

## SOME CURRENT RESEARCH ISSUES IN AMERICAN CHILD PSYCHIATRY

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### INTRODUCTION

Among the values of cross-cultural exchange is the opportunity for an individual to obtain perspective on his own work through contact with research in another country. The observations to be reported in this paper stem from a year in the U.S.A. during which I was fortunate to have the opportunity to acquaint myself with current thought and investigation in three aspects of child psychiatry: nosology, brain injury and behavior, and behavioral development in children. Because the topics are ones in which advances may have wide implications, I believe that a reaction to American work in these fields by someone from a different psychiatric culture may be of more than private interest. Necessarily a personal reaction is not comprehensive and reflects the especial biases and interests of the writer. Therefore the considerations that follow make no attempt at a complete coverage of current studies in child psychiatry or related fields, several reviews of this kind being available elsewhere.<sup>7, 34, 36, 68</sup> For several reasons interest in nos-

ology, the relation of brain function to behavior, and the problems of behavioral development have central importance for child psychiatry. In considerable degree, the chaotic state of diagnosis has hampered research in many areas. Delineation of the relationship between the brain and behavioral development may help to clarify some aspects of the diagnostic situation and paradoxically also may throw light on the importance of social determinants of behavior. Similarly, methodological and conceptual advances in the study of child behavior and parent-child interaction are of importance in many fields of study.

## NOSOLOGY

The important and problematical questions of psychiatric classification and diagnosis are currently under re-examination. Questions of nosology encompass several issues which need to be disentangled if progress is to be made. On the one hand, a generally accepted classification for psychiatric disorder is urgently needed to facilitate communications between different workers and to provide some comparability between studies in different centers. Such a classification need not be the embodiment of scientific truth, but rather a code for practical use based on operational definition of terms.<sup>98</sup> It is unnecessary for such a classification to await knowledge on the etiology of psychiatric illness. On the other hand, there is the related question of diagnostic concepts regarding the meaningful grouping of conditions, which is equally important for different reasons. Such grouping reflects our understanding of the basis of psychiatric disorder and needs constant revision in the light of new knowledge. In contrast to a formal classification, which requires general acceptance to be of much value, there is a place for several diagnostic schemata which would be provisional and act as a guide to further research rather than as a means of communication.

## CLASSIFICATION

A recent survey sponsored by the World Health Organization has clearly shown the many differences in the various psychiatric classifications used throughout the world.<sup>94</sup> Comparability between different classifications is far from satisfactory,<sup>23</sup> and the reliability of diagnosis of adult psychiatric disorder is often low.<sup>72, 96</sup> Much less is known about the psychiatric diagnosis of children so that, although there are many classifications in use with apparently little correspondence between them, few facts are available regarding the extent and nature of the differences. A diagnostic reliability study by Prall,<sup>79</sup> however, has begun to fill this gap in our knowledge. He has utilized sound-recorded films of interviews with child patients which were shown (both with and without clinical histories) to psychiatrists in a number of different centers. Reliability of diagnosis was generally very low. Agreement regarding major diagnostic categories was better, but even on these disagreement was still substantial. That agreement on prognosis was rather better than that on diagnosis suggests that differences in terminology were at least as influential as disagreement regarding the clinical state observed and its pertinence for development.

One of the very interesting developments in recent years has been the establishment of several registers for all treated psychiatric illness within certain circumscribed communities.<sup>3, 63, 67, 75</sup> The registers differ somewhat in their function, the type of data collected is not uniform, and the degree to which they are comprehensive in coverage varies. At present, the Rochester register is the only one to include patients treated by private practitioners.<sup>67</sup> Perhaps the greatest value of such registers is the provision of a sampling frame for further studies, but it also has other very important functions. Unlike individual hospital or clinic facilities, registers can produce an *unduplicated* count of patients. Data on the ebb and flow of patients through different agencies give invaluable information

basic to the planning of services. Included also in the many potential uses of a register is the examination of diagnostic trends.<sup>67</sup> When patients attend several facilities for the same disorder in a very short period of time (e.g., a private practitioner, an emergency clinic, and then an in-patient unit), there is the chance to compare diagnoses made by different agencies and to relate each diagnosis to the subsequent course of the illness in that patient. Such information on diagnostic reliability would be of value in determining existing differences in classification, while data on the course and outcome of mental disease clearly have many other implications.

Several groups are currently meeting in attempts to obtain agreement on psychiatric classification, but in the main are chiefly concerned with the diagnosis of adult patients. However, a study section of the Group for Advancement of Psychiatry is considering the development of a generally acceptable diagnostic scheme for children's disorders. Their endeavors are much needed, the difficulties are considerable, and it may be that further study of the different uses of existing classifications will need to precede the establishment of a new scheme.

### *CLINICAL DIAGNOSIS*

The factors upon which an ideal diagnostic scheme should be based are undecided and probably are a function of the purposes for which diagnosis is employed. Since disorders in childhood present in a developing organism undergoing constant change, the complexities of the situation are increased. Disorders are rarely clear-cut illnesses, and to what extent they are best regarded as extremes on continua of development and to what extent syndromes of behavior qualitatively different from normal is not known with any certainty.

