The psychology and psychopathology of attention*

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The study of attention has played a significant role in the history of both clinical psychiatry and experimental psychology. The former is marked by unconditional positive regard, while the latter reveals a variable course that extends over the span of a century. The first psychology laboratory gave primacy to attentional studies and other laboratories modeled that interest. Then for a period of 30 years that initial involvement diminished to the point of utter rejection of attention as a viable area of research. Yet today we witness a sparkling recovery and a resurgence of scientific interest in attentional processes. It is intriguing to speculate on the reasons underlying the consistently positive history of psychiatry, in comparison with the markedly ambivalent posture of psychology over an equivalent time period.

The Role of Attention in Clinical Psychiatry

Let us begin with psychiatry. To understand a history of uniform positive acceptance of the significance of attention, one must first look to the traditional methods of psychiatric study. As with other branches of medicine, psychiatry emphasizes the important role of the case history for providing a subjective recital of the patient’s relevant past, of the significance as perceived of early (stimulus) events and the responses made to such events. In that historical accounting, primacy is given not only to the content of happenings but of equal importance to the individual’s introspections with regard to these events. Thoughts, feelings, and sensory and perceptual experience as provided through self-examination constitute a great part of the data of psychiatric inquiry and exchange. Psychiatry leans heavily on these introspective accounts of inner states and of conscious experience to describe and to account for those cognitive, affective, and interpersonal behaviors that set patient off from populace. The use of another’s conscious experiences, let alone the exploration of events experienced seemingly without awareness, has been the hallmark of clinical psychiatric investigation. Out of a long history of patients’ recitals psychiatry has built a comprehensive understanding of the role played by subjective experience in the genesis and maintenance of psychopathology.

That history is replete with examples of the powerful consequences of attentional dysfunction in the unfolding of psychosis. One reads patients’ accounts of such dysfunctional states with an overwhelming awareness of the sense of dissolution that characterizes descent into psychosis (Alvarez 1961, Boisen 1962, Freedman 1974, Freedman and Chapman 1973, Kaplan 1964, Landis 1964, MacDonald 1960, and Sechehaye 1951). The fact that these retrospections have been the forerunners of experimental efforts to understand the role of attentional defects in psychosis speaks to the potential contributory power of such phenomenological accounts.

McGhie and Chapman (1961) have catalogued some of these personal descriptions, noting that when young schizophrenic patients were asked to describe the difficulties they had experienced during the early stage of their illness, they referred most frequently to “a disturbance in the normal process of selective attention.”

My thoughts get all jumbled up. I start thinking or talking about something but I never get there. Instead I wander off in the wrong directions and get caught
up with all sorts of different things that may be connected with the things I want to say but in a way I can’t explain. [p. 108]

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My trouble is that I’ve got too many thoughts. You might think about something, let’s say that ashtray and just think, oh! yes, that’s for putting my cigarette in, but I would think of it and then I would think of a dozen different things connected with it at the same time. [p. 108]

Of the many personal accounts I have read, none is more revealing of the power inherent in patients’ introspections about their illness than one provided by Norma MacDonald (1960), a psychiatric nurse, in which she details the stages of her acute schizophrenic breakdown. Her commentary provides a clinical application in support of Broadbent’s (1958) influential theory of information processing with its emphasis on a filter mechanism to handle stimulus overload. (Unfortunately, I am unable to ascertain whether Ms. MacDonald previously had read any of Broadbent’s numerous papers published in the 1950’s or his seminal volume, *Perception and Communication*, which was published 2 years before Ms. MacDonald’s insightful autobiographical account of her illness.) The excerpt that follows illuminates this point:

