiety, and the application of the technique to the severely mentally retarded. The studies indicate positive effects, such as improved self-control, self-concept, interpersonal relations and achievement functioning. However, identified methodological deficiencies limit the degree to which the gains can be attributed to the APP approach alone. Finally, the authors propose the adoption of a research strategy that is more likely to identify, and produce an understanding of the strategies, agents and mechanisms by which different elements of the APP approach produce their results.

Oudiopsigofonologie (OPF) is deur sommige kritici verwelkom as verfrissend-nuut, dinamies, revolusionêr en as baanbrekerswerk. Andere weer, bevraagteken die teoretiese uitgangspunte en die terapeutiese benadering, onder andere weens die sterk klem op kliniese waarneming en die gebrek aan streng-gekontroleerde empiriese steun. 'n Kort oorsig van Tomatis se OPF-benadering word hiermee aangebied, asook 'n oorsig van agt empiriese ondersoeke in Suid-Afrika uitgevoer oor onderwerpe soos lateraliteit, hakkel, angs en die toepassing van die tegniek op ernstig verstandelik-vertraagdes. Positiewe resultate word deur die studies aangedui, byvoorbeeld ten opsigte van verbeterde algemene aanpassing, angsvermindering, beter selfkontrole en selfkonsep, beter interpersoonlike verhoudings, asook verbetering van prestasies. Die mate waarin die vordering aan die OPF-benadering alleen toegeskryf kan word, word egter beperk deur metodologiese gebreke. Die outeurs stel ten slotte 'n navorsingstrategie voor wat hopelik daartoe sal bydra om die spesifieke strategieë, agente en meganismes van die OPF-benadering verantwoordelik vir die resultate, te identifiseer en te begryp.

*To whom correspondence should be addressed

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Audio-psycho-phonology (APP) as defined by its founder, A. Tomatis, is the study of the interaction between a human being's listening and hearing potential (audio), his psychological attitudes (psycho), and his control of speech and language (phonology). As a therapeutic approach it is an intervention in the development of a person that is intended to correct problems arising from a deficiency in 'listening' ability. This is achieved by means of (a) controlled sound stimulation with the Electronic Ear to increase the client's ability to listen, which is (b) complemented by counselling. It is proposed that APP improves listening ability, motivation, and desire for communication, and also mood and interpersonal relations. This in turn is expected to lead to improved academic and behavioural functioning and to increase the potential to further benefit from remedial and class instruction.

According to Stutt (1983) the APP approach seems to have been neither well received nor well understood. Tomatis writes only in French and although there are a few translations of his work available, they are not easy to interpret, possibly because of his flowery and grandiose style of writing which is not acceptable in scientific literature. While the ideas of Tomatis are essentially based on neurophysiology and do not seem to follow any of the modern psychological theories, many of his formulations reflect a strong psychodynamic orientation, for example, the psychodynamic interaction between parent and child and the role of fixation in disorders of childhood. Some traces of learning and existential theory are also evident, for example, Tomatis advocates the conditioning of the middle ear muscles, but also urges his patients to take full responsibility and live an authentic self-transcendant life. Understanding of what Tomatis tries to convey is further confounded by criticism that he seems to promise too much. APP is claimed to be useful in cases of stuttering, delayed language development, difficult second language learning, dyslexia, autism, neurosis, depression, and epilepsy. The evidence, according to Stutt (1983), is usually clinical rather than experimental. It may, however, be argued that Tomatis's clinical deductions, which were eventually incorporated into a holistic theory of human development, would have been impossible without his large scale experiments on occupational deafness, as well as his ingeniously designed laboratory

experiments. What cannot be opposed is criticism that most investigations of the therapeutic effectiveness of APP have not been carried out on a large enough scale, with all the proper precautions and controls, to make the findings scientifically convincing.

The purpose of this article is to review research on APP carried out in South Africa. First, however, an introduction to the basic premises of APP seems appropriate. In conclusion, identified methodological shortcomings in the research reviewed are used to recommend methodological strategies for further research.

