PSYCHIATRIA ET NEUROLOGIA JAPONICA

Special Feature Article

What is Schizophrenia?

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Psychiatria et Neurologia Japonica 123: 600-604, 2021

Abstract

When asked what is schizophrenia, most clinicians and researchers will answer that they are unsure. As such, what knowledge should be available in order to define schizophrenia? The author argues that clarifying the meaning of this question is the first step to answering the question of "what is schizophrenia".

Keywords: schizophrenia

Introduction

When asked what schizophrenia is, many clinicians and researchers probably answer that they are not sure. What do we need to know to answer the question of what it means to be schizophrenic?

As a start to answering this question, let me consider the same question for a disease other than schizophrenia: "What does it mean to be XX?". For example, let me apply the term "COVID-19" to the "XX" part. In other words, the question is: "What does it mean by 'COVID-19'?" In this case, by obtaining information on the major routes of infection, incubation period, prognosis, gene sequences, and a list of numerous variants in sequence, we will be able to understand COVID-19, which was mysterious at the beginning of the epidemic, and we will be able to say: "So

that's what COVID-19 is!" I would like to give you another example. What if the question is: "What does it mean to be an alcoholic?" The pharmacological properties of alcohol are important to know. In addition, we would like to know about the social and family environments that promote the formation of addiction. As we learn more about these factors, we will gradually come closer to a sense of: "So that's what alcoholism is!"

What about the question of what it means to be schizophrenic? One of the reasons for the difficulty of asking what schizophrenia means compared with the same question for COVID-19 or alcoholism is that, needless to say, there are many things about schizophrenia that are not known. However, there is another level of difficulty with the question: "What does schizophrenia mean?" There is little consensus, either among clinicians and researchers or among the general public, about how to answer the very question of: "What does schizophrenia mean?". In other words, the author believes that another difficulty lies in the fact that there is no consensus on: "the nature of an appropriate answer to the question" and "What do we need to know in the future to say that we have the answer?"

To return to the example of COVID-19, at the beginning of the outbreak, little was known about what COVID-19 meant. However, even at that time, there was a consensus among the majority of people on: 'What does COVID-19 mean?" There were, of course, those who sought different kinds of answers, asking questions in different directions, such as conspiracy theories, the fate of mankind, etc., but these were in the minority. The majority would have thought that knowing how the virus is transmitted, its virological entity, or its therapeutic agents would be the answer to what COVID-19 is.

On the other hand, what about the experts who have addressed the question of what it means to be schizophrenic? Biologically minded researchers would have thought that the answer to this question lies in identifying the details of related genes, the details of the pathophysiology of brain structure and function, or characteristic neuropathological findings. On the other hand, researchers pursuing an understanding of schizophrenia at the level of psychology, such as in anthropology or cognitive science, would have thought that the answer to this question lies in describing a model of the schizophrenia-specific psychopathology that explains the various symptoms and mental states of schizophrenia. Furthermore, researchers who focus on the social, cultural, and institutional factors that create illnesses would have tried to

identify such relevant factors and then describe a consistent story in which society creates illnesses. Traditionally, researchers and clinicians who claim to be schizophrenia specialists have probably been strongly committed to one of these positions. The author believes that there has been a lack of constructive dialogue among them.

On the other hand, a relatively recent trend has been toward a compromise between all of these positions. That is, the factors involved in schizophrenia are considered to be related to all the layers of biological, psychological, and social factors, and all of them are comprehensively examined and enumerated. However, has this eclectic position expanded the possibility of mutual dialogue among researchers, which has been a problem in the past? For constructive dialogue, it is more important to clarify the points of contention rather than to obscure them. The author's concern is that the recent exhaustive eclecticism has made it difficult to understand what each researcher thinks about "what schizophrenia means," and as a result, it has hindered constructive dialogue.

Under these circumstances, I believe it is important for each clinician and researcher to speak about the question: "What does schizophrenia mean?", itself after each person has clarified his or her own interest and stance.

In other words, it is necessary to say: "I myself want to know XX about schizophrenia. Over the course of research, it is possible that the approach one adopted to describe schizophrenia as "this" may not be as sharp as one would have liked it to be. Of course, each person has his or her own ideas about what he or she wants to know about schizophrenia, and even if the sharpness is not good, each person can go his or her own way because they have different goals to begin with. However, even though we have different goals in terms of what we want to know about schizophrenia, there is no difference in the fact that we share the same interest in schizophrenia, so if there is someone who uses a sharper knife, it is not a bad idea to listen to him or her. In that case, we should be aware of our own lack of sharpness and try to find another knife, even though we are aware that our purposes are different. Such an approach seems reasonable for a pathology such as schizophrenia, where not only is the pathology not well-understood, but the layers of explanation that are most appropriate for talking about the pathology are not known.