There has been so much written about acute schizophrenic illnesses, and there is so much material available on delusions and hallucinations, that I won’t go further into those. What I do want to explain, if I can, is the exaggerated state of awareness in which I lived before, during, and after my acute illness. At first it was as if parts of my brain “awoke” which had been dormant, and I became interested in a wide assortment of people, events, places, and ideas which normally would make no impression on me. Not knowing that I was ill, I made no attempt to understand what was happening, but felt that there was some overwhelming significance in all this, produced either by God or Satan, and I felt that I was duty-bound to ponder on each of these new interests, and the more I pondered the worse it became. The walk of a stranger on the street could be a “sign” to me which I must interpret. Every face in the windows of a passing streetcar would be engraved on my mind, all of them concentrating on me and trying to pass some sort of message. Now, many years later, I can appreciate what had happened. Each of us is capable of coping with a large number of stimuli, invading our being through any one of the senses. We could hear every sound within earshot and see every object, line, and colour within the field of vision, and so on. It’s obvious that we would be incapable of carrying on any of our daily activities if even one-hundredth of all these available stimuli invaded us at once. So the mind must have a filter which functions without our conscious thought, sorting stimuli and allowing only those which are relevant to the situation in hand to disturb consciousness. And this filter must be working at maximum efficiency at all times, particularly when we require a high degree of concentration. What had happened to me in Toronto was a breakdown in the filter, and a hodge-podge of unrelated stimuli were distracting me from things which should have had my undivided attention. [p. 218]

It is the conscious awareness of experiences such as these that has helped to form the structure for the phenomenology of schizophrenia as recorded by psychiatry’s great figures. It occasions no surprise then to observe that Kraepelin¹ (1919) in *Dementia Praecox and Paraphrenia* gave the highest priority to attention as one of the most “fundamental disturbances” of the disorder. Referring both to the motivational and the cognitive components of attentional dysfunction, Kraepelin noted how for schizophrenic patients “it is quite common for them to ‘lose both inclination and ability on their own initiative to keep their attention fixed for any length of time” (p. 6). At one point in Kraepelin’s writings his early Wundtian training comes to the fore and helps to link attention to eye-tracking phenomena in schizophrenia—an experimental area of high current interest (Holzman and Levy 1977):

In psychological experiments the patients cannot stick to the appointed exercise; they feel no need to collect their thoughts in the appointed manner, or to reach a satisfactory solution. Perhaps the experience related by Dodge and Diefendorff that patients do not usually follow a moving pendulum continuously, as normal persons do, but intermittently and hesitatingly, may be explained by a similar disorder of attention. [p. 6]

¹Preceding Kraepelin were the observations made by Griesinger in 1867 in his *Mental Pathology and Therapeutics* in which he described the incapacity of patients suffering from dementia to compare, to judge, and to integrate separate ideas so that “all thought has degenerated into a disconnected mass of fleeting images and words.” The attention-concentration disturbance so recorded provides the basis for the breakdown in abstraction, the coherence of associated ideas, and the logicality of thought. “We often think that in such patients an attempt at memory, at judgement, and at attention may be discovered, which, however, falls powerless and inefficacious... and we may often receive the impression that these pitiable creatures themselves were tacitly and painfully feeling their own inability to direct themselves amidst these broken remains of psychical life” (pp. 341-342).
For Bleuler (1924 and 1950) attention was also a central process, one that was related to the fundamental symptom of affectivity in schizophrenia. In his *Textbook of Psychiatry* Bleuler (1924) wrote more generally of the significance of attention:

> Attention is a manifestation of affectivity. It consists in the fact that certain sensory perceptions and ideas which have aroused our interest are facilitated and all others inhibited. If we are performing an important experiment, we only observe what is relevant to it; everything else is entirely lost to our sense. [p. 40]

In distinguishing between “passive” and “active” attention Bleuler sought to specify the influencing agent. The former approximates what is currently termed selective attention. In Bleuler’s terminology passive attention was directed by “external occurrences,” whereas active attention was directed by the “will” (i.e., voluntary/purposive and, hence, motivated activity). This differentiation made clear Bleuler’s clinical acuity for he recognized that passive attention is retained in paranoid schizophrenics (cf. Rapaport 1951, pp. 627-628, for a discussion of this point) who are prone to excessive scanning of their environment.

A similar distinction made by Bleuler was one of tenacity versus vigility. Tenacity was “the ability to keep one’s attention fixed on a certain subject continuously” (p. 40); by contrast, vigility was “the capacity to direct one’s attention to a new object, particularly to an external stimulus” (p. 40). Thus tenacity would define sustained attention, and vigility, selective attention as these terms are used in contemporary psychology.

What is particularly interesting in the interlocking of psychiatry’s and psychology’s history is that Bleuler, like Kraepelin, was also beholden to Wundt in having borrowed the concept of active attention from the founder of experimental psychology. (Kraepelin having noted the same impairment in active attention in schizophrenia also attributed it to the patient’s impairment of volition [i.e., voluntary activity].)

