I. CONTRIBUTIONS OF EXPERIMENTAL AND ABNORMAL PSYCHOLOGY TO CLINICAL PSYCHOLOGY

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Experimental Psychology, with its long history and even longer tradition and its wide acceptance, needs no special definition, since its methods and content do not vary greatly from country to country. Clinical psychology, however, has developed differently in various parts of the world. Since World War II it has occupied the position of a special profession in the U.S.A., to which some 12,000 psychologists belong officially and a larger number unofficially. In some countries it is largely in the hands of physicians or psychiatrists, in others it is primarily in the hands of psychometric technicians, while in still others it has not yet emerged as a specialty. For this reason it is important to indicate what we mean by the term.

Soon after experimental psychology emerged in Wundt’s laboratory, and even earlier, many academic psychologists began to study the mentally ill with the techniques of experimental psychology. Among the earliest workers to invade psychopathology with the new psychological weapons were Ribot, Janet, Krapelin, Jung, Ach, Sidis, August Hoch, Boring. Those who left a deeper imprint on experimentation are Claparède, Sante de Sanctis, McDougall, Morton Prince, and Franz. These men established a new field—Abnormal Psychology—which represented the academic interest in psychopathology and was devoted to a scientific rather than a service-focused approach. It is interesting to note that during this early period the discipline from which these men came did not matter.

Before the turn of the century Lightner Witmer, one of Wundt’s students, followed by Henry H. Goddard, Alfred Binet, F. L. Wells, and others, pioneered the development of clinical psychology—i.e. the application of scientific methods to the practical problems of the mentally disordered and handicapped.

But the greatest impetus to the development of clinical psychology came from its contact with psychiatry and the general field of medicine. Among those who inspired and won the devotion of the earlier abnormal and clinical psychologists were Charcot, Janet, and Adolph Meyer. The great interest in the concepts of personality engendered by Freud, Jung, and their followers probably served as the strongest support for the development of abnormal and clinical psychology.

The purpose of this brief historical excursion is to indicate that our problem is three-fold, since there are three elements to be considered: Experimental

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space and time will not permit it and the reader can find this discussion elsewhere (Zubin, 1969). Here we shall be concerned with the variety of techniques and methods which have been developed for dealing with the various hypotheses emanating from these models.  

In order to test these hypotheses we must provide techniques and methods for measuring the hypothesized deviant behaviour accounted for by each of the models. For the first, the ecological model, culture-dependent interviewing techniques seem currently to be the most satisfactory way of assessing deviant behaviour. For the second group, the development and learning models, culture-fair techniques have been provided. For the third group, the genetic, internal environmental, and neurophysiological models, culture-free techniques have been developed.

Time will permit a sampling of the methods and results for only a few of the techniques that have proved useful.

One of the difficulties facing the abnormal psychologist is the alleged weakness of our classification system which produces such heterogeneity in our samples that the intra-group variability nullifies differences between groups. The current diagnostic system, damned by so many, turns out on closer inspection to be like Mark Twain’s evaluation of Wagner’s music—not as bad as it sounds. In a recent survey of the reliability of diagnosis (Zubin, 1967) the results were not as high as would be desirable, but not as low as had been anticipated. But even agreements of .70 and .80 leave a considerable heterogeneity in the sample of patients under investigation. The chief tool now used in the diagnosis of mental disorder is the interview, and the first task of the scientist is to improve its validity and reliability. There is currently a great deal of activity devoted to making of rating scales for evaluating patient behaviour, ranging from such techniques as the Malamud and Sands Psychiatric Rating Scale to the Lorr Inpatient Multidimensional Psychiatric Scale and the Overall Psychiatric Judgment Depression Scale (Lyerly and Abbott, 1966). These scales have arisen as a result of a demand for better evaluation of patients before and after drug therapy.

