PSYCHOBIOLOGICAL VS PSYCHOSOCIAL: WHITHER THE ZEITGEIST

Comment on "The Neuroscience Imperative in Psychiatry"
by H.G. Stampfer and G.A. German in Integrated Psychiatry.

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ABSTRACT

Neither the psychobiological, nor the psychosocial approaches by themselves hold the keys to the revolution that is needed to break the current logjam in psychopathology. Only through their interaction in some type of supermodel such as the vulnerability model and with the help of both triggers and moderating variables can we hope to break the logjam. Neither the psychobiological models nor the psychosocial models by themselves can bring about the revolution. However, the psychosocial models must find their brain-addresses before the revolution becomes possible.
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Stampfer and German question the likelihood that the next revolution in psychiatry will come from psychosocial approaches and express the conviction that the wave of the future belongs to neuroscience or the psychobiological approach rather than the psychosocial. This indeed represents the current Zeitgeist and raises the question of why this trend developed and what the next development will be. Elsewhere (1) it was pointed out that the scientific approach to the study of human behavior and of science in general, sprang from the subjective intuitive observations of primitive man on his environment. Even the most scientific fields like physics and chemistry had their early beginnings in primitive psychological phenomena observed by early man. Thus our understanding and measurement of temperature arose from the psychological observations on subjective warmth. This phenomenon must have puzzled early man and started him on the search for its causes and how to assess it. It wasn't until fire was tamed that man was able to increase or decrease the feeling of subjective warmth and thus lay the foundation for understanding its source and eventually develop the thermometer. The other physical and chemical entities developed in analogous ways. This also held true of psychopathological phenomena. Unfortunately, progress in the objectification and measurement of psychopathological phenomena are still in a primitive state. Both the psychobiological and the psychosocial approaches in psychopathology can not operate alone, and must collaborate in developing an understanding and measurement of the phenomena.
Which will prove more efficient remains an open question. It should also be realized that progress in scientific endeavors is neither linear nor predictable. The most revolutionary advances have come not from theories, but from technological discoveries or inventions. The telescope revolutionized astronomy, the microscope did the same for biology and now CAT scans, PET scans, NMR and other imaging techniques have opened up brain structure and function to scrutiny. But there are two aspects to the brain: (1) the wired-in portion and (2) the neuroplastic portion. The wired-in portion probably developed through evolutionary survival, while the neuroplastic part of the brain probably developed through experience with the environment and does not get transmitted genetically but culturally. Each individual must develop his own neuroplastic brain. Thus, the pathways for the visual, auditory and other sensory processing, and the orienting response are probably transmitted genetically and deviations from the norm in them can be more readily detected. On the other hand such psychosocial behaviors as mood have thus far defied our attempts to find their brain tracks. Perhaps there are none, or they are so idiosyncratic that they can not be generalized. Here both the psychobiological and the psychosocial approaches fail us. Thus far most hard-headed scientists in the biological domain have tended to regard the psychobiological approach as having the upper hand, and favoring Stampfer's and German's thesis. Is there any defense or advantage for the psychosocial approach? Perhaps the severest attack on the imperialism of biological causality was launched by
Rene Dubos (2). According to him all the processes found in living things, including humans, obey the laws of inanimate matter, an assumption which even the early Freud lived by. But Dubos goes on to say that all these forces are merely the stage props for the drama we enact on the stage of life. Perhaps the most important determinant of our behavior has been overlooked - our ability to be a self-starter. Unlike other organisms that are shaped by their environment through accommodation, we humans shape our own environment, both the exogenous and the endogenous, through assimilation as well as accommodation.

A most intriguing contrast between the biological and psychosocial approaches is offered by S.J. Gould (3). He writes: "Yet surely most 'things' now done by our brains, and essential both to our culture and our very survival, are epiphenomena of the computing power of this machine, not genetically grounded Darwinian entities crafted specifically by natural selection for their current function." Thus, it is the interaction between the wired-in portion of the brain and the environmental forces including especially the psychosocial which determines our behavior.

An even more picturesque argument for the psychosocial approach is offered by Ciompi (4). He states, "There is little doubt that the key phenomenon of the natural plasticity simultaneously causes action to form an analogous network of limbo-thalamico-cortical neural systems with integrated cognitive and affective components, representing a condensation of all concrete experiences. In other words, external dynamic
transactions are transformed into internal structure. Thus, clear and unambiguous social conditions, interpersonal relationships, communication processes, etc., must be reflected in equally clear and unambiguous intrapsychic reference systems, (with corresponding neuroplastic structures), whereas ambiguous and contradictory external conditions must find their counterpart in ambiguous internal structures. The pathogenic effect of confusing communication patterns therefore becomes more understandable."