Several approaches to diagnosis have been used by investigators. Etiology is probably an indispensable part of any adequate system of diagnosis, but in itself is unlikely to be sufficient. The same agent may cause very different outcomes and similar clinical pictures may be due to many different etiological

factors. For example, a classification of fractures based *only* on the causative agent would have failed to encompass the crucial distinctions between injuries where there is disruption of the skin, or trauma to internal organs, and those where there is not.

An alternative approach is afforded by groupings according to symptom clusters or similarities in the clinical state. Differentiation according to the nature and extent of responses to treatment may also provide a basis for diagnosis. Finally there is the classical Kraepelinian method of dividing disorders according to long-term prognosis. For convenience, studies in connection with each approach will be considered in turn. However, the approaches do not provide alternatives, the acceptance of any one of which necessarily excludes the others. Rather some rapprochement between them is desirable to produce a comprehensive and adequate diagnostic system.

*Symptom Clusters.* In the past, attempts to delineate clusters of symptoms by factor analytic studies<sup>1, 2, 46</sup> have met with some degree of success. Two major factors appear fairly consistently in both these and more recent studies<sup>6, 8, 26, 74</sup>—personality or neurotic problems on the one hand, and conduct or anti-social problems on the other. However, correlations between symptoms are generally low and the groupings may, in part, be a function of the conceptual framework of the person rating the symptoms or items of behavior. The work of Becker<sup>6, 8</sup> has clearly demonstrated that, although similar factor structures may be present in ratings from different sources (as by parents and teachers), the behavior rated may not be the same. Correlations between behavior ratings on the same child by parents and teachers are low. His studies of parents and children have delineated some of the areas where differences are greatest; for example, regarding parental assessments, mothers judged hostile by their husbands and by professional workers generally regard themselves not as hostile, but as anxious. Some of the relevant variables influencing ratings of behavior by different observers are also emerging from the studies of

the St. Louis group.<sup>40</sup> Agreement between teachers and parents is quite high for behavior of children in the upper socio-economic strata but low for children from the lower strata.<sup>41</sup> Further, there is an association between low academic achievement and behavioral disorder when the behavior is rated by teachers but not when it is rated by parents.<sup>42</sup>

*Response to Treatment.* Short-term prognosis and response to treatment may also be used to differentiate disorders in childhood. As in factor analytic studies, neurotic and anti-social children were differentiated by Eisenberg according to their outcome following six months of treatment, the improvement shown by the neurotic children being much greater.<sup>26, 36</sup> Similarly, children with hyperactivity were distinguished from the neurotic group by their worse short-term prognosis. In view of the demonstrated differences in outcome between children with these symptoms, studies of response to treatment in more homogeneous groups of children are being undertaken by Eisenberg and his co-workers. It is to be expected that better measures of responses to different treatments will be thereby possible.

*Long-term Prognosis.* The differentiation of neurotic and anti-social children is also borne out by the careful follow-up studies of children who attended psychiatric clinics in St. Louis thirty years ago, carried out by O'Neal and Robins.<sup>69, 70</sup> They earlier reported that neurotic children often became psychiatrically healthy adults, although, compared with a group of children not exhibiting disorder in childhood, more of them were neurotic as adults. Delinquent children often became sociopathic or criminal adults, but it should be noted that 38 per cent of juvenile delinquents had no adult crime record by the age of 43 years. The group of non-delinquent anti-social children contributed a disproportionately high number of schizophrenic adults. Individual symptoms bore little relationship to outcome if their association with the three overall syndromes was taken into account. It was also noteworthy that factors such

as broken homes, although occurring more frequently in the child clinic population than in the control group, were unrelated to outcome within the clinic population.<sup>69</sup> This investigation is one of the most important in recent years and the forthcoming final report of the complete findings will be eagerly awaited. Their findings are consonant with the very few other investigations in the same area, and provide important data on outcome upon which to develop a differentiation of psychiatric disorders of childhood. Nevertheless, in that the group came largely from lower socio-economic strata of a previous generation, limitations on generalization from their findings remain.

*Etiology.* Despite the existence of certain stereotyped views on the etiology of behavioral disturbances in childhood, there are at present few data upon which to build an adequate etiological system of diagnosis. Stereotypes have been based upon both experiential factors, as in the so-called 'maternal deprivation' syndrome, and upon presumed brain pathology, as in the epileptic personality and hyperkinetic syndromes. However, it is now clear from Bowlby's own work that the 'affectionless character' is only one of many consequences of maternal deprivation.<sup>18</sup> The results of the British National Survey also suggest that the harmful effects of separation of the child from his parents may be largely confined to the middle classes.<sup>29, 87</sup> Nevertheless, there have been very few definitive studies of the consequences of specified psychological or social events and it cannot be assumed that particular clinical pictures would not be found.