Basic premises of APP

Observing that hearing defects are always accompanied by some vocal deficiencies, Tomatis ascertained experimentally that the frequencies not perceived by the ear are those which are absent from the vocal spectrum of the patient. This finding led to the formulation of his law: The voice contains only what the ear perceives, i.e. the larynx emits only the harmonics that the ear can hear (Tomatis, 1956; 1978, p. 57). Husson and Grasse (1957) who verified this law, called it 'the Tomatis Effect' (Husson & Mouonguet, 1957). By using a low-pass filter, Tomatis observed that eliminating the subject's capacity to perceive auditory stimuli above 2000 Hz led to a deterioration of the voice: it lost timbre and in addition the subject became more susceptible to fatigue. A next logical step in his exploration was to determine whether the electronic restoration of impaired frequencies in a person with hearing loss would restore the capacity to vocalize those frequencies. For example, through spectral analysis of the voices of famous singers, it was possible to define what he called 'the musical ear', which is characterized by its ability to perceive the entire sound spectrum with speed and precision (Tomatis, 1953; 1963; Madaule, 1972). Audiometrically the musical ear can be described by an ascendant audiogram to frequencies of 3000 to 4000 Hz with stabilization at this level and a slight drop towards the highest frequencies. By electronically providing subjects with the characteristics of 'the musical ear', he assumed that he would enable them to emit sounds of the same quality. This led to the postulation of a second law: if a defective ear is enabled to regain the capability of hearing the lost or impaired frequencies, these are instantly and unconsciously restored in the vocal emission. The apparatus which Tomatis developed, the Electronic Ear, made auditory self-conditioning possible. According to Tomatis, during this process of conditioning the functioning of the auditory faculty is transformed from a mode of passive accommodation to a mode of active participation in the listening process.

This gave rise to his third law: auditory stimulation maintained for a determined period modifies the self-listening faculty of the subject, and consequently his phonation.

It became clear to Tomatis that the hearing function, as the initiator of phonation, not only perceives the pressure of sound waves, but also analyses the incoming stimuli on diverse dimensions: it discerns the loudness, pitch, timbre, and rhythm of the voice. But in man, the ear functions selectively: the auditory input is not accepted at its face value alone. Tomatis (1978) therefore emphasizes three overlapping actions in the optimal hearing process: the purely sensory act of *hearing*, secondly *listening* which implies an underlying effort of will, and finally *integration*. However, all three actions are not necessarily utilized in the hearing process. The child can *hear* without *listening*, or *listen* but not *integrate*. Listening denotes the integration of sensations into perceptions, that is, the assignment of meanings to the previously raw and undefined sensory experiences. It involves the development of concepts or ideas about the sensory experiences. Listening thus defined as the process of hearing with attention, devotion, with concentration and integration, necessitates a mobilization of the awareness of the self, and is to Tomatis indispensable for achieving humanness. But it seems to him that sensory emotional stimuli must exceed a certain threshold to reach the locus where stimuli are perceived.

The key to this process of listening, according to Tomatis is motivation, a desire to communicate. It is the desire to bond and form a relationship with the mother that serves as the incentive of assigning meaning to the raw and undefined sensory experience of hearing. This process originates, according to Tomatis (1972, 1974) *in utero*, that is, prenatally. It is possible for the foetus to form an awareness of the mother through sound – the rhythmic heartbeat, the calming effect of the mother's breathing, but most important, through vocal sound. The affective components of the mother's voice seem especially important: it may be warm and melodious, conveying acceptance, or harsh with an absence of warmth during emotional upsets. The foetus thus hears the voice of the mother and extracts the emotional content from it. Tomatis refers to the intense maternal feelings a woman experiences during pregnancy to explain the origin of the bonding process between mother and child which will ultimately provide the incentive for listening and verbal communication.

