

## Thought in schizophrenia

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Beyond doubt the most significant development in psychology has been the recent tendency to bring together investigations in various fields in order to discover the common principles involved in those investigations. Especially is this true of psychopathology and genetic or child psychology. They have developed independently, and only occasionally heretofore have the results obtained been brought together for comparison.

Meanwhile, more and more investigators think that psychologic laws are the same no matter where they are observed. As an example of the growing integration of the various fields of psychologic investigation and the growing feeling of the unity of psychologic laws in spite of the variety of their manifestation, one may refer to the comparative study of the splitting of thought, the phenomena of hypobulia<sup>1</sup> in psychopathology and the phenomenon of syncretic thinking in child psychology. In hypobulia there are phenomena which were formerly considered a result of schizophrenia or hysteria; in the light of more thorough investigation, however, they now appear to be in reality stages in the normal organization of consciousness as a necessary ontogenetic step in the development of normal personality. Such observations are doubtless widely true: the phenomena of developing thought in the adolescent child are evidently in general closely related to certain aspects of pathologic thinking.

There is, furthermore, a growing tendency to investigate psychologic processes by observation and comparison of their various courses of development, this procedure being used as a means of arriving at the laws determining the characteristics of such processes. I have found such an approach extremely useful in clinical and experimental work. Whereas previously the bringing together of genetic psychology and psychopathology consisted merely in a comparison of the conclusions reached, I have attempted to introduce the comparative method of study into my own experimental work from the beginning. It did not take long to find out that many problems, so conceived, appeared in a totally different light.

There is an old attempt to connect the psychology of the adolescent with certain symptoms of schizophrenia. This connection was implied in the term 'dementia

praecox', and has given stimulus for a large number of studies of the adolescent child and for the comparison of the mental life of the child with that of patients with schizophrenia. Kretschmer, in Germany, and Blonsky,<sup>2</sup> in Russia, insisted that there is a connection between the two. They based their opinion on the fact that at times it is impossible to differentiate between a stormy period of sex adjustment in adolescence and incipient schizophrenia. My investigations, on which I shall comment later in the article and which give rise to certain ideas about the nature of psychologic processes in schizophrenia, lead me to quite different conclusions. The pivotal point in my comparative analysis has been the process of formation of concept as observed in the child and in the patient with schizophrenia.

### Scope of investigation

My investigations have been two-fold. They have embraced the development of thought in children up to the age of puberty, on the one hand, and the deterioration of thought in schizophrenia on the other. The conclusions have likewise been two-fold. I have found that the most important development of thought in adolescence is the change from 'complex'<sup>3</sup> types of thinking to conceptual types of thinking — a change which not only revolutionizes the intellectual processes but determines the dynamic structure of the personality, i.e. the consciousness of the self and the environment. I have also found, conversely, that the most important deterioration of thought occurring in schizophrenia is a disturbance, an impairment, in the function of formation of concept. The fragmentation and the breaking of that part of the psyche which is involved in the process of formation of concepts is just as characteristic of schizophrenia as the development of the function of formation of concepts is characteristic of adolescence. Hence it is obvious that both in schizophrenia and adolescence certain external similarities can be found, especially in the transition from complex or associative to conceptual thinking. When both are approached in a formal, static way during the transitional stages a large number of points in common can be found. But by using a more dynamic method of approach it will be seen that the psychologic processes in schizophrenia and in adolescence have a converse relationship to each other and that they are connected more by differences than by similarities. This is true, if for no other reason, because in adolescence one is dealing with phenomena of growth and development, while in schizophrenia one is dealing with the disintegration and decay of psychic life. Such principles obtain for the general mental processes of the person, but they are especially applicable in the function of formation of concepts. By studying this function, one becomes convinced that the psychology of adolescence gives a key for the understanding of schizophrenia, and conversely that schizophrenic thought helps one to understand the psychology of adolescence. In both, the most important thing is the proper understanding of the function of formation of concepts.