The relationship between structural factors and specified behavioral syndromes is scarcely more clear. The syndrome of hyperactivity commonly supposed to be characteristic of the 'brain-damaged' child is found only in a minority of such children and can be found in children without demonstrable brain pathology.<sup>78</sup> Some aspects of the relationship between brain injury and behavior will be considered further in the second

section of this paper.

*Epidemiological Studies.* Concepts regarding childhood psychiatric disorder have largely developed from contact with clinic or office patients; much less is known about children who are not brought to psychiatric notice. Studies of the general population are necessary in order to assess the extent to which referral factors contribute to the selection of syndromes seen among psychiatric patients. It is of value to know something of the frequency with which various symptoms and disorders are manifest in the general population and of even greater interest to determine the inter-relationships between symptoms in such a population. Knowledge is also required of the association between any individual symptom and the presence of sufficient general malfunction to warrant a diagnosis of psychiatric disorder. Fortunately, epidemiological studies are beginning to provide answers to some of these important questions. Earlier reports of the study of a sample of 482 children of ages six to twelve years in Buffalo showed the high prevalence of symptoms such as hyperactivity, fears, etc.<sup>60</sup> It was also of interest that there was no relationship between numbers of fears and the presence of other symptoms.<sup>61</sup> Studies of third grade children in St. Louis have shown that, whereas enuresis, thumb-sucking, speech disturbance, etc. were unrelated to the assessment of maladjustment, impaired peer relationships were a good indicator of maladjustment.<sup>66</sup> It is noteworthy, too, that this same symptom among children attending child guidance clinics thirty years ago has also been found to be related to their later adjustment to army life as measured by social criteria or psychiatric disorder.<sup>84, 85</sup>

It is clear that different approaches to diagnosis to some extent produce a similar broad differentiation of categories. However, we are still far from a rational classification for child psychiatric disorder. Nevertheless, groupings can be made and it is only by attempting to classify disorders according to explicit criteria that we can determine to what extent present di-



agnostic concepts are valid and where rethinking is required.

## BRAIN INJURY AND BEHAVIOR

There has been much good work in recent years concerning cerebral palsy, epilepsy, and mental subnormality with regard to their relationship both with brain disease and social conditions. These very important issues, however, will not be discussed here where attention is confined to psychiatric or behavioral disorders perhaps less obviously due to overt neurological dysfunction. Considerations regarding brain damage and epilepsy have been well reviewed from the viewpoint of a psychiatrist by Pond,<sup>78</sup> and there is a good recent review of mental subnormality.<sup>55</sup>

*General Considerations.* Delineation of those behavioral abnormalities characteristic of certain varieties of brain pathology would constitute an important advance in the classification of one area of child psychiatric disorder. However, there are many difficulties in relating brain injury to behavior. There is no doubt that many children with frank neurological disease exhibit no psychiatric abnormality and, when abnormalities are associated with brain dysfunction, the clinical picture is rather heterogeneous.<sup>78</sup> Many factors require consideration, including locus of lesion, extent of neurological damage, type of lesion, and the point of time in the life history of the individual at which the damage to the brain was sustained,<sup>14, 16</sup> as well as the modifying influence of non-structural factors. Teuber's careful work examining the specific and general effects of focal lesions in different parts of the brain<sup>100</sup> has clarified some of these issues. That the clinical picture is far from uniform, however, even when children with the same locus of dysfunction are considered, is clear from Bray's study of children exhibiting an EEG focus in the temporal lobe.<sup>19</sup> An as yet unpublished study by Birch and his colleagues also found great behavioral heterogeneity among a similar group of children.

Evidence that the age at which brain dysfunction developed may be pertinent comes from the findings of Birch and Belmont in the course of an important series of studies of perceptual functioning in patients with neurological disorder<sup>14, 16</sup> and from a valuable series of investigations by Teuber.<sup>101</sup>

Earlier studies of encephalitis and head injury occurring in childhood demonstrated the important behavioral consequences of post-natal damage to the brain. Although the nature of such effects cannot be said to be fully understood, there have been relatively few recent studies of children who have sustained brain injury after birth. However, there has been an increasing interest in the results of brain damage sustained during pregnancy and delivery, and this topic will now be dealt with more fully.

*The Behavioral Consequences of Pregnancy Complications.* The beginnings of clarification of the relationship between pregnancy complications and the later behavioral development of the child, largely stemming from the work of Pasamanick and Knobloch and their collaborators, have opened up a series of very important questions. As is now well-known, they have demonstrated statistically significant associations between, on the one hand, prematurity, toxemia, and bleeding during pregnancy, and, on the other, a variety of disorders in the child ranging from cerebral palsy, mental deficiency and epilepsy, to reading and behavior disorders.<sup>71, 73</sup> Their chief hypothesis concerns what they have termed 'the continuum of reproductive casualty'. Prematurity and complications of pregnancy are known to be associated with foetal and neonatal death, often on the basis of injury to the brain. Pasamanick and Knobloch have argued that there must remain a fraction so injured who do not die. At one extreme of the continuum there will be those children with overt neurological disorder (such as cerebral palsy), at the other, children with lesser degrees of brain injury (perhaps not demonstrable by available clinical techniques) whose abnormalities of behavior or development are

related to 'minimal brain damage' following complications of pregnancy. Thus, the demonstrated association between complications of pregnancy and behavior disorders of childhood is thought to be a causal relationship acting through mild damage to the brain.