But these internal structures are not transmitted genetically but rather culturally, and through the neuroplastic portion of the brain rather through the wired-in portion. Returning to the relative contributions of the psychobiological and psychosocial approaches, both have made important discoveries in psychopathology, but have not yet solved some of the basic problems such as the problem of schizophrenia. While dopamine theory has made many advances on the psychobiological front, the psychosocial approach has also provided, on its part, such discoveries as the role of emotional expression in relapse and the role of communication deviance in the development of episodes. Ackerknecht (5) points out the see-saw that existed between the Hippocratic trend towards natural healing of the patient and the more aggressive trend for treating the disease in the history of medical treatment. Hippocratic therapy could be regarded as the removal of the obstacles that stood in the way of the natural tendency for self healing, with the full active participation of the patient. The more aggressive types of treatment were
introduced when natural healing seemed insufficient, and appeal could be made to active intervention with drugs, surgery or other means. In the see-saw between the two approaches, when one was dominant, the other tended to be neglected. We are now dominated by the more aggressive approach which is largely psychobiological, while the psychosocial is somewhat neglected. But it is in this connection that psychosocial factors can play a very important role by invoking natural self-healing tendencies. These can be brought about by cognitive and behavioral strategies for maintaining and aiding and abetting the morale of the patient in his search for self liberation from his affliction. Only by returning to the Hippocratic belief that the patient rather than the disease should be targetted by therapy, can we abort new episodes and maintain health. This is the challenge that the psychosocial approach has to meet if it is to revolutionize the current status of psychopathology.

Thus far we have discussed only the contributions of the psychobiological and the psychosocial approaches to treatment. With regard to etiology, these approaches show greater diversity. The various scientific models for etiology can be grouped into the biological models, primarily within the skin, and the psychosocial and ecological models primarily external to the skin of the organism. Thus we have on the one hand the biological sources of etiology and on the other hand the psychological and social-cultural field forces. The biological models contain the genetic, internal environment, neurophysiological and neuroanatomical models, while the
psychosocial models contain the ecological, developmental, and 
learning models (6). However none of these etiological models 
alone are found to be both necessary and sufficient for etiology. 
A superordinate model for etiology subsuming the two groups of 
models in interaction with one another has to be provided. A 
good candidate is provided by the vulnerability model (7;6). 
But before we can examine their interaction experimentally we 
have to find the brain pathways in which the psychosocial models 
dwell, that is find their biological underpinnings. Does that 
mean that the revolution can come only from the biological 
sources? Not quite! The psychosocial models are the 
frontrunners, demanding and laying the roads for progress. How 
to find the brain pathways corresponding to the psychosocial 
factors is the great challenge facing us. In searching for these 
brain tracks we have no better guide than the poet Antonio 
Machado, 1875 (Sevilla) 1939 (Collioure), who wrote: Wayfarer, 
there is no road, you make it as you go!

The vulnerability model which is being proposed at the 
superordinate model, further specifies that vulnerable 
individuals will develop an episode only if sufficient stress is 
experienced, otherwise they may end their days without ever 
experiencing an episode. At the present time the only measure 
available for detecting the degree of stress is a Life-event 
interview. Even though such interviews have indicated that the 
majority of individuals who develop episodes undergo at least one 
severe life event during the three weeks preceding the onset of 
the episode, the reliability of this type of self report is not
very high. It is hoped that the recent advances in the measurement of the parameters of the immune system, and of the neurohumoral system may provide more objective monitors of stress. But even if individuals undergo a severe life event they need not develop an episode if the social network, premorbid personality and the ecological niche can absorb the stress and thus abort the episode. The provision of objective measures for determining the presence of vulnerability, and of measures of the parameters of stress which trigger the episode and of the moderating parameters which either abort it or exacerbate it, are urgently needed in order to bring about the revolution (6).

But what are the specific next steps that could change psychiatry?

I am limiting my predictions to the field of schizophrenia because that is my chief interest, though some of the predictions probably will apply to mental disorders in general.

1. The discovery that would change the face of schizophrenia most is the acceptance of a new philosophical outlook on the nature of this disorder, changing the currently accepted notion that it is a disease into the concept that it is a vulnerability state which can be transformed to an episode of disorder by sufficiently disturbing stressors. This view fits in well with most of our current knowledge and would provide a gateway for prevention of both initial episodes and relapses.

2. In order to develop good measures of stress, measures of the immune system responsiveness to stress will be
required and the development of such measures will mark a milestone in progress.

3. In order to identify the vulnerable individuals, a group of indicators which can serve as "markers" of vulnerability are required and the current progress in this field bids well for the future. The utilization of information processing theory will be of great use in the development of such "markers".

4. The functioning of the brain in schizophrenia through brain imaging techniques (CAT scans, PET scans, cerebral blood flow, NMR) will make it possible to identify the brain functioning of the schizophrenic while he is undergoing an episode and hopefully also provide "markers" for identifying the vulnerable even before they develop their first episode.

5. Family studies in which individuals possessing "markers" who are unaffected by the disorder will yield information on how vulnerable affected individuals differ from the vulnerable but unaffected. What protects the unaffected and what special circumstances influence the affected will emerge from such comparisons.

6. Genetic engineering may provide means for altering the genetic make up of those individuals who have inherited the genetic vulnerability or propensity for schizophrenia.

7. Determination of the differences between drug responders and non-responders may yield new insights into the etiology of schizophrenia and the maintenance of episodes.
8. Studies of individuals with currently predicted good outcomes (good premorbid personality and other characteristics predicting good outcome) and those with currently predicted poor outcome, should reveal why some who have a prediction for a good outcome fail to live up to it, and why some with poor outcome predictions do well. These false positives and false negatives should provide new insights into prognosis.
REFERENCES