Ormerod (1960), Johansson, Wederberg & Westin, (1964), Grosser and Ortman (1966), and Clauser (1971) are a few who confirm Tomatis's assumption of very early functioning of the ear during the prenatal period. Also Salk's experiments which underlined the effect of the mother's heartbeat on the foetus serve as a well-documented indication of prenatal rhythmic-acoustic engravement (Salk, 1962). Prenatal stato-acoustic engravements seem to be not only possible, but may be significant for postnatal learning. This knowledge led to the utilization of 'filtered sounds'. 'The term "filtered sounds" refers to sounds which have been sent through electronic filters so that they will sound as though they are being heard through a liquid barrier – as they would be in the womb, for example. This process recreates the prenatal environment' (Tomatis, 1978, p. 145). The application of a filtered mother's voice as part of the therapeutic programme was the result of his research on prenatal hearing. It seems to be a unique and original APP-technique, found in no other therapy. Its aim is to dispel anxiety and to establish feelings of security,

because anxiety naturally comes to be associated with the threat of abandonment or separation from the mother. Because the child's listening function creates a desire to communicate and to bond relationships, interference with this function at different developmental stages may result in different psychopathological outcomes. At the physiological level the child's problem manifests itself in a relaxation of the ear drum, and this state of flaccidity considerably impedes the passage of sound. If the middle ear muscles are subjected to this non-activated state for too long, a lack of the necessary tympanic tension will prevent the ear from analysing sound correctly.

Amongst others, Lenneberg (1967) has advanced the hypothesis that the capacity for language acquisition is intimately related to man's peculiar maturational history and the unique degree of neurological lateralization of function. Auditory lateralization forms a core element in Tomatis's theory. A preferential ear develops during the process of lateralization, designated to execute the more special listening and precise speech control functions. This he called the *leading ear* which should always be the right ear. According to the APP approach, auditory training by means of the Electronic Ear implies that the middle ear muscles may be conditioned to a state of adaptation to the sound environment. APP claims that the subject thus regains the ability to perceive sound without distortion, as well as the capacity to analyse sound more precisely. Basically the Electronic Ear consists of amplifiers, filters, and electronic gates. Various kinds of auditory stimulation (e.g. music filtered with a high pass filter at 8000 Hz, filtered speech of the child's mother, Gregorian chants, speech, etc.) are transmitted by a tape recorder through the Electronic Ear to the subject in such a way that different parameters may be controlled. Conditioning of the middle ear muscles is achieved by the alternation of the passage of sound stimuli from a low pass filter assuring the relaxation of the muscles, and from a high pass filter which, according to this view, contracts the middle ear muscles. The alternation from one channel to another is automatically controlled. Simultaneously there is a progressive reduction of intensity to the left ear. The assumption is that this will ultimately force the right ear to become the leading ear (Van Jaarsveld, 1974; Madaule, 1976). The right ear is assumed to provide the most direct route to the speech area in the left hemisphere.

APP advocates the notion that auditory training enhances communication, first by auditory simulation of the prenatal acoustic environment by means of the filtered mother's voice. This is followed by a programme of auditory training with the aid of filtered music. The aim of this phase is to increase the subject's ability to perceive sound without distortion and to analyse it more precisely. This is followed by a programme of audio-vocal conditioning. Counselling with the client is necessary to ensure optimum progress during the auditory re-education programme. From this overview it is clear that APP can be characterized as pioneering, dynamic, and revolutionary. The cautious and sceptical reception of APP is therefore understandable. On the other hand, there seems to be some additional support in the literature for certain premises of this method.