In examining both the findings and their implications, it is necessary to consider the research strategies employed. The associations between pregnancy complications and various childhood disorders have largely been found by retrospective studies. Children selected by a specified disorder were matched with a control group, usually selected from birth records. Data regarding pregnancy and delivery were obtained for each group, the findings for the two groups being then compared. The studies were well designed to control for a number of possible selective biases, but nevertheless certain limitations of the data remain.<sup>65</sup> The cases were selected through their attendance at specific medical care facilities and consequently were unrepresentative of the population of the area. On the other hand, comparison groups were representative of the population except with regard to the variables matched, such as race and maternal age. Further, to be included, a 'case' must be both born and resident (at the age of ascertainment) in the area studied, whereas a 'control' need only be born there. This criticism, however, does not apply to the study of behavior disorders<sup>86</sup> where the comparison group was chosen from schoolmates of the patients. The degree to which these limitations influence the findings is uncertain and it should be noted that the bias might operate both for and against the hypothesis in different situations. Complementary to these retrospective studies the same investigators studied large matched groups of prematurely born and full-term children in Baltimore. Both groups were selected at birth and followed in a prospective manner though early childhood.<sup>53, 56</sup>

One of the outstanding difficulties in any research in this area is that the selection of a group of children on the basis of complications of pregnancy also selects a group differing greatly

from normal on social and other characteristics. Matching groups on such characteristics in the usual way may not always be sufficient. Douglas,<sup>30</sup> in the course of a British longitudinal study, found that groups of prematurely born and full-term infants matched on social class at outset were no longer matched in later childhood. In comparison with other families of the same social class initially, families of the prematures had shown social deterioration. It was also found that within social classes considerable social heterogeneity remained. Under certain circumstances, within-class differences may weigh as heavily as those which exist between classes. Although social factors could not account for the difference between behavior disorder cases and their controls in the Baltimore study,<sup>66</sup> the situation is complicated by the present uncertainty regarding which social variables may be influential. A complex of relationships needs to be unravelled and, although statistical techniques to partial out variance due to different factors are available, it is not always easy to distinguish cause and effect.

Issues in the Baltimore longitudinal study of prematures presented somewhat similar problems. It will be recalled that there was an association between brain damage and behavioral abnormalities in the child, but that a similar association was found between 'maternal tension' and behavioral disturbance.<sup>66</sup> Whether the disorders of behavior were causally related to brain dysfunction or rather to maternal handling (tension having arisen perhaps through the difficulties of coping with a neurologically abnormal infant) remains to be determined. That there may be an interaction between brain dysfunction and maternal handling is suggested by the finding in another study that the most premature children were also most susceptible to the effects of poor parental care.<sup>31, 32</sup>

Pregnancy complications themselves present a further complex of relationships in that different complications are frequently associated. This is particularly the case with regard to prematurity and toxemia. Cases and controls in most of the neuropsychiatric conditions studied have differed markedly

regarding the incidence of prematurity, differences remaining even when prematurity in the absence of any complications of pregnancy is considered. However, whether toxemia in the absence of prematurity is consistently related to neuropsychiatric disorders is less certain. Severity of the pregnancy complications may well be relevant too. The premature infant weighing 5 pounds differs considerably from one weighing 2 pounds. It is conceivable too that, whereas severe and uncontrolled toxemia may have serious effects on the foetus, milder treated toxemia may be without demonstrable effect. The mechanism of action of the various complications of pregnancy also remains to be determined.

The studies of Pasamanick and Knobloch have opened up avenues of investigation too long neglected. However, much further work is required to delineate the relationships and to determine the mode of association between variables. Further studies in different communities, preferably ones with dissimilar social characteristics, are required to examine these issues. Retrospective and prospective studies in Columbus, Ohio, by Pasamanick and Knobloch are of great importance in this respect, particularly as Columbus and Baltimore differ in a number of crucial respects. For example, the rate of toxemia in Columbus was much less than that in Baltimore at the time of their earlier studies.<sup>54</sup> The proportion of women attending for delivery without previous antenatal care was also lower in Columbus. Measurement of psychosocial characteristics at different periods during the course of the Columbus longitudinal study may help to determine their relevance in relation to the influence of factors in pregnancy.