The point to be stressed here is that these formulations arose out of the reports of patients and attendant observations of their behaviors. This was the all-embracing focus of Kraepelin and Bleuler (and others who followed in their pioneering path), and philosophical issues surrounding concepts of consciousness, will, and other “mentalistic” constructs that came to plague psychology were not central to psychiatric advances. Progress in psychiatric understanding grew initially from clinical observation joined with the subjective accounts that patients provided of “inner” experiences as revealed in descriptions of their sensations, images, thoughts, and associations.

### The Role of Attention in Experimental Psychology

For psychology, history took a different turn and the attentional construct was caught up in major philosophical and theoretical differences within the discipline. A brief recital of some elements of that history may help to clarify this point.

Toward the close of the 20th century research on attentional processes stood at high tide, yet by 1920 attention as a research area had fallen into disrepute and disrepair. After a hiatus of three decades, the 1950’s saw a revitalization of the earlier interest, and now in the 1970’s, attentional studies have once again made a remarkable resurgence as seen in the literature of psychophysiology, neurophysiology, and experimental psychology.

Three developments Moray (1969) points out have brought about this renaissance: 1) Operational definitions in stimulus-response language terminology that have swept away the objections to an older and unacceptable introspectionism, bringing in turn acceptance of research aimed at clarifying the role of attention in performance. 2) The necessity for solutions to critical problems (initially in transport and traffic control) of communication in a technological society that generated a rapid and extensive information flow that human operators were required to process. (In Moray’s words, “there are few things more likely to overcome a theoretical prejudice against the possibility of certain kinds of research than an urgent practical need for solutions, especially in the sphere of military operations” [p. 5]). 3) The development of new techniques and apparatus that eased the problems of experimental studies of attention in response to auditory and visual signal inputs.

But what about that curious history of recrudescence and retreat? The specificity of method must first be separated from more substantive issues, for there has always been a striking consistency in the modes used to study attentional phenomena over the past century. Indeed, methods for studying attention objectively antedate psychology’s experimental tradition. Describing
the first effort to study span of attention or apprehension, Woodworth and Schlosberg (1954) trace history back to a demonstration by Sir William Hamilton (1859) in the course of a series of lectures on "metaphysics" in which students were told that were a handful of marbles to be thrown on the floor "it would be difficult to view at once more than six, or seven at most, without confusion; but if you group them into twos, or threes, or fives, you can comprehend as many groups as you can units because the mind considers these groups only as units" (p. 90). One hundred years later Miller (1956) would write that greater amounts of information can be retained in memory by "chunking" the information into larger units.

However, the experimental study of attention, traces back to Wundt's laboratory at Leipzig toward the close of the 19th century. There an initial emphasis on the reaction time experiment and mental chronometry (i.e., the effort to time mental processes) gave way to studies of attention which Boring (1950) describes as follows:

In this field of attention there were researches on the complication experiment, the range of attention and the fluctuation of attention, all classical topics which appeared to represent the surrender of vague mental functions to the rigor of experimentation. [p. 342]

Wundt provided psychology with its experimental commitment to the clear delineation of stimulus, the careful specification of experimental conditions, and the objective recording of response. To join physiological and psychological factors together in the new psychology, Wundt turned to "clear introspective consciousness" as the method for analyzing the elements of a subject's experience. This could only be achieved by stressing the most careful training in introspection—an emphasis that was accentuated to an even greater extent by Titchener (1908) who became the leading advocate of structural psychology in America. At Cornell University Titchener pursued experiments that were clearly in the Wundtian tradition, training his students systematically and precisely in the method of introspection for reporting the then central content of psychology—mental states which were compounds of sensations, images, and feelings. Attention played a central role in achieving clarity of such sensations and images. In the passage that follows Murphy and Kovach (1972) describe the orientation to research problems that characterized Titchener's laboratory:

Is there in attention a gradual transition from maximal to minimal clearness, or are there a number of definable "steps"? The reports of some subjects indicated two distinct levels, focal clearness and marginal clearness. Other subjects reported several levels of clearness. Here, as elsewhere, subjects trained in introspection were used; Titchener took seriously only the testimony of subjects who had learned to introspect: that is, to observe and describe accurately the mental states experienced. [p. 215]

But by 1920 structuralism was dead, its demise heralded by the rise of the alternative schools of functionalism (Dewey 1886 and Angell 1904) and behaviorism (Watson 1913) in American psychology. These newer orientations, opposed to the mentalism inherent in consciousness, excised it from the new psychology—a surgical undertaking made less painful by the manifest unreliability that was evident even in the reports of subjects who had been trained within the Cornellian citadel of structuralism.