On the basis of various studies (Kostelijk, 1950; Moller, 1972; Reger, 1960; Wersäll, 1958) it has been established that, upon contraction of the tympanic muscles in the middle ear, the physical properties of the conduction system of the middle ear changes: a reduction in the sensitivity for low-frequency tones and an improved perceptiveness for tones above 1000 Hz give rise to an ascending audiometric curve, which, according to Tomatis's definition of the 'musical ear', is the graphic representation of a well-adapted ear. But auditory re-education also finds support in the *accommodation theory* which regards the contractile action of the tympanic muscles as a mechanism designed to adjust the sound-conducting apparatus to the best possible absorption of sound energy. This theory originated by analogy with the process of accommodation in the eye, presupposing that the individual, by an effort of will, or unconsciously, selects and follows certain sounds. The theory assumes co-operation between the two tympanic muscles in such a manner that they should be able to bring about a fine adjustment in the ossicular chain of the middle ear (Jerger, 1963). It therefore seems that Tomatis's arguments with reference to 'auditory re-education' deserve more than just sceptical attention. Research studies may provide more clarity.

Research studies

In his critical review of studies conducted in Canada with respect to the APP approach to the treatment of learning disabilities and dyslexia, Stutt (1983, p. 1) emphasizes that the APP approach seems to produce benefits beyond what could be expected by maturation or remedial education alone. The benefits mentioned by Stutt refer to a significant increase in: I.Q. (Gilmor, 1982; Rourke & Russel, 1982); reading skills (Gilmor, 1982; Rourke & Russel, 1982); perceptual processing (Roy, 1980b); academic skills (Roy, 1980b); specific auditory processing skills (Gilmor, 1982); general adjustment (Gilmor, 1982; Rourke & Russel, 1982); improvement in communication skills and a greater ability to verbally express thoughts and feelings (Gilmor, 1982; Roy, 1980a; Wilson, Iavociello, Metlay, Risucci, Rosati & Palmaccio, 1982). The evidence indicates, according to Stutt, that something of value is happening to most children who undergo this treatment programme. And thus 'it would seem that cautious acceptance is an appropriate stance' (Stutt, 1983, p. 15).

The research studies conducted in South Africa were all done in collaboration with the APP centre at Potchefstroom University. The studies on laterality were designed to investigate certain premises and techniques of APP, while studies on stuttering, anxiety, depression, and the application of the technique to the severely mentally retarded are outcome studies. The results of these studies indicate positive effects. However, it is questionable whether the increasingly complex criteria

for satisfactory outcome research have been adequately met by the experimental designs of these studies. Rachman and Wilson (1980) point out that there are many unidentified variables in almost all forms of treatment which appear to have a positive influence on the outcome of therapy. This built-in over-estimation makes it difficult to isolate the specific contribution made by any therapeutic technique. These are critical issues to consider when evaluating the outcome effect of the APP approach.

Studies on laterality

In her study Van Wyk (1974) tested the APP hypothesis that more stutterers than normal speakers failed to develop right ear dominance (the 'directive ear', or the main controlling ear in the speech–hearing feedback circuit, according to Tomatis). Accordingly she investigated auditory dominance in a group of 20 stutterers and a group of 20 normal speakers by means of two different techniques: the dichotic stimulation technique of Kimura (using digits), and the audiolaterometric investigation method of Tomatis.

The results indicated that with the dichotic stimulation technique no significant differences could be found in the auditory dominance of the normal speakers and the stutterers. The audiolaterometric results, however, yielded significant differences between the two groups: stutterers showed a significantly greater left ear dominance, or nonspecific ear preference, while a significantly greater number of fluent speakers showed a significantly greater right ear dominance. Van Wyk speculated that the two techniques measured different aspects of auditory laterality.

Although Van Wyk took various precautions to control contaminating effects, the small sample sizes and the use of solicited subjects instead of a randomized groups design, necessitates a cautious interpretation of the results. Van Wyk also failed to implement Tomatis's controlling technique of observing the amount of mobility of the left or right facial muscles during the speech act which provides a futher indication of a right or left speech–hearing preference.