Investigations from other centers, too, provide the possibility of obtaining cross-validation of some of Pasamanick's findings. Among the most important of such studies is the prospective study of children born prematurely or following complications of pregnancy undertaken by Dr. Carol Buck and her associates at the University of Western Ontario.<sup>24</sup> Other studies relating pregnancy complications and neonatal status to later develop-

ment include the hyperbilirubinaemia and anoxia study at New York Medical College by Freedman and his associates,<sup>88</sup> and the anoxia study started by Graham<sup>45, 104</sup> and now being continued by Anthony and his co-workers in St. Louis. However, the most extensive investigation is the collaborative study organized by the National Institutes of Neurological Diseases and Blindness.<sup>64</sup> This involves the prospective study of thousands of babies at many different hospitals throughout the United States. For certain sorts of questions the study of very large numbers is indispensable. Nevertheless, such large-scale collaboration between different centers with somewhat dissimilar research interests inevitably means some lack of uniformity in collection of data and non-comparability of populations. Whether the methodological difficulties produced by these and other related factors can be overcome through the study of large numbers of children is questionable.

Large-scale epidemiological studies have an important place in the delineation of problems, but they also have limitations. Perhaps the greatest of these is that, in order to obtain a sufficient number of cases, the differential diagnosis of disabilities by examination of individuals has to give way to the analysis of differences between large groups selected according to necessarily crude criteria. Pregnancy complications have now been shown to be related to a very wide assortment of disorders with few investigations producing negative findings. The facts of most of the associations are not in doubt, although there is continuing dispute regarding the relative importance of brain injury and social influences as etiological agents. Complementary to extensive surveys a number of more limited projects are now needed in which, by intensive study of perhaps rather smaller numbers, the nature of abnormalities associated with certain sorts of brain injury may be more precisely determined. One such endeavor is the study of children with educational problems by a team from New York led by Dr. Birch working in collaboration with the M.R.C. Obstetric Medicine Research Unit in Aberdeen, Scotland. The children

studied form part of a much larger number studied by the Obstetric Unit and for whom there is systematic information regarding their birth and the social status of the families.<sup>37</sup>

*Childhood Psychosis.* Among the foremost of psychiatric syndromes in childhood thought to have developed on the basis of brain dysfunction is that of psychosis. A number of earlier investigations have emphasized the presence of brain disease in a number of psychotic children<sup>15</sup> and Zitrin's recent study from Bellevue Hospital has demonstrated an excess of prematurity in a group of children, many of whom were psychotic.<sup>106</sup> The association of childhood psychosis with abnormalities of pregnancy and neurological disorder has also been reported recently by Knobloch and Pasamanick.<sup>57</sup> Probably the studies of childhood psychosis by Goldfarb and his collaborators at Ittleson Center, New York, have explored the widest range of variables. He has sought to demonstrate the existence of two varieties of the disorder: on the one hand, those children without brain dysfunction in whom the etiology is presumed to lie in disordered family relationships, and, on the other, those children in whom the psychosis is thought to have developed on the basis of brain disease.<sup>43</sup> Two groups of psychotic children were delineated: one of children without demonstrable organic brain disease, and the other of children diagnosed as having structural brain disorder on the basis of history and neurological examination (usually with findings of 'soft' signs only). The two groups showed marked differences on a variety of physiological and behavioral measures which seemed to confirm the validity of the differentiation. However, the mean IQ of the two groups differed by some 30 points and it was not possible to determine whether the differences were related merely to the very large discrepancies in intellectual functioning.

Similarly, the conceptual and perceptual anomalies found to differentiate the schizophrenic children from the controls are those also observed in younger normal children and in patients with mental retardation or brain disease.<sup>76</sup> They have yet to be

shown to be independent of cognitive differences between the two groups. It may be that such abnormalities will not be found to differentiate psychotic children from children with mental subnormality or overt brain disease. Nevertheless, they do emphasize the differentiation from neurotic children. They also suggest marked differences between childhood psychosis and adult schizophrenia as indicated by Pollack<sup>77</sup> in his examination of intellectual functioning in two groups. It seems likely that, although sometimes termed schizophrenia, psychosis in childhood has little in common with schizophrenia developing after puberty.

In the Ittleson Center study 'family adequacy' was assessed from three-hour observations of the child and his family in the home, from which an overall score was obtained, the sum of 46 ratings, each on a 7-point scale. The family scores of the 'organic' and 'non-organic' schizophrenic children did not differ significantly and, although the scores of families of the 'non-organic' and normal children (the two polar groups) differed significantly in the predicted direction, the mean difference was less than 1 point on a 7-point scale. Goldfarb considered that the findings supported the view that there are 'organic' and 'non-organic' subclusters within a group of psychotic children, but the differences in family functioning are hardly such as to be interpreted in terms of different etiologies for the two subgroups. Whether the small differences are a function of the poor discrimination of present instruments or whether differences are in fact minimal remains to be seen.

Many different types of behavioral and other disorders seem to be associated with brain injury. The factors determining why one child develops one condition and another child some dissimilar disorder remain largely unknown. In this connection new and important developments are likely to follow from the strategic change from studies of 'brain damage' as an entity to the clinical and experimental study of the behavioral consequences of specific lesions in different parts of the brain developing at different ages.



## BEHAVIORAL DEVELOPMENT IN CHILDHOOD

Examinations of psychiatric diagnosis and of the behavioral consequences of brain pathology clearly depend on current concepts of behavioral development and its measurement. The last few years have seen the emergence of several interesting and important developments in American research in this area.