### Method

My experiments consisted in offering the patient a situation which required the formation of artificial concepts. This was accomplished by giving the patient what appeared in the beginning to be meaningless words chosen at random. The formation of the concepts had to be based on specially selected and connected elements. Thus, in the series of experiments the patients had to learn to associate meaningless syllables with certain definite concepts, as for example, 'bik', meaning large and small, 'lag', meaning large and tall, etc. The patient, that is, was confronted with the problem of the formation of a new concept, which he would not meet anywhere else except in the setting of a laboratory experiment.

It should be stated parenthetically that this method of experimental formation of concepts by means of specially selected words has a long history into which I shall not enter at present. It suffices to say that the method has been used a great deal by Ach and his students. My methods of investigation were based on principles advanced by Ach, but as I used them for altogether different purposes they had to be considerably modified.

With the methods developed by my collaborator, Sakharov, we were able to observe the impairment of the faculty of formation of concepts, not only when the disturbance of thought was quite apparent, but also in the cases in which no formal disorder of thought could be demonstrated. The important factor here is not that the patient with schizophrenia, confronted with the experimental problem, is not able to solve it, but that, in the attempt to solve it, he exhibits characteristic and significant forms of thought.

### Observations

Not counting refusals and half-hearted co-operation in the experiments, in all cases in which the results were definite and clear-cut we observed certain characteristic forms of association which resulted in the formation of certain kinds of ideas taking the place of concepts. We could adduce a large variety of these forms of association, but what we believe essential at the moment is the description of the common characteristic of such associative processes. I shall enumerate the most frequent associative structures encountered: (1) collective thinking, in which various objects are grouped together as if they formed a collection composed of different objects united to each other by certain relationships – such as a collection of things or objects of various colours or various forms; (2) chain complex thinking; (3) associative complex thinking; (4) pseudocomplex chain thinking. The last three will be explained later. All of them imply a whole, constituted of organically united parts, the difference between such associations and concepts being that in the associations the union is concrete and mechanical, whereas in the concept there is a general and abstract principle on the

basis of which the conceptual association is formed. A complex is best likened to a big family in which are grouped, under the same family name, a large number of altogether different people. A patient with schizophrenia looks on the stimulus word as a family name for a group of objects on a basis of physical proximity, concrete similarity of certain parts or some other non-abstract relationship to each other. A typical example would be the so-called chain associations in patients with schizophrenia. The patient responds to a stimulus word denoting a certain object by naming another object similar in only one trait, then naming a third object chosen on account of some similarity to the second object, then in similar fashion adding a fourth to the third, etc. The result is a number of quite heterogeneous objects very remotely connected with each other. The associative chain is built up in such a relationship and in such a manner that there is a connection between separate links but with no single principle uniting them all. Thus, in my experiments the subject has to select a group of objects, all of which have a common name, being guided in the principle of grouping by a sample shown to him. The example may consist of a small blue triangle, then a large, round, green figure, then a green parallelogram, etc. (the chain colour complex); or he may be shown the same triangle and may choose another triangle which is quite different from the first in colour and size (associative complex). There arises thus a joining of various objects resembling a large family in which the tie is of a most heterogeneous character, degree and principle. Such a method of association is common in children before adolescence. In spite of all the differences in the process of thought in the child and in the patient with schizophrenia, there is a fundamental similarity in the most essential features. Thus, in persons with schizophrenia, thought is really regressive.

### Comment

The impairment of formation of concept leads back to complex thinking, and although the concepts which were formed previously are used well and quite automatically, the formation of new concepts becomes extremely difficult. There is an important conclusion to be derived from such observations. Comparison of thought in persons with schizophrenia with the various genetic stages of complex thought establishes a psychologic criterion, a means of evaluating the degree of splitting and regression in the patient with schizophrenia. The disintegration of concepts and the regression to the concrete, factual, complex forms of thought have been observed by other investigators without appreciation of the genetic factors involved in the differentiation between complex and abstract thinking. This failure finds its expression in the fact that the comparison of disordered thinking with phylogenetically earlier forms of thought is usually made on the basis of negative rather than positive criteria, merely on the basis of the absence of concepts in thinking. This comparison, based on a negative criterion, is wrong because it treats as approximately equivalent forms of thinking which, from the positive side, have nothing in common with each other -

which are, in fact, separated by many millions of years in genetic development. The example to be cited will explain this.