All of these approaches have one defect in common. They depend upon unstructured unsystematic interviews and observational techniques. In order to overcome this defect systematic structured interviews were introduced by the

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1 Each of these models has given rise to a variety of hypotheses. Only a few examples can be cited. Thus the ecological model has initiated a large number of epidemiological studies to investigate the ecological sources of mental disorder. The developmental model is responsible for the series of studies in the influence of early environment on subsequent personality adjustment. The internal environmental model has initiated an investigation of the body fluids of schizophrenics and of the electrolyte metabolism of depressives. The neurophysiological model has initiated the study of the inhibitory role of descending afferents on cortical evoked potentials in hysterical anaesthesia (Hernández-Peón et al., 1963) and to a host of investigations on the cortical arousal level of schizophrenics, including Mednick’s assumption of higher arousal leading to quicker conditioning and generalization. The learning model has been responsible for providing animal analogues for behaviour disorders in the form of the conditioned emotional response (Hunt, 1964) and for psychosomatic disorders in the operant control of autonomic and visceral functioning (Miller, 1966). It has also given rise to the hypothesis that the schizophrenic is more influenced by the immediately preceding event than by a more distant event (Salzinger, 1966).

2 It is interesting to note historically that the development of the Malamud–Sands Rating Scale, one of the first in the field, came as a result of the request of Hudson Hoagland and his colleagues at the Worcester State Hospital for some clinical data which would explain changes observed in the biochemistry of a patient. Since the only available information was in the form of a case history, Malamud and his colleagues had to convert it into some type of numerical data and provided a rating scale for making such a transformation.
back to the Hindu Ayure-Veda (1949), but understanding still eludes us. By dealing with behaviour that is relatively free of prior experience and cultural influence, as we do when we limit ourselves to these brief laboratory tasks, we are attempting to obtain differentials between schizophrenics and normals that reflect a basic substrate of brain functioning in the processing of information. If the difference between schizophrenia and normality can be demonstrated to begin at the information-processing level, for example, we may be able eventually to understand why the world looks so different to the schizophrenic, and yet demonstrate that his behaviour is consistent and predictable though systematically deviant from normal expectancy in some basic substrate. Such differences may yield the culture-free indicators we so desperately need when studying sub-cultural groups or when making cross-cultural comparisons. By depending on interviewing methods or clinical tests alone, or on techniques highly dependent on prior reinforcement history, such as perceptual constancy or higher mental functions, we cannot escape the cultural bias inherent in such techniques. It is hoped that culture-free indicators may help us detect deviations that would be either falsely occluded or spuriously introduced when culture-dependent techniques are used.

There are several techniques developed by clinicians which are begging to be admitted as respectable citizens. Among the more promising of these are Sjöbring’s system of personality evaluation and George Kelly’s Theory of Personal Constructs. The Sjöbring system will be dealt with briefly here, since it is less widely known.

If we define personality as the systematic aspect of a person’s behaviour, and psychopathology as those aspects of his systematic behaviour attributable to illness, an important question arises regarding the possible connections between pre-morbid personality and psychopathology. Elsewhere (Zubin, 1965) I have discussed these three possibilities: that personality and psychopathology are one and the same and no distinction can be made between them, even in the pre-morbid stage; that psychopathology represents an interaction between the pre-morbid personality and the noxious aspects of the illness; or that they are independent of each other—i.e. anyone can become mentally ill regardless of his pre-morbid personality. Until recently, the literature gave no definitive preference for any one of these three alternatives, but a recent series of studies using Sjöbring’s method of personality evaluations has thrown its weight on the side of the independence hypothesis.

Sjöbring, a Swedish psychiatrist, postulates that individuals are either normal or suffer from some underlying neurophysiological ‘lesion’. The lesion cases are the result of damage due to noxious influences—single-gene substitutions of a deleterious for a wholesome allele, genic mutation, birth injury, accidents, etc. Virtually all serious mental disorders are regarded as lesional, though even lesion cases have personality characteristics other than those imposed by their lesion. In general, personality can be subdivided into four dimensions (considered genotypic by Sjöbring): capacity, validity, solidarity, and stability.