*Behavioral Concepts.* Notable has been the willingness of several investigators to examine behavior without being tied to traditional concepts (ethological, psychoanalytic, or Hullian) of drive, motivation, conflict and the like. Hunt has provided a provocative and stimulating reinterpretation of well-known studies of drive and motivation in which he questions the validity of some of the usual theoretical assumptions.<sup>49</sup> The value of ethological concepts has been questioned by Bridger in a paper in which he reports his studies of neonatal sucking.<sup>21</sup> He found that sucking in the neonate was largely explainable in terms of arousal and that it was unnecessary to invoke any hypothetical concept of hunger drive. Thomas, Chess and Birch, in reporting the results of their New York longitudinal study have considered temperamental differences in a fresh light without postulating drives, needs, or defensive tactics.<sup>102</sup> They regard development as an interactive rather than a projective process.<sup>103</sup> The child's reactive pattern or temperament, then, is important through the determination of individual susceptibilities and sensitivities, by modifying life experiences and thus learning opportunities, as well as by influencing the attitudes and practices of his parents and any other individuals with whom he comes in contact.<sup>89</sup> Pasamanick and Knobloch's concept of individual cognitive and behavioral differences in terms of a 'continuum of reproductive casualty' has already been noted.

*Studies of Autonomic Function.* The studies of Lacey at the

Fels Institute have done much to further knowledge of individual physiological characteristics. He has demonstrated some of the ways in which autonomic functioning is related to behavior and emotion in older children and adults,<sup>58</sup> and has also shown the considerable problems in using physiological characteristics as measures of emotional states.<sup>59</sup> More recently, autonomic studies have been extended to include the neonate, particularly by Richmond and his collaborators at Syracuse<sup>62, 80, 81, 82</sup> and by Bridger at the Albert Einstein College of Medicine.<sup>20</sup> It has sometimes been considered that through the physiological study of the neonate one is getting measurements of variables crucial to later development at a time when there has not been the occasion for constitutional factors to be obscured by changes induced by the environment.<sup>81</sup> That the constitution at birth cannot be assumed to be wholly genetically determined has been made clear by the work of Pasamanick and his colleagues in demonstrating the influence of the intra-uterine environment. Also, before one can estimate the significance of neonatal automatic function, however determined, it is necessary to know something of the stability of such physiological characteristics, that is whether measures in the neonate are predictive for later childhood, and of the relationship between autonomic measures and behavior as studied in other ways. Data regarding both points are largely lacking at the moment.

Basic to any studies regarding child development have been the problems of what variables to consider, how to measure them, and the accuracy, reliability and validity of the measures employed. Among the main areas of difficulty in deciding what variables to examine are questions of definition and pertinence. Autonomic variables have been well defined and can be reliably measured, but their pertinence for behavioral development remains to be established.

*Some Methodological Considerations.* Other workers have preferred to study either observable molar behavior or, alternatively, emotions, conflicts, etc., requiring a greater or lesser

degree of inference. More has been done than in physiological studies to examine the relationship between variables and to assess the relevance of the functions examined. However, different terms for the same variables are often used by different investigators, and sometimes the same terms are used for different variables, so that comparisons between studies are hazardous. There are obvious difficulties when the *prime* data of any study are inferential. Exact replication is then impossible. However, inferences can be checked if defined in operational terms as shown by Beller in his studies of dependency and the frustration-aggression hypothesis.<sup>11, 12, 13</sup>

Increasing interest in problems of method, and critical scrutiny of some assumptions in earlier work, have clarified several issues. The importance of age and sex differences between children in relation to their behavior has been more fully delineated in studies of attitudes and academic achievement by Crandall and his associates at the Fels Institute,<sup>27</sup> and in investigations of social reinforcement by Stevenson at the University of Minnesota,<sup>95</sup> to mention but two. Problems of rater variability have also received attention. Becker's work at the University of Illinois,<sup>6, 8</sup> as mentioned above, has been outstanding for his careful examination of similarities and differences between ratings of parents and children according to who made the rating—self, spouse, professional worker, etc. The relationship between ratings of children by parents, teachers and professional workers has also been examined during the course of the St. Louis studies of the efficacy of services to prevent the development of behavioral disorders in children.<sup>40, 41, 42</sup>

The study of parental attitudes and practices in relation to child behavior is also undergoing important changes. It has become clear that the most widely used questionnaire measure, Schaefer and Bell's Parental Attitude Research Instrument,<sup>90</sup> is strongly influenced by social class variables<sup>107</sup> and does not differentiate parents of clinic and non-clinic children.<sup>107</sup> There has been increasing dissatisfaction with the use of self-rating questionnaires, and Schaefer<sup>91</sup> and Bronfenbrenner<sup>22</sup> have explored

the use of children's reports for the rating of parental behavior. Interviews in which each parent gives a detailed description of all his interactions with the child on the day before the interview have been used by Hoffman<sup>47</sup> in a study of parent influence techniques and their effects on the child.