Some authors compare the complex thinking of persons with schizophrenia with the thinking of primitive people, with thought in dreams, and finally with intellectual processes in lower animals, especially with the process of thought in spiders as shown by Volkelt.<sup>4</sup> As reported by Volkelt, the spider goes through accurate movements when trying to get its prey from the web into the nest, but becomes lost when the same prey is removed from the web – that is, from the total complex situation to which the spider is accustomed – and placed directly in the spider's nest. The selective consciousness of a spider does not so much perceive isolated sensations as perceive total conditioned emotional situations. In all these the transition to associative thinking is represented as a step toward visual, pictorial thinking. Although a trend is undoubtedly in evidence, all these comparisons suffer by disregarding the degrees of the governing psychogenetic development. Between abstract thinking in the form of concepts and thought as it is exhibited by the spider, there are a great many developmental steps, each one differing from the other no less than the associative thought of the patients with schizophrenia differs from the thought of a normal person.

And just as it is not admissible to make a genetic comparison of thought as it occurs in dreams with thought as it occurs in primitive man or in spiders, simply because such forms of thought are all below the stage of conceptual thought, neither has one the right to assume that the thought of the patient with schizophrenia immediately drops into the abyss of millions of years, or needs for its understanding analogies with the spider, which does not recognize its prey after the prey has been removed from the web and placed in the nest.

My observations show that complex thought observed in patients with schizophrenia is the nearest step to conceptual thought and immediately precedes it genetically. There is some similarity, then, although by no means an identity, between the thought of the patient with schizophrenia and the thought of a child. The one common basis which permits direct comparison of the two different types of thinking is that the process of thought of the child and that of a patient with schizophrenia in the initial stages of the disease are merely steps in the genetic development of thought; that is, they represent the step immediately preceding the stage of formation of concept and cannot be compared to the process of thought of the spider from which they are separated by millions of years of development. One knows that even in adulthood there remains a tendency to complex thinking in certain fields. A superficial examination will not reveal the transition from one mode of thinking into another unless special methods of investigation are employed.

A second important conclusion to be derived from the experiment relates to the fact that in schizophrenia there is a destruction of the psychologic systems which lie at the basis of concepts. Expressing the same idea differently, it can be said that early in schizophrenia the meanings of words become changed. These changes are sometimes difficult to observe unless one uses special methods, but they can be

demonstrated. The way to understand this phenomenon lies in the study of thought in the child. A child thinks differently from an adult; consequently, the words for him also have different connotations in their psychologic structure. The question naturally arises: If the words have different meanings how do a child and an adult understand each other? As an example I may cite the paradoxical fact established by Piaget that children of the same age and degree of development do not understand each other as well as they do adults.<sup>5</sup> Yet the thinking of adults is governed by laws quite different from those determining the thinking of children. This, it will be seen, involves the problem that I described at the beginning of this article. If, I said, the meaning of words begins to change early in the course of the schizophrenic process, how does that fact remain unobserved, and how is it possible for the normal person and the person with schizophrenia to understand each other?

The answer to such questions, as indicated by my investigations, lies in the fact that 'complexes' may and sometimes do coincide with concepts in their reference to objects, but not necessarily in their meanings. When one speaks of Napoleon as the victor at Jena and the loser at Waterloo, the two phrases coincide in their reference to Napoleon, but are widely different in their meanings. When a concept and a complex thus refer to the same object, the complex may be spoken of as a pseudoconcept. Pseudoconcepts, which are the basic elements in the thought of a child, may coincide with the concepts of adults, but this does not mean that they necessarily coincide in other particulars. When a child says 'house' or 'dog', he may be speaking of the same objects as the adult, but he thinks about them in a different way. He groups and combines them in a way quite different from that of the adult.