Essen-Möller (1956) applied the Sjöbring method in a study of 2,550 individuals in ‘Lundy’ outside Lund, Sweden, in 1947—and was able to assess the personality and type of psychopathology when present in 98.8 per cent of all individuals in
way in which the patient behaves—his symptoms and signs (the complaints and the indicators which are observable even without complaint). However, the disordered behaviour may arise from a variety of causes. Furthermore, the same type of disorder may reveal itself differently in different patients depending upon their original equipment or their personality—i.e. the systematic behaviour which characterized them before the disorder became apparent. From this point of view there are three necessary sets of information required before a diagnosis can be made: (1) pre-morbid personality, (2) current behaviour and characteristics, and (3) the cause of the change.

What has experimental psychology done to help in these three areas? First, it has provided certain psychometric devices for evaluating the current behaviour of the patient when he comes to attention. Among these are such well-known instruments as intelligence tests, and personality tests and laboratory techniques for measuring physiological, sensory, perceptual, psychomotor and conceptual responses under controlled stimulation as well as under idling state conditions. It has, thus far, helped but little in the provision of methods for determining pre-morbid personality, though retrospective accounts of development and instruments for recording such data are now being developed. Some prospective studies (Mednick) are also in progress. With regard to aetiology, attempts have been made to formulate scientific models which may underlie mental disorders, ranging from ecological, developmental, and learning, to heredity, internal environmental, and neurophysiological models, and considerable research under each of these models has been engendered in an attempt to uncover the sources of the disorder.

Most of these studies are conducted by research psychologists and other research scientists in various research centres: The Maudsley Hospital, the NIMH, New York Psychiatric Institute, Max Planck Institutes, University of Paris Faculté de Médecine, the Medical Research Council in Great Britain, etc. It is to be hoped that the result of these efforts will eventually benefit the practising clinician. The techniques for testing the hypotheses emanating from these models may be divided into (1) culture-dependent, (2) culture-fair, and (3) culture-free. The first will vary considerably across cultures, since it has to conform to local cultural norms in order to detect deviation in response. The second will also vary from culture to culture, but translations or equivalence across cultures can be found. The third attempts to transcend culture by remaining relatively invariant from culture to culture. It is still too early to know whether culture-free techniques can be developed, but to the extent that they remain relatively invariant from culture to culture, they may make possible more objective cross-cultural studies.

There is one danger facing clinical psychology—the danger of being swamped by the demands for service. In the U.S. this demand has produced a severe shortage of trained personnel and an even greater shortage of research clinicians or abnormal psychologists. The fortunate countries where this has not happened yet should take heed to avoid the North American pattern. One too easy road would be to adopt North American clinical psychology by translating most of the tests and techniques. It is to be hoped that this will not become a vogue, and that each country will enrich our knowledge of human behaviour through its own heritage rather than sacrifice its past to the American mould.
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the district over 15 years of age. The same population was re-examined by Olle Hagnell (1966) ten years later—1957.

The principal finding of interest in the Hagnell study, in the relation between personality and psychopathology, is the following: 1947 Sjöbring ratings did not predict mental illness incidence in the following ten years. That is, 1947 Sjöbring 'deviants' in the (sub- and super-) categories of his four dimensions did not become mentally ill in greater proportions than did members of the population as a whole. This does not mean, of course, that those who have become mentally ill will demonstrate 'normal' personality in the Sjöbring system. It appears that psychopathology and pre-morbid personality are distinct and independent things. Whether the pre-morbid personality has prognostic significance, once the disorder strikes, remains to be determined. Whether psychopathology, once it has appeared, takes on a colouration that can be related to the personality that pre-existed, or whether the personality can be said, in some sense, to be suspended for the duration of illness also needs to be investigated.