The St. Louis group is one of the few to report significant relationships between parental attitudes and child behavior.<sup>39</sup> The variables studied differed from the usual in their concern with specific attitudes of mothers towards their children's behavior. It is impossible to tell from the available evidence whether the strength of the relationships found in comparison with many other studies was due to the particular patterns of attitudes examined, to the use of interview rather than questionnaire techniques (questionnaire measures of other maternal attitudes used in the same investigation produced negative findings), or to the fact that they focussed on attitudes towards one particular child rather than towards children in general. Further exploration of parental attitudes and practices with regard to *individual* children would seem to be indicated. Clinical experience and evidence from investigation<sup>99</sup> suggest that parents do not have the same attitudes to all their children, nor do they handle them in the same way. Such differences may express parental response to temperamental differences between children. The New York longitudinal study, referred to below, is providing data on the attitudes and practices of some 25 pairs of parents, all of whom have at least two children studied from early infancy.

The importance of considering parent-child relationships according to the sex of both parent and child has been evident in studies by Becker,<sup>6, 8</sup> Bronfenbrenner,<sup>22</sup> and others. The same authors<sup>6, 8, 22</sup> have also shown that paternal function is at least as strongly related to the child's behavior as is maternal function. Many of the classic studies of parental attitudes were exclusively concerned with the mother—it is much to be hoped that more attention will be paid to the father, even if he may be elusive for research purposes. At the same time as the impor-

tance of the father is being re-emphasized, several writers have again demonstrated that 'working' mothers are no more likely to have maladjusted children than are their counterparts tied to the home.<sup>48, 97, 105</sup>

Reliability of assessments is important but that reliability may be no measure of accuracy is clear from Robbins' study of parental recall.<sup>83</sup> Many well-known studies of parental attitudes and child-care practices have relied on parental accounts of events which had occurred several years previously. Measures have generally been shown to be reliable and apparently pertinent in that they could be related to behavioral development. They may, however, have been both inaccurate and misleading. During the course of the New York longitudinal study<sup>102</sup> systematic data were collected regarding the behavior of the children and the manner in which it had been handled by their parents. When the children were aged three years, the parents were asked to give an account of some of the outstanding issues upon which there were data collected contemporaneously. Errors in recall were considerable and these showed systematic as well as idiosyncratic biases in that there was a tendency for errors to be biased in the direction of what the experts had said should happen. Thus, in studies utilizing retrospective data, there may be a built-in bias to confirm theories prevalent at that time.

*Longitudinal Studies.* Longitudinal studies have the great merit of avoiding such biases. However, the method is certainly not without its problems and the respective merits of longitudinal and cross-sectional approaches are well reviewed by Bell<sup>9</sup> and Baldwin.<sup>4</sup> Too many longitudinal studies have failed to produce any findings after years of work because there has been no clear formulation of the aims of the investigation.<sup>98</sup> Some thirty years ago several major longitudinal projects were started in different centers across the United States. Although providing rich information on physical and cognitive development, there were few published findings on behavioral development.

Recently, however, there has been an increasing interest in longitudinal studies. This has been reflected perhaps in the survey of current American projects sponsored by the Social Science Research Council.<sup>51</sup> The data of some of the original studies still await analysis, but findings from the Berkeley study<sup>92</sup> and from that at the Fels Research Institute<sup>52</sup> have recently been published.

In view of the large number of variables studied, the different sources of information available at different times, the variability in functions examined at different ages, and the difficulties of rating data collected years ago by several investigators, problems in the interpretation of findings are considerable, as clearly realized by the authors of both studies. Schaefer and Bailey found that for children in the Berkeley study, behavioral consistency was greatest in mid-childhood, more marked changes occurred in infancy and adolescence, and correlations between infancy and adolescence were very low. Maternal love-hostility ratings were more stable than autonomy-control ratings<sup>5</sup> and, in general, mother-son correlations were higher and more stable than those between mother and daughter. Unfortunately, as in the Fels study, there were no assessments of paternal behavior. Kagan and Moss at the Fels Institute found that inferential variables were less stable than behavioral ratings. Sex differences were marked and some seemed best explainable in terms of cultural expectations. For example, assertive behavior was more stable in boys, whereas dependency showed greater stability in girls.<sup>50</sup> In contrast to findings from the Berkeley study,<sup>5, 92</sup> maternal treatment did seem highly related to adult personality. However, comparisons between the two studies are of dubious value in that the methods of data collection and the variables studied were not the same.

Recently several more structured longitudinal studies have been planned, with more specific aims than in the earlier investigations. Bell and Goodrich at the National Institutes of Health have set out to relate aspects of the marital relationship and of parental attitudes towards child-rearing, to the later behavioral

development of the children. Assessments of the parents are obtained partly from interview and questionnaire and partly by means of an ingenious experimental situation, utilizing color matching, designed to measure aspects of marital conflict.<sup>44</sup> Measures of infant behavior were developed during the course of earlier studies.<sup>10</sup> The parents are evaluated shortly after marriage and prior to pregnancy. Couples are then followed through the first pregnancy and during the early years of the child's life, so that it may be possible to disentangle cause and effect.