The fact that in its reference to objects the speech of a child coincides with the language of the adult can be explained by the development of speech in children. Speech in a child does not develop freely and spontaneously; the child does not create words and their meanings. He finds them both ready made in his environment, and he acquires something that has been prepared for him. In his environment certain names are definitely attached to certain objects. Each object has its distinctive name, and the child, acquiring these names, groups them by the only method he knows, i.e. by associations. The association consists of objects not chosen freely by the child, but is made on the basis of existing connections and relationships of the objects with each other, relations in part previously established by the adult. As soon as this external pressure is removed, the associations of the child and the concepts of the adult begin to differ, not only in their connotations but also in their relationships to objects. My study of the thinking of deaf mutes shows that they have associative thinking and that they even resort to earlier forms of thought – the syncretic forms of making connections.<sup>6</sup> Thus, in the mimic language of the deaf mute, the gesture denoting teeth may also mean 'white', 'stone' and 'talk', depending on the whole sentence. The additional gestures, such as pointing to the upper lip, or indicating rejection or pointing, make possible the differentiation of various meanings which are all united on the basis of the associative complex, of which I have already given examples. But because their mimic speech develops without the fixed system of rigid limitations associated with

verbal speech, their associations do not coincide in relationship to objects with the concepts of normal adults. This same situation exists in schizophrenia. The words of the patient with schizophrenia coincide with ours in their object relationships but not in their meanings.

### Process of thought in schizophrenia

Two influences determine such a phenomenon. The first is that (with the exception of neologisms) the patient with schizophrenia uses in his speech the system of fixed names which he learned in childhood. When the disintegration begins he reverts to complexes in the place of concepts, not freely, but as predetermined by his prior attachment of certain names to certain situations and objects. A table is a table for us as well as for a patient with schizophrenia, but we think about it differently. He puts all the various tables into a complex, and the word table is merely a familiar name for this association. We use a general concept, and the name is merely carried as a symbol of this concept. In other words, he has in his possession a ready-made system of words standing in definite relationship to the objects they denote. Consequently, since he does not see the principle forming the basis of this association, his association is invariably a pseudoconcept.

The other influence involved in the fact that the words of the patient with schizophrenia coincide with those of the normal person in their object reference but not in their meanings, arises from the way in which conceptual thinking develops. I have said that a school child goes through a stage of complex thinking as a period in his development immediately preceding conceptual thinking. Consequently, in ontogenesis, complexes precede concepts and actually form the inner layer or the older substructure beneath the new layers of concepts, if one utilizes Kretschmer's graphic expression for older and newer forms of thought. There is reason to believe that the development of concepts, like the appearance of other higher psychologic functions, is accomplished by the formation of new layers over the old ones, with the preservation of the older layer of thought in a subordinate function. This law, which was recently discovered in the development of the central nervous system, holds true also for the development of various psychologic functions, motor as well as central.<sup>7</sup> Kretschmer has shown that hypobulia, i.e. the early stage in certain motor discharges, is preserved in all the activities of the organism associated with the discharge of volitional impulses. Hypobulia is preserved in a latent, subordinate role, and occasionally it is uncovered and expresses itself independently when the higher processes of the will are impaired or disturbed. Something like this must be taking place in schizophrenia. Associations, as a primitive form of thought, are retained as a substructure in the development of the higher forms of thinking, but they are uncovered and begin to act independently in accordance with their own laws when the whole personality, for some reason, is disturbed. There is reason to believe that complex thought is not a specific product of schizophrenia, but merely a cropping out of the

older forms of thought, which are always present in a latent form in the psyche of the patient but which become apparent only when the higher intellectual processes become disturbed by illness. The regression to earlier forms of thought is observed also in other diseases in which there is interference with conceptual thinking. The process of thinking then becomes strikingly similar to thought in schizophrenia, and this probably accounts for the schizophrenic reaction in the course of physical illnesses. The other proof that these are earlier forms of thought can be found in the fact that associative thinking is latent in all of us and comes to the surface in connection with sudden emotional shocks and in a setting of fatigue, sleep and dreams. There is nothing impossible, then, in the assumption that regression of patients with schizophrenia to complex thinking is merely a reversion to earlier forms of thought. Each one of us carries schizophrenia in a latent form, i.e. in the mechanisms of thought which, when uncovered, become the central figure in the drama of schizophrenic thought. Thus, the history of the development of thought ought to be used as a means of reaching an understanding of the peculiarities of complex thinking in schizophrenia.