Badenhorst (1975) more thoroughly investigated the nature and measurement of auditory laterality, also using the techniques of Kimura and Tomatis. Badenhorst paid special attention to Tomatis's supplementary technique of determining right or left speech–hearing preference by physiognomical observations during the speech act. Badenhorst hypothesized that left-handers form a heterogeneous group, who experience difficulty in realizing their inner potential. The primary aim of the study was thus to determine differences between the Rorschach responses of a group of completely right-lateralized female subjects (age 19–21 years) with a strong right speech–hearing preference and female students of the same age with reasonably general right lateral preference, but with a left speech–hearing preference. The right speech–hearing preference group produced significantly more FC and M responses than the left speech–hearing group. The left speech–hearing group also tended to respond more with FM responses.

Three independent raters concluded that the right speech–hearing subjects displayed a superior capacity to relate spontaneously and appropriately to emotional stimuli. The right speech–hearing subjects also displayed a more extraverted orientation, were more responsive and in control of their emotional responses; were less prone or subject to anxiety, tension, frustration and aggression. These findings were in line with the predictions of the APP theory regarding laterality.

Regarding the secondary aim, the comparison between the two techniques for ascertaining auditory laterality of Tomatis and Kimura, Badenhorst's findings shed more light on the findings of Van Wyk (1974). Badenhorst concluded that 'closed selectivity' (i.e. the inability to distinguish between neighbouring frequencies) and audiometric deviations as identified by the Listening Test of Tomatis had to be taken into account when interpreting the results achieved by means of dichotic stimulation.

In conclusion, Badenhorst's results demonstrated a significant relationship between audiometric and audiolaterometric results, confirming the view of Tomatis.

Studies on stuttering

The only known APP studies on stuttering were carried out by Van Jaarsveld (1973, 1974). During the pioneering years of APP in South Africa, Van Jaarsveld (1973) devised a follow-up study to determine the long-term effect of auditive training by means of the Electronic Ear on a group of 43 stutterers one year or more after treatment. The ages of the subjects ranged from 14 to 53 years, the average age being 26 years. Questionnaires were also completed by a close family member and a close friend of each subject who were well acquainted with the client's speech behaviour before and after auditive training.

All the clients experienced symptom relief (more fluent speech) after the initial treatment and in the case of 82.5% of the participants, the symptom relief was significant. The results revealed that the adult group improved significantly more than the adolescent or the middle-aged groups. Although participants reported significant progress after the concentrated APP programme, as compared to long-term speech therapy received previously, only 54% of the participants maintained their good improvement for one year or more after treatment.

Again the methodological restrictions of this study make it difficult to isolate the specific contribution of the therapeutic technique. The complete APP programme was not applied and a comparable control group was not available. Also the use of a questionnaire as the sole instrument of evaluation seems insufficient. On the other hand, the inclusion of informants' ratings appears to provide greater objectivity. Another positive aspect of the study was that the ratings were based on observations of the clients' speech behaviour in 'real-life' situations. The second study (Van Jaarsveld, 1974) provided an in-depth analysis of the APP approach to

stuttering. The primary aim of the investigation was to study the effect of auditory training on the speech behaviour of adult stutterers. The experimental group consisted of 30 young adults. The results indicated a generally positive outcome:

(a) The severity of stuttering as measured by the Lanyon SS Scale, was significantly less after auditory training.
(b) Participants performed significantly better with regard to the number of speech disfluencies in a representative speech and reading sample.
(c) A significantly faster rate of speech and oral reading was registered at post-treatment.
(d) The participants' attitude towards stuttering improved significantly.
(e) The audiometric results supported Tomatis's observations that stutterers have a relative hearing loss in the frequency range of the speech area, especially for the right ear, and that acuity improves after re-education.
(f) A spectral analysis also supports Tomatis's observations, indicating a significant gain in energy in the vocal output after training.

The general conclusion was that auditory training led to improved hearing and speech. The results of this study would have been more convincing if a comparative outcome study had been possible. The methodological complexities of contracting a comparable non-solicited group of adult stutterers and an acceptable alternative technique that meets all the controls and criteria spelled out by Kazdin (1986), however, seemed unsurmountable at that stage.