I. The author's method

As an example of such an approach, I will now introduce the author's own method. The method employed by the

author in understanding schizophrenia is a combination of neuropsychology and understanding psychology (verstehende Psychologie). In other words, the author believes that if one attempts to understand schizophrenia using the steps described below, they will come to feel that they understand "what it means to be schizophrenic".

The combined neuropsychology-understanding psychology approach involves two elements:

A. Identify "known cognitive and brain functions" on which the symptoms of schizophrenia would be understood if we assume the disorder.

B. Based on the assumption of such cognitive and brain dysfunction, "understand" the subjective symptoms of schizophrenia.

If A and B are successful, one will have a sense of understanding schizophrenia. Therefore, that is what the author is aiming for. First, I would like to cite one successful example of this method outside of schizophrenia. It is amnesia syndrome and the associated delusion of theft. In amnesia syndrome, episodic or long-term memory is a candidate cognitive function for level A above. It is known that a series of brain regions and networks centering on the hippocampus play a central role in this cognitive function, and that if these brain regions become inoperable, long-term and episodic memory will be impaired. We will then move on to step B and try to understand the "delusion of theft". From a third party's perspective, it is "understandable" that a person with a severe impairment of long-term and episodic memory would naturally think that someone must have stolen his or her wallet, because he/she has forgotten that they put it in a cabinet some hours ago and it is not there. In line with Jaspers, K.'s understanding/explanation dichotomy, we are "explaining" the impairment of long-term and episodic memory as a disorder of brain function, and "understanding" the patient's subjective complaint (delusion of theft) based on such an impairment of memory function. By combining these two layers of understanding, we can understand: "So that's why he blames his family for not having his wallet!"

II. Application to schizophrenia

From this point on, I will apply the method described above to schizophrenia. However, it is necessary to further organize the question as to what is to be understood in schizophrenia. The author is interested in the following two areas:

a. Understanding hallucinations and delusions.

b. Understanding the relationship between hallucinations/delusions and other symptoms in a unified manner.

First, let me address a., i.e., understanding hallucinations and delusions. In order to understand what is meant by hallucinations and delusions in schizophrenia, the strategy of the previous section leads to the following two tasks:

A. Identify known cognitive and brain functions that can explain hallucinations and delusions.

B. Consider whether the "subjective experience" of hallucinations and delusions can be "understood".

Then, the issues in these two layers are considered separately. What the author considers important in this approach is to avoid mixing layer B into layer A. The model in layer A does not include the patient's subjective experience, but aims to describe it in a purely mechanistic manner. In other words, it aims to conceptualize the dysfunction underlying hallucinations and delusions as a dysfunction that would apply even to animals that do not have language. Not including layer B in the consideration of layer A is the same as not including subjective statements such as: "I have become forgetful recently", by the patient in the conceptualization of layer A of the amnesia syndrome described above.

For example, meerkats can discriminate between natural enemies and other animals. A meerkat on guard will then behave in such a way that it will "screech when a natural enemy arrives" and "continue to monitor the surroundings, if it's an animal other than a natural enemy". In other words, meerkats can be said to recognize natural enemies in the context of keeping watch. If a watchful meerkat "screeches when a natural enemy appears" but now also "screeches when a non-natural enemy appears," what should we consider to have happened to the meerkat? As evidence that the meerkat is not merely irritated, or that it has not lost its ability to recognize animals in general, suppose that we can also confirm that the screeching is not random, but is limited to when an animal is present. Let us also assume that the loss of discrimination between enemies and non- enemies is limited to the context of "lookout" and that the animals are able to discriminate between them in other contexts. Likewise, if we are able to eliminate one by one by observation the possibility that other nonspecific cognitive or behavioral deficits could explain this phenomenon, then we are quite close to the point where we could infer that the meerkat has the paranoid delusion that "all approaching animals are enemies". That is, in a particular context (e.g., as a lookout), an inflexible response (an enemy, an enemy, an enemy, an enemy…) without tracking the changing situation with the coming of

various animals that change from time to time (an enemy, a non-enemy, an enemy, a non-enemy...) can be considered a behavioral definition of delusion (in this case, the natural enemy delusion of the watchful meerkat).