#### Alterations in the meaning of words

Whatever may be its cause, and paradoxical as it may appear, the fact is nevertheless fairly well established that the meanings of words become pathologically altered in schizophrenia, though such alterations do not become apparent for a long time. Complexes replacing concepts in thought in schizophrenia nevertheless coincide in their object relationships with the concepts they replace. They are then pseudoconcepts, but the whole transition to the more primitive forms of thought is not apparent because the patient retains his capacity for verbal intercourse, even though words do not have the same meaning for him as they have for us. As a concrete illustration I may cite my experimental investigations as to the degree to which patients with schizophrenia at the same stage of the disease, and with the same type of thinking, understand each other as compared with the degree of mutual understanding exhibited by a patient with schizophrenia and a normal person. As might be expected, the experiments indicated a better mutual understanding between patients with schizophrenia and normal persons than between schizophrenic persons.<sup>8</sup> An analogous situation is seen in children, who understand adults better than they do each other. The solution of this problem is presented later.

An important question, which to me is central to schizophrenia, arises in this connection. If it is really true, as I assert, that in schizophrenia there is disintegration of concepts with changes in the meaning of words, even though this is not apparent on the surface, there must be some proofs that these phenomena actually take place. The proof is simple. If words have different meanings for a patient with schizophrenia from those which they have for us, then this difference must express itself functionally, i.e. in the behaviour of the patients. Even if a complex may outwardly resemble



a concept, it nevertheless has its own laws of function. Just as the associative thinking of a child expresses itself in various ways, so must the thought of a patient with schizophrenia reveal its distinguishing characteristic when subjected to a test, i.e. in actual behaviour. This was the principle of my experiments, and I found that in actual function these associations reveal the changes in the meanings of words which I postulated previously.

From many methods I have selected the test dealing with capacity for metaphorical expression, i.e. the transference of terms originally denoting one thing to the expression of others ('A ship ploughs the sea'). I first used this test in cases of aphasia associated with loss of memory, in which may also be seen disturbances both of categorical thinking (Gelb and Goldstein) and of conceptual thought. (In this connection it may be noted that the disturbances of categorical thinking which Gelb and Goldstein found as a cardinal symptom in amnesic aphasia, were also found by them in a patient who exhibited amnesia for various colours. When asked to match colours this patient, instead of matching objects according to the colour designated, would match them according to size, or according to value in brightness of the paint, and only occasionally according to colour, thus manifesting the previously described complex type of thinking.)<sup>9</sup> I found in my patients an analogous and marked disturbance in the capacity both for using words in metaphorical senses and for understanding words so used. They could not grasp the meanings of the simplest words unless they were used in a direct and literal sense. Nor could they cope with the test of Piaget, which requires the subject to match a specified proverb with another of similar meaning.<sup>10</sup> To my surprise such failures occurred in spite of an apparent preservation of speech and of other intellectual functions. I later discovered, however, that Kurt Schneider had also found disturbances in the capacity to understand words used in metaphorical senses to be a frequent characteristic of schizophrenia.<sup>11</sup> Most remarkable was that I found disturbances in the understanding of words figuratively used, even when there was no apparent disturbance of intellectual life in general. This difficulty became very obvious when special words or concepts were used. While the normal mind has no difficulty in using given words metaphorically or figuratively, the same problem presents insurmountable difficulty for the patient with schizophrenia in spite of the fact that he has retained from childhood the habit of using figures of speech, proverbs, etc. Thus, many of my patients have no difficulty in seeing the wider ramifications and generalities when they are given the Russian proverb, 'If you go slowly you get further in the end', but they could not give a general meaning when the Russian translation of a French proverb, 'When the cat is away the mice will play', was given. This they interpreted in its narrow sense, and they could only see literally that mice play when the cat is away. They could not, that is, see, in a situation concretely described, meanings other and more abstract than those directly signified by the particular words used in describing it. This fact serves as an important differentiation between the visual, symbolic thinking of dreams and the metaphorical, symbolic thinking based on concepts. The identification of one with the other is without any solid, psychologic basis.