The central theme of these new orientations was not merely rejection of a research focus on the structural elements of "mind," but rather a commitment to a functional view of behavior; the core problem of psychology was perceived to be the study of the behavior of organisms in terms of its significance for adaptation to the environment. One could, with prescience, foresee the profound implications that such an emphasis would have for ultimately welding the common interests of psychiatry and psychology.

Nevertheless, for several decades the study of attention essentially disappeared from psychology's purview, reappearing whenever it did disguised in the cloth of motivation, expectancy and set, perceptual defense, and as one factor influencing facilitation and inhibition of response. Then, in his major volume on The Organization of Behavior, Hebb (1949) brought attention back into focus for psychology, undoing in the process the narrow stimulus-response analysis that behaviorism had advocated. The volume virtually begins with his counterattack.

In the simplest terms, "attention" refers to a selectivity of response. Man or animal is continuously responding to some events in the environment, and not to others that could be responded to (or "noticed") just as well. When an experimental result

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2i.e., the uniting of impressions drawn from different sense modalities.
makes it necessary to refer to "set" or "attention," the reference means, precisely, that the activity that controls the form, speed, strength, or duration of response is not the immediately preceding excitation of receptor cells alone. The fact that a response is not so controlled may be hard to explain, theoretically; but it is not mystical, and "attention" is not necessarily anthropomorphic, or animistic, or undefinable.

Now the tradition in psychology has long been a search for the property of the stimulus which by itself determines the ensuing response at any given stage of learning. This approach seems partly a consequence of psychology's persistent fight against animism and deserves respect for that reason; but it is no longer satisfactory as theory. Almost without exception psychologists have recognized the existence of the selective central factor that reinforces now one response, now another. The problem is to carry out to its logical conclusion an incomplete line of thought that starts out preoccupied with stimuli or stimulus configuration as the source and control of action, eventually runs into facts of attention and so on, and then simply agrees that attention is an important fact, without recognizing that this is inconsistent with one's earlier assumptions. To complete this process, we must go back and make a change in the basis of the theory.

There are three points here: one is that psychologists have generally recognized the existence of attention or the like; another that they have done so reluctantly and sparingly, and have never recognized the fact in setting up theories. The third point is obvious enough, that we need to find some way of dealing with the facts consistently. Since everyone knows that attention and set exist we had better get the skeleton out of the closet and see what can be done with it. [pp. 4-5]

Hebb then went on to point out the neurophysiological evidence that suggested a "rational basis" for implicating a "central neural factor" capable of modifying the action of a stimulus.

Two years later Berlyne (1951), citing Hebb's major contribution, decried psychology's neglect of attention over the previous 30-year span, adding that "since its importance, for the study of human behavior, especially in applied psychology and psychopathology cannot be ignored, behavior theory must come to grips with it sooner or later" (p. 137).

Over the past 25 years psychology has indeed come to grips with the problem. Drawing upon a rich experimental literature provided by the emergent areas of cognitive psychology and information processing, psychophysiology and neurophysiology, attention has not only re-entered the scene, it has commandeered the stage and, by the power of its heightened sophistication both conceptually and methodologically, has ended psychology's pervasive ambivalence toward the construct.

The Multiform Nature of Attention

That ambivalence had not been without merit. So many different meanings have surrounded the concept of attention that its use as a global term has only served to produce confusion and to reduce any potential power inherent in the diversity. Numerous categorizations of the meaning of attention have been advanced, the orientation of these sortings being more often to tasks, although attempts have been made to derive more adequate working definitions of the construct.