Next, we will list candidate hypotheses at the cognitive psychology level that are consistent with these behaviors. One of the most promising candidates is the aberrant salience hypothesis 1). It is a hypothesis that random and trivial events and sensory stimuli that do not have significant meaning to the subject are given excessive meaning, leading to hallucinations and delusions. This cognitive psychological hypothesis corresponds to the dopamine hypothesis of malfunction of dopamine cells or dopamine neurotransmission at the neurobiological level. This is the task of layer A.

Then we move on to layer B, the "understanding" of the patient's subjective experience based on the mechanistic dysfunction of layer A.

I am writing this book indoors, where it is relatively quiet, but if for some pathological reason the dopaminergic nervous system becomes overactive, the cars moving outside my window may interrupt my work on the manuscript and jump into my ears as noises of great significance to me. The constant sound of the cars may take on a "significant meaning for me" of harassing my writing. This "delusional mood" may gradually give way to a "delusion" that "there are people with malicious intent to make noise and disturb my work" 2) (p.31-32).

Thus, by assuming the mechanistic hypothesis of the aberrant salience hypothesis, a concrete subjective experience can be understood.

Of course, there are some remaining issues. In the example of the meerkat, the question is whether the malfunction of aberrant salience and dopamine cells is limited only to the behavior of responding to natural enemies and does not affect all behaviors of the meerkat. In other words, it is a question of the localization of delusions. Second, even if the emergence of delusions can be explained, how can the maintenance of delusions be explained? The latter question leads to a discussion of the two-stage hypothesis of delusions.

Understanding hallucinations and delusions is a big challenge, and of course not everything can be solved. Still, at a level not far removed from that of: "That's what amnesia syndrome is!", I believe that I was able to approach the feeling of: "That's what hallucinations and delusions are all about!"

On the other hand, regarding the

question of what it means to be schizophrenic, in addition to understanding hallucinations and delusions, the author's goal was to understand the relationship between hallucinations/delusions and other symptoms in a unified manner as task b. However, after much consideration, I believe that the method that I have successfully employed for hallucinations and delusions, a combination of neuropsychology and understanding psychology, is difficult to apply to answer this second question. Positive symptoms, including hallucinations and delusions, and negative or disorganized symptoms coexist in the same individual at a much higher rate than if each symptom were to occur coincidentally at the same time. Therefore, it is appropriate to refer to the disease by a single name: schizophrenia. However, it is difficult to explain the different symptom clusters - hallucinations, delusions, negative symptoms, and disorganized symptoms – in a unified manner as damage to the same brain region or dysfunction of the same neural network. On the other hand, it is also impossible to "understand" the relationship between hallucinations and delusions in the acute phase of an individual's illness and the negative symptoms that gradually develop several years later, without a very in-depth or arbitrary interpretation, in the sense that one would naturally understand that this is the case. In other words, the author's view is that hallucinations/delusions and negative and disorganized symptoms do not have a common macro-level neural basis that can centrally explain them, nor do they have a meaningful association that can be understood as a series of symptoms, but that from the perspective of neuropsychology and understanding psychology, one can only assume that they occur in the same individual "by chance". Perhaps the answer to the coexistence of these symptom clusters lies at a completely different level from neuropsychology or understanding psychology, such as molecular pathology that is less specific to brain regions. In degenerative diseases where pathology occurs in a wide range of brain regions (e.g., Alzheimer's disease), the pathology of each brain region can explain individual symptoms in a neuropsychological way. However, why various symptoms occur simultaneously in the same individual and why neuropathology occurs in different brain regions in a certain spatial distribution cannot be explained by neuropsychology or understanding psychology, and the same can be said for the above.

Conclusion

In this paper, I asked the question:

"What does it mean to be schizophrenic?" I thought about what I needed to know in order to get a sense of understanding: "That's what schizophrenia is all about!" I then attempted to understand: (1) what hallucinations and delusions are, and (2) why various symptoms of schizophrenia (hallucinations and delusions, negative symptoms, and disorganization symptoms) occur simultaneously, using a combination of neuropsychology and understanding psychology. I feel that I have "got it" about the former. Unfortunately, however, I have no idea about the latter. In other words, I think that the method may not be sharp enough for the latter.

To reiterate what I said in the introduction, what I have argued in this paper is that a constructive attitude in tackling the question of: "What does it mean to be XX?", is to first imagine what you need to know eventually in order for a sense of understanding to be achieved when various experiments and observations are successful.

There are no conflicts of interest to disclose in connection with this paper.

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