### Formation of new concepts

I found also another fact illustrating disturbances of meaning in words used by patients with schizophrenia. My experiments did not stop at the stage of development of experimental concepts. I studied the manner in which these new concepts expressed themselves. I included them as a part of association tests in which the responses were carefully traced out. The subjects were asked to make judgements which included the old as well as the newly formed concepts, and were encouraged to widen the application of the newly formed concepts and to carry them over from the laboratory into everyday life. In other words, I wanted to trace as fully as possible the course of the newly formed concepts in the thinking of the patients. Without going too much into detail, I may state that there was found a latent disintegration of concepts. I found also that the pseudoconcepts which took the place of true concepts were quite different from them in behaviour and expression. As an example of pseudoconcepts I may take the example of the concept of causality in a child. As the reader will remember, a child begins quite early to use words denoting causal relations, such as the word 'because', although, as Piaget has shown, the meaning given by the child to these words differs altogether from that given by an adult.<sup>12</sup> A child will connect causally the most inconsequential ideas, a fact which led Piaget to speak of a certain stage in the development of a child as a pre-causality stage. One must have special methods to demonstrate such pseudoconcepts because superficially they may resemble true concepts in their external appearance. Pseudoconcepts are wolves in sheep's clothing. They are associations which look like concepts. Anybody who works with them finds out quickly how they disturb the forms of conceptual thinking. In order to demonstrate this, however, one must consider other psychologic functions. As an example of the more remote consequences resulting from the disturbance of the function of concept formation, I may refer to experiments with perceptions and with affective responses in schizophrenia. A study of the perceptions of a patient with schizophrenia indicates that for such a patient various common perceptual objects easily lose their common perceptual characteristics. Slight variations in light or in the position of the object bring out in the patient responses similar to those of normal persons to the meaningless ink blots of the Rorschach test. Just as normal persons see in such ink blots people, landscapes, faces, fairies and what not, so does the patient with schizophrenia, in his perception of objects, attach to them the most extraordinary meanings if there is the slightest change in their customary appearance. The key to the understanding of the phenomenon lies in genetic psychology, which teaches that categorical perceptions are achieved through a complicated process, in which percepts and concepts are co-ordinated into new forms of visual thinking, the percepts playing therein a subordinate and dependent role. As an example of such fusion of conception and perception in the narrow sense of the word I may refer to illusions, in which one cannot separate the meaning from the object (white shadow-ghost). It is also known from experimental psychology that it is

impossible under normal conditions to get absolute perceptions without associating with them meanings, understandings and apperceptions.

This is why it is so hard to get perception in pure culture, and why objects cannot serve all of us as ink blots serve us in the Rorschach test. Perception is an integral part of visual thinking and is intimately connected with the concepts which go with it. This is why every perception is really an apperception. But this is not true for complex thought. With the disintegration of concepts and their regression to more primitive forms of thought, the whole relationship between perception and apperception becomes altered in a manner which is typical of schizophrenia. Such a change is closely akin to the phenomena which appear in the affective life of patients with schizophrenia. The significant factors here are not the emotional dullness and the disappearance of the richness and variety of emotional expression, but the separation of these emotional expressions from the concepts with which they are closely associated. These facts, of course, are well known clinically. My contribution lies in the demonstration that disturbance of emotional life is only part of the wider and more fundamental disturbance, i.e. a disturbance in the field of concept formation. My postulation is that the intellectual disturbance, as well as the disturbances in the fields of perceptions, emotions and other psychologic functions, are in direct causal relationship with the disturbance of the functions of formation of concepts. This hypothesis is based on the results of the developmental study of the individual, i.e. on ontogenetic data.

### General comment

A study of the development of psychologic functions in childhood through adolescence affords an opportunity to observe the connection between development of the capacity for formation of concepts and the development of personality. In adolescence one finds a fundamental regrouping of these various functions, a complete change of their inter-relationships, leading to the appearance of totally different psychologic systems of a much higher order and complexity. A disintegration of these new systems, a splitting of those higher functions, is what is found in schizophrenia.

