Are symptoms and mental phenomena linked with their neural substrate?

Symptoms and mental phenomena appear in our consciousness in the form of mental processes and neural activity in the brain. The question then arises of whether there is a link between such a term, which is the schema of an idea, and the neural substrate from where it came.

Immanuel Kant in Critique of Pure Reason writes that a mental object is not attributable to a physical object (Kant quotation 7).

Confirmation of Kant’s statement can be found in daily practice. The cause of any symptom or mental phenomenon cannot be recognised as a general rule purely by the nature of that symptom or phenomenon (e.g. phenomenon = that which appears) (Discussion 1).

And vice versa, knowing of the existence of a physical abnormality (a physical object) is, in itself, insufficient evidence to be able to make a decision about the cause of a symptom of mental phenomenon unless the patient’s complaints are known (Discussion 2).

By contrast, if a symptom or a mental phenomenon, e.g. a mental disorder, is already diagnosed on a mental basis, it is not related to this, then it can potentially help to explain the symptom, phenomenon or mental disorder.

It becomes clear that there is no definitive correlation between physical brain structures and a mental phenomenon. While a relationship exists, it cannot be defined or determined. And the relationship can be specified because an ideal object (object in the idea) is something quite different to an object in an absolute sense; an ideal object makes no direct reference to a physical object (Kant quotation 8).

This is the underlying fundamental reason why empirical research in psychiatry has been unsuccessful in finding biological markers and signs, that is, in the foreseeable future, biological markers for the validation of a mental phenomenon and psychiatric diagnosis, will not be found. A ‘physical’ explanation of the development of a mental phenomenon (symptom or syndrome) can be taken into consideration after it has been diagnosed on a mental basis (though in another way).

Mental phenomena develop through neural activity – they develop through subjective perception combined with reasoning. All this is physically based: firstly, knowledge has physical requirements and, secondly, knowledge is based on subjective mental processes (Kant quotation 9). By contrast, physical objects and signs of physical objects, e.g. mental signs, are not based on external criteria that are recognisable by everyone, and not on the basis of subjective, mental requirements (Kant quotation 9).

A psychiatric concept is a psychological idea. Moreover, since psychological ideas, and consequently also psychiatric ideas, are known (Kant quotation 10), we can conclude that psychiatric ideas are known (Kant quotation 11). A functional image shows stronger or weaker localised activity in time sequence, but we can only establish the validity of a tangible object, or its signs, if we can determine the boundaries of the neural processes involved in our thinking through cognitive processes (Kant quotation 8), mental processes including subjective judgement in the consciousness of the person who perceives the symptom or mental phenomenon (Kant quotation 9). Thus, no neural correlates can be found – no identifiable boundary that corresponds to the mentally defined boundaries – and consequently, for example in functional images, no boundaries correlate with the mentally defined categories.

A mental phenomenon or a mental disorder, once diagnosed, can perhaps be explained in relation to a physical abnormality. For example, a delusional disorder could potentially find its explanation in the brain image, and a depressive disorder in the clinically diagnosed thyroid hormone deficiency, etc. Similarly, functional imaging evidence is significant once a mental disorder has been diagnosed on the basis of abnormal mental phenomena (Kant quotation 12).

We can only establish the validity of a tangible object, or its signs (objects in an absolute sense). It is in relation to such an object that all knowledge is in agreement, i.e. (Kant quotation 13).

For example, an initial idea, a suspected heart infarction, is tested and either verified or rejected. A neurophysiological test, or functional imaging, is done to verify the existence of a mental disorder, e.g. major depression. The objectivity of a psychiatric diagnosis is not possible because it cannot be based on signs only, but on the basis of subjective, mental requirements (Kant quotation 9).

A relationship between a mental phenomenon (object in the idea) and the neural substrate (object in an absolute sense) exists, but it is not possible to define or determine the relationship.