Studies on anxiety and depression

Peché (1975) evaluated the effect of APP on 10 anxious female students, but no control group was used. Clinical observations and test results led Peché to conclude that as a group, the participants developed more social directedness and objectivity regarding their problems. Neurotic and hypochondriac behaviour patterns declined significantly. Peché concludes that it was clear that psychic blocks may be eliminated by APP training, and as such it can be regarded as a valuable aid to psychotherapy.

In her study Botes (1979) concentrated on an in-depth study of three clients with neurotic depression (dysthymic disorder). The results indicated higher retest scores on the S.A. Wechsler Intelligence Scale, reduced depression on the Beck Depression Inventory, improved interpersonal relations and improved self-control and self-concept on the TAT and Rorschach. Her study also demonstrates the use of the Listening Test of Tomatis to design a programme for the specific needs of a client.

Learning from the methodological pitfalls of previous studies, Du Plessis's (1982) exploratory study on anxiety and the APP approach is characterized by several commendable methodological features: the use of an experienced therapist during the experimental period; assignment of clients to an experimental and a control group; the inclusion of a no-treatment control group; a 14-month follow-up; virtually no subject attrition; and the use of an extended range of specific outcome measures. Du Plessis (1982) assessed a population of 424 first-year female students by means of the IPAT Anxiety Scale, the Reactions to Everyday Situations (RES), a biographical questionnaire, and the Personal, Home, Social and Formal Relations Questionnaire (PHSF), and identified an anxious and a non-anxious group, both consisting of 40 subjects.

Twenty solicited subjects from the anxious group were assigned to an experimental and a control group of 10 subjects each. The experimental group received an APP anxiety-reduction programme consisting of 60 half-hour sessions of filtered music and also regular therapeutic interviews. At retesting, the anxiety level of the experimental group had decreased significantly, with no change in the control group. Scores on the Purpose in Life test had increased significantly in the experimental group, yet decreased in the control group. In both groups scores on the S.A. Wechsler Intelligence Test showed a significant increase in performance and total scores, but only the experimental group achieved a significant increase in verbal IQ. Finally, the experimental group manifested a significant increase on a measure of self-actualization. This group had enhanced their level of mental health, were utilizing their time more constructively and were functioning more in keeping with their inner needs and motives.

Du Plessis then applied the same stimulation programme to a sample of 14 students from the non-anxious group with very similar results. However, practicalities prevented him from checking the results with a control group.

A follow-up study of the anxious experimental and control groups 14.3 months after the initial testing, showed that the anxious experimental group ($N = 10$) had maintained its reduced anxiety. A significant increase in the level of self-actualization was maintained in the experimental group, but not in the control group. A follow-up evaluation of the non-anxious experimental group ($N = 13$) also indicated a significant increase in the level of self-actualization.

Study on the mentally retarded

De Bruto (1983) conducted a carefully controlled study to investigate the effect of APP on a group of profoundly retarded children. A secondary aim was to inquire into intervention as a contaminating factor. Thirty inmates of Witrand Care and Rehabilitation Centre, aged 4 to 14 years and previously diagnosed as profoundly mentally retarded but with the ability to sit and walk, were randomly assigned to three groups which received

(a) auditory training plus a sensory motor stimulation programme (group A);
(b) music stimulation (but without the APP effect) plus the same sensory motor stimulation programme (group B);
(c) no-treatment (group C).

Psychological tests used included the Bailey Scales of Infant Development and a measure of responsiveness. The results indicated that both experimental groups manifested an increase in mental age, but the increase in the APP stimulation group was significantly higher than that in group B. No change was found in group C.

Whereas no significant differences in terms of responsiveness in group A and B were observed prior to the stimulation programme, a statistically significant reduction of self-directed responses, together with a significant increase in object-directed responses occurred after APP training.