But the investigation brings out still other conclusions. The capacity for formation of concepts is really the third of three stages in the intellectual growth of the child. The first involves the development of ideas of physical causality. The second consists in secondary changes in other psychologic functions. The third, intimately connected with the formation of concepts, also involves the development of personality and a world outlook, i.e. the cognition of one's self and one's environment. The appearance of a formed personality with a world outlook in adolescence is the result of the highest development of intellect in that period of life. The process has been discussed elsewhere in my work on the psychology of adolescence.<sup>13</sup> Observing the disturbance in the perception of self and the environment in the patient with schizophrenia, I cannot but believe that there is some involvement of the third stage in the development of personality associated with the functions of the formation of concepts. And

truly, a perception of the self and the outside world is intimately connected with the concepts by means of which they are represented. One knows that the child's concepts of himself and his environment are quite different from those of an adult. One knows how changed are the perceptions of self and the environment in dreams, and it is fair to suppose that the changes in personality and changes in perception of the outside world observed in schizophrenia are caused by the slumping of intellect from the conceptual level to the level of associations.

True enough, this is only a hypothesis, but it is a tempting hypothesis, not only because it takes into consideration the developmental facts of those functions which are strongly affected in schizophrenia, but also because it allows one to reduce the data to a common denominator and to study schizophrenia in the light of the psychologic development of personality.

There is one misunderstanding which invariably appears in any discussion of schizophrenia, and which I should like here to clear up. Utilizing the function of the formation of concepts as a starting point in investigation, and finding also that it is the psychologic centre or nucleus of the whole drama of the disease, one yet sees that it has nothing to do with the etiology of schizophrenia. Disturbances in the function of concept formation are the immediate result of schizophrenia but not its cause. I am not at all inclined to treat schizophrenia as a psychogenic disorder. Whatever may be the organic cause of the disease, however, psychology has a right to study the phenomena associated with the changes in personality from a psychologic point of view. Disintegration of personality follows certain psychologic laws, even though the direct causes of this process may not be psychologic in nature.

Moreover, the clinical and physiologic observations form a bridge to psychologic speculations. I refer particularly to clinical observations which lead to the conclusion that at the basis of schizophrenia there is a loss of psychic energy. Jung was the first to draw the parallel between dreams and schizophrenia. He put it beautifully, that if a man could walk and talk in his dreams his total behaviour would be in no way different from that of a patient with schizophrenia. The asthenic habitus as a constitutional factor has been emphasized by many authors. I had an opportunity recently to study schizophrenia in children in a setting of marked fatigue and sleep. One of my patients was observed to drop off to sleep frequently. He was asleep most of the afternoon, and in the acute stage of the illness the tendency to fall asleep was most marked. I feel that there must be some germ of truth in the old clinical observation comparing stupors and sleep. Although sleep and schizophrenia are not identical, yet they have some points in common. Lately this view found expression in Pavlov's paper, 'The excursion of a physiologist into the field of psychiatry', in which he stated the belief that the most probable physiologic cause of schizophrenia is the overdevelopment of the process of inner inhibitions, which are also overdeveloped in hypnosis and sleep.<sup>14</sup> Some time ago Pavlov thought that cortical inhibitions and sleep were identical; now he believes that inner inhibitions and schizophrenia have a good deal in common. Of course, it is a fascinating theory. The thing which interests me in this

theory is that it bridges the gap between the psychologic hypothesis and the physiologic data in schizophrenia. If one recalls that the biologic function and purpose of inner inhibitions, including sleep, consist in cessation of contacts with the outside world, it becomes clear that autism, withdrawal and shutting off one's self from reality are direct results of the special state of the central nervous system of patients with schizophrenia. The loss of contact with the outside world assumes a biologic significance. It is not a result of schizophrenia but an expression of the protective forces of the organism reacting with inner inhibitions to the weakness of the central nervous system. If this is so, and there seems to be every reason to believe that it is a fact, important conclusions may be drawn. All higher psychologic functions, including speech and conceptual thinking, are of social origin. They arise as a means of rendering mutual aid, and gradually they become a part of the person's everyday behaviour. It is significant that in dreams there is a cessation of contacts with that social self which forms the foundation of the normal personality. This apparently becomes also the cause of impairment of intellect in the field of concepts; the other symptoms of schizophrenia, as I have shown, all spring from this source. At any rate, my experimental data, interpreted in the light of genetic psychology, allow one to formulate certain theories which I have here presented.