The rather striking results obtained by the Sjöbring method of personality assessment are somewhat dampened by the fact that the method depends on the clinical interview, with all its sources of variability. If someone were to transmute the Sjöbring method into a systematic structured interview of the type described earlier, a great gain would be made for personality assessment.

Some of the models which are regarded as important by many clinicians have not yet lent themselves to experimentation to test their tenability. We have succeeded in experimenting only with the peripheral aspects of psychoanalysis, for example. Its basic structure has thus far denied admission to the experimentalist.

At the present time, nearly all the therapies that have been proposed have failed to demonstrate their efficacy over and beyond spontaneous improvement. This is due partly to the absence of reliable tools for measuring the outcome and partly to the heterogeneous nature of our patient population as a result of a poor classificatory system. Some of the problems of classification are the result of poor data, but some may be laid at the door of insufficient statistical methodology for coping with the problem of classification. We still do not have good methods for fractionating populations into like-minded or like-structured subgroups.

**SUMMARY**

An analysis of the influence of experimental psychology on clinical psychology has made it necessary to call attention to the middleman who mediates between experimental and clinical psychology—the abnormal psychologist. Whether the clinical and experimental approaches can be synthesized in one cranium remains an unanswered question, despite the success with which the synthesis has occurred in a few rare instances.

With regard to diagnosis of disorders in behaviour, by which we mean a thorough knowledge of the cause of the illness and a description of its effect on the individual suffering from it, such knowledge is rarely available in the mental disorders, and hence we must fall back on mere description of the characteristic
and do not enter unpredictably or selectively into the data. That is, for example, seeing that the across-subjects' experience with the stimuli is approximately equal, that motivation does not vary significantly trial by trial, that the instructions as to the response or to the reception of the stimulus are standard and sufficient, that different experimental conditions are counterbalanced, and so on.

Another requirement for such relatively culture-free indicators of mental disorder is to so design the experiment that the number of options, or number of ways in which the task can be performed, is limited. Thus experiments involving judgement of brightness in brief stimuli should not be reducible to time judgements or flicker to judgements based on brightness or hue, etc. Only by being certain of what the patient is actually doing and by preventing him from performing by any other route can we compare patient with patient or patient with normal. This presents a challenge, but without the guarantee of identity of task no useful comparisons can be made (Sutton, personal communication).

Examples of the behavioural techniques that are relatively free of cultural influences are the effect of modality shift in reaction time of schizophrenics and normals (Sutton and Zubin, 1964), in which, even when motivation is ruled out and general level of speed is ruled out by covariance methods, there is greater retardation in the schizophrenic, and this holds true even when expectancy is eliminated as a factor. Similarly, pupillography has indicated smaller initial pupil size and less contraction to light stimulation in schizophrenics (Hakerem, Lidsky, and Sutton, 1966).

While these techniques seem relatively free of cultural influences, our preliminary findings suggest that when adequate care is taken to reduce or control the role of additional, motivational, and criterion variables, and when the task that is constructed is based on close experimental analysis of the perceptual situation, the differences found between patients and normals are usually small. The large differences to be found between patients and normals are evidently results of factors other than sensory or perceptual ones. That the residual differences are small does not disturb us, except in the sense that we have to exercise infinite care with our equipment and procedures to prevent experimental artifacts from swamping small differences between groups. If we can establish such findings and be sure of their accuracy, we would have a sound basis for moving to theoretical formulations that might open the door to designing measures that would yield large differences between patients and normals. Of course, we may find instead that under these conditions of testing the differences in scores between patients and normals will vanish altogether. Findings of this kind would lead us to give up the search on this level of organization, and we would concentrate on those variables—e.g. motivational, attentional, attitudinal, effects of prior reinforcement history—that we have striven so hard to exclude as factors in our perceptual experiments.