In a posthumously published paper, E.G. Boring (1970), psychology's premier historian, indicated the outline of a paper he had hoped to be able to write for a volume edited by Mostofsky (1970). His effort was to provide a historical perspective to answer the question, What became of attention as a psychological concept? In his outline of the projected paper, Boring listed 10 "overlapping little histories" which were to serve to define the specific uses of the concept. It is clear from reading the paper that these uses indicate that the 10 histories would have been markedly methodological in their import. This is Boring's list: 1) the personal equation—the role of individual variation in expectancy as this influenced speed of reaction; 2) reaction time studies; 3) the complication experiment involving presentation of two synchronous stimuli from different sense modalities; 4) compound reactions, based on discrimination reaction time; 5) span of attention; 6) degree of attention; 7) the unconscious as a lower level of attention; 8) conditions determining the focus of attention; 9) the duration of attention; and 10) attention as set.

In another listing provided by Moray (1969), a distinction is made among the following: 1) mental concentration on a particular task; 2) vigilance to detect an event embedded in other events to be presented; 3) selective attention in which one of several simultaneous messages is to be selected out for response; 4) search and scanning of a set of stimuli to seek out a single stimulus or subset of stimuli; 5) activation and arousal; 6) set and the preparation to respond in a given way. By contrast with these more elaborate category sets, Zubin
(1970 and 1975) has contented himself with a simple, threefold classification of attention: 1) selection of a portion of the environment for focusing attention; 2) maintenance of that focus; and 3) shift of the focus, when required, to some other part of the environment.

Since our receptors are bombarded continuously by a wide spectrum of both internal and external stimuli, we must have some way of separating the relevant stimuli and those that we cannot ignore, those on which our adaptive adjustment depends in a given situation, from the irrelevant, those which we can ignore with safety and survive and continue undisturbed with the ongoing activity. This is selective attention. Once the sector of the environment has been selected, attention is directed toward it until we attain our goal or become satiated or bored with it. This is maintenance attention. Since we can not remain glued to the same sector forever, a switching mechanism is provided which switches our attention to some other sector. This is switching attention. [Zublin 1970]

Attention and the Experimental Psychopathology of Schizophrenia

It is the marked variability in meaning and method attached to the concept of attention that establishes its overinclusive nature. This imprecision is evident not only in the usages accorded the concept through psychology's century-old history but equally so in the many experimental studies of attention that have been performed with schizophrenic and normal individuals. If attention has been many things to many researchers, nowhere is this more evident than in the numerous investigative areas with which attentional defects in schizophrenia have been associated. So encompassing is this literature that I have spared individual citations lest the page boundaries of this issue of the Schizophrenia Bulletin. Multiple citations, however, for each area can be readily located in the voluminous literature of schizophrenia.

Here are some examples of the diversity of research contents in which attentional components have been viewed as influencing schizophrenic performance: perception research: deviant perceptions, disruption of size constancy, perceptual scanning, two-flash threshold, sensory deprivation and perceptual isolation studies; cognition research: poor conceptual performance, incidental learning, field articulation studies, over-inclusion research, information processing, memory deficit, word association disturbances, language deficits, referential communication, competing information tasks, visual short-term memory, effectiveness in utilizing contextual clues, stimulus overload in distraction studies; motoric behavior: motor inhibition; attentional tasks: span of apprehension, simple/discrimination/cross-modal reaction time, perceptual vigilance, disattentive studies; psychophysiology and neurophysiology: states of high drive and autonomic arousal as indexed by peripheral indicants such as skin conductance, heart rate, blood pulse volume and muscle tension, EEG and evoked potentials, correlates of orienting behavior, narrowed cue utilization with or without stress interventions, withdrawal/arousal in chronic schizophrenia, EEG activity during signs of episodic disturbances in perception and train of thought, studies of sleeplessness; psychopharmacology: behavioral response to phenothiazines; studies of children at risk for schizophrenia; attitudinal: motivational components in schizophrenic performance, studies of set and expectancy.

What are we to make of such a potpourri of research areas? One conclusion, of course, is that defective attention has profound consequences that extend over a wide band of behavioral domains in schizophrenia with such defects providing a basis for the patient's failure to acquire competence skills of a cognitive, affective, motivational, and social-interactional nature.