#### Notes

First published as Vigotsky, L. S. 1934: Thought in schizophrenia. *Archives of Neurology and Psychiatry*, 31, 1062-77. The translator, Jacob Kasanin, mentioned that the article had been written at his request three years before, and that since then a great deal more work had been done. Kasanin - together with Eugenia Hanffman - subsequently investigated concept formation in schizophrenics using a modified form of Vygotsky's procedure. The translation was edited by C. Trueblood of Brown University. The translator and editor provided the article with six footnotes, some of which we used. In these cases the words 'original footnote' are added between square brackets.

- 1 'The hypobulic type of will is the ontogenetic and phylogenetic lower stage of the purposive will.' See Kretschmer, E. 1926: *Hysteria*. Washington, DC: Nervous and Mental Disease Publishing Company [original footnote].
- 2 See Blonsky, P. P. 1926: *Pedologija*. Moscow: Rabotnik Prosveshchenija [original footnote].
- 3 By complex thinking Vygotsky signifies not the usual meaning of the term 'complex' in psychopathology but a type of simple elementary generalization found in the thought processes of a child, a primitive man or a psychotic patient. This type of thinking can perhaps be expressed in terms of English psychology as associative thinking or 'group thinking', meaning by 'group' a unity whose members are different, i.e. a type of thinking in which groups of different elements are related to each other [original footnote]. A detailed description of Vygotsky's research into 'complexes' and concepts can be found in

- chapters 6 and 9 of this reader and in chapter 12 of Van der Veer, R. and Valsiner, J. 1991: *Understanding Vygotsky: A quest for synthesis*. Oxford: Blackwell Publishers.
- 4 Refers to Volkelt, H. 1912: *Über die Vorstellungen der Tiere. Ein Beitrag zur Entwicklungspsychologie*. Doctoral dissertation, Leipzig.
  - 5 See the last chapter of Piaget, J. 1923: *Le langage et la pensée chez l'enfant*. [*The Language and Thought of the Child*]. Neuchatel: Delachaux & Niestlé.
  - 6 Vygotsky frequently claimed that sign language is inferior to vocal language in that it has no or less abstract concepts. For this reason he advocated teaching deaf mutes vocal speech. There is no evidence, however, that Vygotsky investigated the matter thoroughly and modern research contests his claims.
  - 7 The idea that the brain (and the mind) consists of several layers or systems of different age, of which the older ones function at a subordinate level but may take charge again when the newer ones are disturbed, was shared by many scholars at the time. Explicit formulations of this point of view can be found, for example, in the works of Head, Hughlings Jackson, Janet, Kretschmer, Sherrington and Wallon.
  - 8 We have no other evidence of these experiments.
  - 9 Refers to a patient described in Gelb, A. and Goldstein, K. 1925: *Psychologische Analysen hirnpathologische Fälle. Über Farbennamenamnesie*. *Psychologische Forschung*, 6, 127-86.
  - 10 See chapter 4 of Piaget, J. 1923: *Le langage et la pensée chez l'enfant* [*The Language and Thought of the Child*]. Neuchatel: Delachaux & Niestlé. Piaget's proverb experiment - as well as many other of his experiments - was replicated by Vygotsky and Leont'ev. They basically found the same results.
  - 11 Refers to Schneider, K. 1923: *Die psychopathischen Persönlichkeiten*. Leipzig: F. Deuticke.
  - 12 See the first chapter of Piaget, J. 1924: *Le jugement et le raisonnement chez l'enfant*. [*Judgement and Reasoning in the Child*]. Neuchatel: Delachaux & Niestlé.
  - 13 Refers to Vygotsky, L. S. 1931: *Pedagogija podrostka*. Moscow/Leningrad: Uchebno-Pedagogicheskoe Izdatel'stvo.
  - 14 Pavlov's paper was published as chapter 42 in Pavlov, I. P. 1936/1963: *Lectures on Conditioned Reflexes. Vol. II: Conditioned reflexes and psychiatry*. New York: International Publishers.