One may ask what profit there is in investigating these partial and small-scale functions or their patterning in the mental disorders. What possible advantage can they offer for understanding the total disorder? Would it not be better to study the totality of the behaviour—the total disorder? Our answer is that the total disorder is so encrusted with such varying life experience that it defies analysis; all one can do is describe it. We have had 34 centuries of such descriptions, dating
Biometrics Research Division of the New York State Department of Mental Hygiene, in which the same questions are asked of each patient in the same order and dichotomous items for recording the information with regard to the presence or absence of specific behaviors are provided as the interview proceeds. The responses to these interviews give rise to a total score indicating severity of psychopathology and to subscores based on factorial analysis as well as on clinical groupings of items which provide a profile of psychopathology. The reliabilities of these instruments are found to be in the range of the 0.80s and 0.90s for most of the scales and the total score (Burdo and Hardesty, 1968; Spitzer et al., 1967).

While the newer interviewing methods have not yet been widely accepted by the practising clinician, interest in them is widespread, and some recent attempts have been made to provide computerized diagnoses based on the data provided by such interviews.

The utilization of more objective interviewing methods opens up the possibility of arriving at more homogeneous subgroups by an iterative process. By beginning with a clinically selected group, and applying our objective interviewing methods through a computer, we can get a more homogeneous group for experimentation. In fact, the variability in some of our measures of behaviour drops radically when we consider those individuals who qualify as schizophrenic on clinical grounds as well as on computer scored interview responses.

The usefulness of these systematic structured interviews in determining the basis on which diagnoses are arrived at is demonstrated in the following experiment (Katz, Cole, and Lowery, 1969). One of our structured interviews was videotaped so that it could be presented to groups of clinicians for their clinical judgement and diagnosis. In addition to the over-all diagnosis the clinicians were asked to fill out ratings on an inventory for such factors as excitement, paranoid projection, anxious introvertiveness, perceptual distortion, motor disturbances, hostile belligerence, apathy and retardation, grandiose expansiveness, and thinking disorganization (Lorr, 1953). The clinicians were all seasoned veterans; nevertheless, of the 35 participants, 14 diagnosed the patient as neurotic and 21 as psychotic. An examination of their ratings revealed, however, that the groups differed significantly only in one respect—the rating on apathy. Those who rated the patient high on apathy diagnosed him as psychotic, while those who rated him low on apathy diagnosed him as neurotic. We are planning an objective approach to the estimation of apathy independently of the interview.

Culture-fair techniques which we have used for the developmental and learning model are three in number: (1) delayed auditory feedback for children and adults; (2) friendship-pattern evaluation for adolescents; and (3) measure of pre-admission isolation for residents of old-age homes and mental institutions. The delayed auditory feedback technique was applied to children to determine at what age its effect begins. This was found to be approximately age 7. William Goldfarb (1961) applied the same technique to schizophrenic children and reported that they behaved more like children 2 years younger, not beginning to be affected until about age 9. In adult schizophrenics, where we hoped to find
conditioning and deconditioning of a child's phobia (Watson & Raynor) were revived and began to be regarded as a paradigm for the general treatment of phobias. Knight Dunlap's Beta hypothesis (1932) was also revived in desensitization and extinction procedures for mis-spellings (like teh for the) and for tics, etc. Now a veritable deluge of behaviour therapies is upon us, each of them claiming to be the panacea. It is to be hoped that the behaviour therapists will not fall into the same trap as their predecessors, claiming universal efficacy for their treatments.

We shall now turn our attention to those areas which have not yet percolated beyond the experimental level of the abnormal psychologist to everyday practice.

In order to do experimentally sound work in a given area and to be able to relate it to the corpus of certitude in the rest of the field, we have need of scientific models in which definitions and assumptions are built into a structure consisting of a parsimonious number of dimensions and from which certain hypotheses are derived. These can be tested in the crucible of experimental procedures to determine whether or not the results vindicate the hypothesis and in this way establish or disestablish the structure from which it rose.