Another very important study is that in New York where Thomas, Chess and Birch have established an investigation in which quantitative measures regarding children's temperamental characteristics are obtained, initial data being gathered in the first months of life.<sup>17</sup> The children were drawn from preponderantly middle-class Jewish professional families. They have been studied longitudinally and the oldest are now in their seventh year. The study was developed in order to determine to what extent one could delineate individuality in styles of behavior at an early age, how far such styles showed consistency as the children became older, and what was the relevance for later development (both normal and abnormal) of such early individual patterns of behavior. Data regarding behavior are derived from direct observations of the child at home and at school, sequential narrative accounts of the child's behavior from parents and teachers, and various I.Q. and problem-solving test situations used as a means of sampling behavior occurring in response to demands. Parents and teachers are not asked to rate the behavior of the children. Rather their accounts are used as the basis for non-interpretative quantitative scoring according to defined categories. Used in this way paternal reports were shown to be valid measures of the child's behavior<sup>17</sup> and to have the advantage over direct observations of tapping behavior concerned with changes over time—such as rhythmicity of functioning and adaptability to new situations. Whether the reliability and validity of parental reports will be as great for older children or when obtained from parents of different

socio-economic status remains to be determined.

Findings from the New York study have clearly shown that individuality in styles of behavior can be demonstrated at an early age and that such styles can be reliably measured.<sup>102</sup> Considerable consistency in the first two years of life was found,<sup>102</sup> but stability from the second to the third year was less.<sup>88</sup> Later analyses have demonstrated that, although correlations between the first and fifth years are low, consistency over any intermediate period of two or three years is much greater. However, although some children showed marked change during the first five years, individual behavioral development curves showed that there was considerable consistency in the direction and degree of behavioral change over the years in these children. Preliminary explorations of the interaction between genetic and non-genetic factors in the development of behavioral styles have been reported in an investigation of a subsample of sibs and twins included in the population of children studied.<sup>88</sup>

Of the 128 children in the study, 21 have received psychiatric referral for some disorder of behavior. Most disorders were mild but some were of moderate severity, including those of three children who, independently of the study, are under psychiatric care. Investigation was made of the degree to which behavioral styles in infancy could be related to the later development of behavioral disorders. It was found that temperamental characteristics, present before the onset of overt symptoms and not themselves constituting the first signs of disturbance, were strongly related to later psychiatric referral,<sup>89</sup> thus demonstrating one way in which the categories studied were relevant to developmental course. The relationship of behavioral styles to other aspects of behavior in later children is currently being examined by the same group.<sup>25</sup>

The value of the New York study lies not only in the behavioral facts it has provided, but more particularly in the avenues of investigation it has developed. A non-randomly selected population was properly chosen to reduce social heterogeneity for the better study of individual temperamental differences.



Until further populations are examined (and the same research group has now initiated a study of working-class Puerto Rican migrants in New York), the generality of the findings must remain uncertain. Nevertheless, what has been clearly demonstrated is the feasibility of studying individual behavioral differences in young children without recourse to inferential judgement. The categories studied are not exhaustive but they appear to include several which may be pertinent to the later development of abnormalities of behavior. The work points to the need for further investigation of children's temperament and emphasizes the necessity in clinical work to view present disorders not only in the context of previous and current environmental factors, but also in terms of the contribution made by the child's own characteristics.

## CONCLUSION

Investigation of normal and abnormal behavioral development in childhood has not been long established and the areas or strategies of research most likely to give rise to crucial advances in our understanding are not known with any certainty. The topics chosen for discussion here are but three among many of interest, but they are ones of central importance to child psychiatry. Re-emergence of concern with the complex problems of diagnosis and classification should lead to a necessary reappraisal of present concepts of child psychiatric disorder. Several approaches offer possibilities of providing sound data upon which to build a diagnostic scheme but, perhaps, what are most needed are further studies of the 'natural history' and epidemiology of disorders developing in childhood.

Studies of pregnancy complications have emphasized the need to consider brain injury as an important variable in the development of a wide range of disorders and the same investigators have also demonstrated the pertinence of social deter-

minants of behavior. Epidemiological studies of 'brain damage' have played an indispensable role in the definition of problems concerning relationship between the brain and behavior. To delineate the particular behavioral consequences of specific brain lesions developing at different stages in the child's development, extensive studies now need to be complemented by intensive clinical and experimental investigations.

Studies of parent-child interaction and of children's temperamental characteristics often have been contradictory in their findings and our knowledge of behavioral development is still fairly rudimentary. Much of the difficulty in the past has stemmed from uncertainties regarding the questions to be asked of any body of data. This problem has been strikingly illustrated by the course of the earlier longitudinal studies. Recent methodological and conceptual advances have clarified the issues to some extent and there is promise of important developments in this area in the near future. There are exciting trends in current American research relevant to child psychiatry; some answers have been provided but many more fruitful lines of inquiry have been opened up for future study.

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