Conclusions and recommendations

The studies discussed indicate that APP seems to produce benefits and they also seem to support certain basic premises of Tomatis. Support for the use of the audiolaterometer as a measurement of auditory laterality came from the studies of Van Wyk (1974) and Badenhorst (1975). The studies on stuttering seem to support Tomatis's premises that auditory training may lead to improved hearing and speech. This finding is also supported by the results of the Canadian studies (e.g. Gilmor, 1982; Roy, 1980a; Roy, 1980b; Wilson *et al.*, 1982) indicating that APP training results in the improvement of motivation to communicate, as well as self-confidence and specific auditory processing skills.

Other indications of positive outcomes which seem in line with APP predictions, include

- improved general adjustment: (Botes, 1979; Du Plessis, 1983; Gilmor, 1982; Peché, 1975; Rourke & Russel, 1982);
- reduction of anxiety: (Botes, 1979; Du Plessis, 1982; Peché, 1975 and by implication also Gilmor, 1982 and Rourke & Russel, 1982);
- improved self-control and self-concept: (Botes, 1979; Du Plessis, 1982; Gilmor, 1982; Peché, 1975; Rourke & Russel, 1982);
- improved interpersonal relations: (Botes, 1979; Du Plessis, 1982; Gilmor, 1982; Peché, 1975;);
- improved achievement functioning: (Botes, 1979; De Bruto, 1983; Gilmor, 1982; Rourke & Russel, 1982; Roy, 1980a; Roy, 1980b).

Impressive as these findings may seem to be, a general impression from the research is that a definite conclusion about the value of APP in the treatment of various disabilities cannot yet be reached. Methodological problems and lack of control conditions limit the degree to which gains can be attributed to APP training alone. Demonstrating that a particular form of treatment is superior to no treatment is useful, but does not rule out the possibility that non-specific effects such as placebo or contact with enthusiastic and committed treatment staff, and not the specific treatment technique, account for the therapeutic change (Rachman & Wilson, 1980). The primary research task is to identify and comprehend the strategies, agents and mechanisms by which elements produce their effects (Parloff, 1986). However, it seems to be very difficult to demonstrate that a particular kind of therapeutic intervention has a unique effect. Not only have no clear differences been found between the effects of different forms of therapy (comparative outcome studies) (Parloff, 1979; Strupp, 1978), but placebo treatments also seem to produce comparable results (Bergin & Lambert, 1978; Frank, 1973). Thus more sophisticated methodologies have been developed, because outcome criteria were too vague, and not in line with what was happening in therapy. As a consequence research became more process orientated and more specific: preference was given to multiple, client-specific and situational-specific outcome measures (Blöte-Aanhane, 1980).

In order to verify the specific contribution of the APP approach to the treatment of various disabilities, the potentially more informative research model of comparing known alternative treatment forms seems advisable. No-treatment, waiting list, and attention-placebo control conditions sometimes raise ethical issues because a reasonable treatment is withheld or postponed (Kazdin, 1986).

The research design should permit the analysis and comparison of characteristic and incidental elements of the treatment. Ideally, according to Parloff (1986), the therapies being compared should be comparable on such variables as credibility of treatment to patients, duration of treatment and therapist attention, skills, and enthusiasm.

Futhermore, it is important that treatment outcome differences do not reflect differences in therapist competence. When therapists are 'crossed' with treatment, each therapist administers each of the treatment conditions in the investigation. Therapists can then be identified as a 'factor' in the data analysis. On the other hand, if therapists are 'nested' within treatments, separate sets of therapists are used to administer the separate treatments. From the standpoint of experimental design, according to Kazdin (1986), it is desirable to 'cross' therapists with treatment.

Finally, the manner of patient recruitment seems to be an important issue. In a review of 14 studies that compared solicited to referred patients, Krupnick, Shea and Elkin (1986) discuss the disadvantages of recruited or solicited patients and warn that it might be methodologically wiser to rely on traditionally referred patients.

If these stringent criteria and precautions could be met in future research, a clearer picture on the value of APP in the treatment of specific pathologies might emerge.

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