The first task is to delimit the area of investigation phenomenologically. Once this is accomplished we can turn to aetiology. The deviant behaviour attributable to each of these aetiologies—the behaviour of the mentally disordered person—has been observed and studied for a long time. The advent of the abnormal psychologist has brought more order and system into these observations.

In our own efforts we decided to eschew the available clinical tools, since they were not suitable for testing the hypotheses emanating from the aetiological models. Instead we instituted a systematic approach to measuring physiological, sensory, perceptual, psychomotor, and conceptual responses elicited by systematic probing in the idling state, with energy and with signal stimuli (Burdock, Sutton, and Zubin, 1958).

But the behaviour exhibited by a given patient could be due to a variety of aetiological factors. It is not sufficient to know the behaviour alone; its antecedents are of the utmost importance. Since aetiological knowledge is still poorly developed in psychopathology, we resorted to the description of potential or 'ideal' aetiologies in the form of scientific models. Out of the welter of possibilities we chose six to work with: ecology, learning, development, genetic (heredity), internal environmental, and neurophysiological (brain function). While these models are conceived of as independent for heuristic purposes, they are in reality interdependent to a greater or lesser degree.

The ecological model and the learning model refer primarily to exogenous factors impinging on the individual. The development model is partly exogenous, influenced by ecological and learning factors, and partly endogenous, reflecting maturation. The genetic, internal environmental, and neurophysiological models operate entirely within the skin but they are mutually inter-related as well as influenced by ecological forces via learning and development.
Psychology, Abnormal Psychology, and Clinical Psychology. Today in the U.S.A. clinical psychologists far outnumber abnormal psychologists, but the scientific thrust in clinical work still seems to come via the abnormal route. In many other countries abnormal psychology is as far as the wave of psychologists’ interest in psychopathology has reached, and its knowledge has not yet filtered down to the everyday clinical practitioner.1

It would be well to remember that the influence was not always uni-directional. Many of the problems which abnormal psychology dealt with came from clinical observations and hunches—e.g. consolidation in memory, brain localization, body image, dream research. In fact the fruitful work in abnormal psychology always had clinical roots and it was sometimes even formulated in the form of a testable hypothesis by a gifted clinician. However, we shall limit ourselves to the influence of abnormal psychology on clinical psychology and not vice versa.

What are the functions of the clinical psychologist and what is his primary area of interest? There is a good deal of agreement on the definition of clinical psychology as the field dealing with personality adjustment and its deviations. Personality can be defined broadly as the systematic behaviour characterizing the unique qualities of a person. Thus, the field of clinical psychology consists of the assessment of personality with regard to the detection, diagnosis, and prognosis of behaviour deviations and the selection and application of suitable methods for their amelioration and for prevention. Presumably, problems of normal personality can be left to the educational and counselling psychologist and other practitioners. We need to define behaviour deviations or disorders more precisely in order to delineate the clinician’s area more definitely. As a working definition we shall designate as a behaviour disorder a progressive condition which, unless ameliorated, leads to severe curtailment of efficiency, or happiness, or even life. This is to be distinguished from a behaviour defect, which is a stationary condition associated with one of more of the above end-results.

What main contributions have come from experimental psychology via abnormal psychology? The first is the introduction of measurement into the assessment of the personality of those suffering from mental disorder. Second is the provision of methods for the treatment of the disorders.

With regard to the assessment of personality, there is a whole host of psychometric instruments now in use which are found to be helpful. Not much time need be devoted to discussing the measurement of intelligence, except to point out that many of our current instruments are so culture-bound that they are not applicable except in the indigenous culture, and even there not to all the subcultures which exist. For example, the New York City Board of Education has eliminated intelligence tests from the early grades because of their unsuitability to Puerto Rican and other minorities as well as to lower socio-economic levels in general.

Regarding clinically used personality tests of the paper-and-pencil variety,