In his paper on the experience of efficacy in schizophrenia White (1965) pointed to an “enduring liability” in schizophrenic patients—ineffectiveness in action, a lack of motivation and initiative, and a failure of persistence in problem solving. These attributes, he suggested, antedated the disorder:

...weak action on the environment has very great generality in schizophrenic behavior. Poor direction of attention and action, poor mastery of cognitive experiences, weak assertiveness in interpersonal relations, low feelings of efficacy and competence, a restricted sense of agency in leading one's life—all these crop out in almost any aspect of the schizophrenic disorder.

I should like now to entertain the hypothesis that his ineffectiveness in action is central not only in the picture of the schizophrenic's ultimately disordered behavior but also throughout his whole course of development—that from the start it is the future schizophrenic's major liability. It characterizes his behavior from an early point in life, and it leads to a precarious development in all the spheres I have discussed, in-
cluding interpersonal competence and self-esteem. [p. 202]

The “poor direction of attention and action” to which White alludes may well be the substrate reflected in those many laboratory investigations of schizophrenia that reveal deficits to be a hallmark of the patient’s performance.

However, equally important is the variability that is inevitably present within samples of schizophrenic patients. This phenomenon raises intriguing questions about the factors that are at work in producing subject and method variance.

The search for the bases for variability within schizophrenia and across attentional studies demands systematic review and study. One such effort is reflected in Nuechterlein’s (1977) review of one of Boring’s 10 little histories—the reaction time task. Similar reviews of research on other methods may help to shed light on the complex of factors that are related to attention and performance in schizophrenia.

The Multiple Theoretical Constructions of Attentional Deficit in Schizophrenia

Theoretical formulations of many of the phenomena associated with attentional dysfunction in schizophrenia reveal a catholicity consistent with the diversity of research. Here are but a few examples: attention-arousal formulations that implicate negative feedback mechanisms; arousal in the context of an acuteness-chronicity dimension in schizophrenia; maximization-minimization of scanning style as a cognitive control principle in paranoid-nonparanoid schizophrenia (cf. Bleuler as cited earlier); impairment of major set; twin arousal systems (tonic and modifying) to account for the broadening or narrowing of attention; stimulus input dysfunction formulations; defective central filter mechanisms; disruption of associative threads; excessive yielding to normal biases; regression concepts; behavior control by more “immediate” environmental stimuli; failure of disattention; reduction of sensitivity to peripheral sensory channels; reciprocal augmentation of anxiety and overgeneralization; lowered response strength ceiling in schizophrenia; and disorders of excitatory modulation.

These diverse formulations appear in many different publications, but summaries of theoretical views can be found in a number of review sources including Broen (1968), Chapman and Chapman (1973), Epstein and Coleman (1970), McGhie (1969 and 1970), and Neale and Cromwell (1970). Commentary on attentional studies also appears in the Special Reports issued by the editors of the Schizophrenia Bulletin (e.g., Keith et al. 1976).

Clearly we are at flood tide in the study of attention in schizophrenia. But never has the time been more propitious for such an explosion in research, for with the old ambivalences dissipated in psychology, the ongoing contributions of experimental psychologists, psychophysiologists, and neurophysiologists can now be more readily incorporated into research on the psychopathology of schizophrenia (cf. Hemsley 1975).

Difficulties remain, and those set forth earlier by Neale and Cromwell (1970) are as relevant today as when they first reviewed the literature of attention in schizophrenia. Referring to the literature on various deficits in schizophrenic patients, they concluded that such studies are not “unequivocally” interpretable in terms of attention and called for a “new systematic approach” to research. Some of the components of such systematization they urged should include: (a) specification of the defining attributes of schizophrenia; (b) attempts to group patients based upon their specific behavioral deficits; (c) sophistication in deriving schizophrenic subgroups that have predictive utility in the study of attention; (d) the use of broadened theoretical models (including brain models) that can integrate “behavioral, genetic, neurophysiological, early history and drug findings”; (e) the further refinement of behavioral techniques used in research; (f) the integration of clinical and experimental data as a step toward providing understanding; (g) a multivariate approach to schizophrenic pathology rather than a misplaced emphasis on the power of any single variable.

Issues such as these speak not only to attentional research but to far broader concerns with the overall quality of research in schizophrenia. The burgeoning study of attention, however, can profit by the increased need for sophistication in experimentation urged by Neale and Cromwell.

Another point deserves mention and this relates to the nonunitary quality of attention. Kopfstein and Neale (1972) have demonstrated the low intercorrelations that characterize performance of chronic and acute schizophrenic individuals and nonschizophrenic
psychiatric patients on five laboratory tasks considered to be measures of attention; such tasks apparently share little common variance.

Clearly a different approach to the problem is needed and here one can profit by a brief look at the children-at-risk literature. Faced with the necessity of identifying subsets of more specifically vulnerable children within risk samples, several investigators (Asarnow et al., in press, and Hanson, Gottesman, and Heston 1976) have turned to techniques of clustering those children who show consistencies in behaviors that would appear to have potential import for future psychopathology.

The research of Asarnow and his colleagues is particularly relevant. These investigators have used a hierarchical cluster analysis derived from performance measures obtained on 10 different attentional tasks to compare children of schizophrenic mothers who were later placed in foster-home settings. Groups of fostered and nonfostered children whose mothers were free of psychiatric disorder constituted the necessary controls. The cluster analysis segregated a small subgroup of children within the high risk sample who showed markedly consistent attentional dysfunction accompanied by personality anomalies—a co-occurrence that may reflect an early pattern of heightened predisposition to the disorder.

Conclusion

This too lengthy essay of introduction to the current issue of the Schizophrenia Bulletin is an effort once again to assert the interdependence of clinician and experimentalist. The symbiosis of the sciences is known to all, but in psychopathology researcher and clinician have too often been set apart, failing to share in an equivalent symbiosis that is essential for the development of a science of psychopathology.

In a recent article Freedman (1974) called upon both clinicians and researchers to be more systematic in accumulating data about their patients’ and their subjects’ subjective experiences in an effort to develop a body of descriptive and experimental data on schizophrenic cognition and perception.

McGhie (1967) recognized that same interdependence when he wrote the following closing paragraph to a review of studies of cognitive disorder in schizophrenia:

I would venture the opinion that most productive experimental studies reported by psychologists have developed from clinical observations, and that often all we are doing is to devise different methods of checking information given to us directly by the patient. Studies which omit this initial phase of observation and contact with the patient, no matter how sophisticated or systematic the experimental methodology, tend to produce findings of very limited clinical usefulness and often of very dubious validity. The further point may be worth making here that experimental investigations are by no means the only nor always the best way of investigating such clinical problems. Careful clinical observation and interviews can provide reliable and valid information about schizophrenic disorders so long as such information is recorded in a systematic manner. Experimental enquiries can be seen as complementing the information derived from the clinical approach. At times information derived from such a systematic clinical approach may indicate the direction in which further experimental enquiries should be headed. At other times the findings of the experimental studies may in turn help to modify the clinical approach to the schizophrenic patient. At no time, however, can experimental studies supplant the carefully conducted clinical observation of the patient, upon which most of our understanding of pathological change is ultimately based.

What McGhie would seem to be calling for is disciplined inquiry by clinician and experimentalist alike. Attention, as Moray suggests, “is back again, respectable in both theory and practice.” The extrapolation of both these aspects of the scientific study of attentional processes to psychopathology can only, in time, enhance our understanding of the nature of schizophrenia.

References


Kraepelin, E. *Dementia Praecox and Paraphrenia.* (Translated by R. Mary Barclay) Edinburgh: E.S. Livingston, 1919.


Zubin, J. Problem of attention in schizophrenia. In:


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job exchange—a free service

The National Society for Autistic Children, Information and Referral Service, operates a job exchange as a free service. The job exchange receives listing of both employees and employers all over the country for services to handicapped children and adults, especially those who are autistic or autistic-like. The job exchange, which attempts to match employers and employees, has names of special education teachers, teacher aides, psychologists, nurses, administrators, social workers, and therapists of all kinds (including speech, occupational, drama, art, and adapted physical education therapists). The job exchange also hears from students in these areas looking for summer camp jobs. Jobs are in public and private programs of many kinds.

Information on more job openings and more prospective employees is needed. With the new mandates for services and the concomitant shortage of personnel, it is important to cut the search time for employers and employees who are interested in serving autistic persons. Suggestions are welcome. Those wishing further information about this free service should write to: Job Exchange, National Society for Autistic Children, Information and Referral Service, 306 31st Street, Huntington, W. Va. 25702.