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UNDERSTANDING SCHIZOPHRENIA, UNIFYING THE PHENOMENOLOGICAL AND COGNITIVE SCIENCES APPROACHES

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Abstract

Both philosophy and cognitive science have made valuable contributions towards accounting for the aetiology of Schizophrenia, an illness that possesses a disparate assortment of symptoms. However, there is no firm agreement on what causes such experiences to arise. A theory is proposed which simplifies the signs and symptoms of Schizophrenia and is something which does not appear to exist in the field to date. The model proposed is a hybrid theory, combining the phenomenological approach of Sass and Parnas with elements from Frith and Hemsley's cognitive science perspective. An argument is that if a hybrid theory was used it would assist in the early intervention of Schizophrenia by providing a focus for treatment during developmental stages.

Keywords: *psychiatric practice, cognitive science, early intervention in Schizophrenia, prodromal symptoms in Schizophrenia, unification of symptom clusters in Schizophrenia.*

Introduction

Schizophrenia is the most debilitating of psychiatric conditions with the greatest heterogeneity of features in psychiatry. The prognosis is poor and with treatment patients can often remain symptomatic (Essali, et al., 2009). A theory is provided which simplifies the diverse range of psychopathology seen in positive, negative, and disorganised symptom clusters.

Jablensky in his article has discussed the proposition that Schizophrenia could be a cluster of overlapping syndromes (Jablensky, 2015). This complicates the aetiology, but simplification would benefit the understanding of diagnosis and treatment of the illness. Valuable contributions have been made to this area by the philosophical phenomenological approach of Sass and Parnas' unified theory and the cognitive science approaches of Frith and Hemsley. The purpose of this article is to provide an account of Schizophrenia that attempts to hybridise these models.

Attentions will be particularly focussed on Sass and Parnas' unified theory where they claim to provide a unified model of the symptoms using the phenomenological approach (Sass & Parnas, 2003; Sass & Heidegger, 1992). Here they identify key features of Schizophrenia which characterise the illness as a disorder of the self. They describe the self as the everyday form of awareness. The concept of hyper-reflexivity, they explain as an exaggerated form of self-consciousness in which objects of an individual's mind are viewed as akin to external objects (Sass & Parnas, 2007). The

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experience of diminished self-affection is described as feeling oneself as having a weakened presence of vitality in awareness and action (Sass & Parnas, 2003). Despite the claims of Sass and Parnas, we shall propose that this theory of Schizophrenia does not provide a complete understanding of the heterogeneous symptom clusters.

Whilst Sass and Parnas' account provides an immensely important contribution to the philosophical literature on Schizophrenia with invaluable examination of its phenomenological characteristics, it is not adequately supported by experimental evidence. This is where the cognitive science accounts of Frith and Hemsley provide empirical strength by linking in neurophysiological mechanisms. The cognitive science account proposes mechanisms for the normal functioning of humans and then examines the effects of psychiatric disorders on these mechanisms (Hemsley, 1993). The reason to integrate the interpretation by Sass and Parnas alongside the theories by cognitive science is that by focusing exclusively on the mechanisms which fail in Schizophrenia we cannot have an account of what the experience of subjects with Schizophrenia is like.

It is also necessary to reconstruct the approach of Sass and Parnas as whilst it may help to identify Schizophrenia in its prodromal stages, it provides no target for a treatment. Conversely, the approach of cognitive science is to target mechanisms which may well be useful for introducing drug treatments.

The theory proposed is a hybrid theory, combining elements from both cognitive science and philosophical phenomenology. The phenomenological and cognitive accounts may be describing the same disruptions at different levels. Phenomenological accounts focus on personal level disruptions whereas the focus of cognitive science is on a sub personal level.

It is suggested that if psychiatry adopted a hybrid theory it would assist in both early intervention and treatment. Importantly, there are identifiable links between the work of Frith and Hemsley, and their theorems can be connected with Sass and Parnas' phenomenological model of Schizophrenia. This approach is supported by Mishara, a phenomenologist who is sympathetic to the contributions of cognitive science whilst aware of its limitations. He proposes that phenomenology should strive to provide a hypothesis for further study rather than a conclusive account (Mishara & Aaron, 1997; Mishara & Schwartz, 1995; Ulhaas & Mishara, 2006).

In this article an outline of the unified theorem for the signs and symptoms of Schizophrenia put forward by Sass and Parnas will be provided. The limitations of their argument will be highlighted and then later linked and strengthened by incorporating evidence from the cognitive sciences.

The benefits of hybridising the theories of Sass and Parnas with Frith and Hemsley will be explained. The structure of the hybrid theory will be explained with attention paid to the aspects of cognitive science and philosophical phenomenology that will be incorporated.

The Phenomenological Approach

The first account of Schizophrenia discussed is the one developed by psychiatrists Sass and Parnas. They have devised their own phenomenological explanation which unifies symptoms. They argue that Schizophrenia is a disorder of the self. This is where the individual loses sense of being the vital and self-identical subject of the world. The distortion of the self in Schizophrenia has two fundamental properties. First, there is hyper-reflexivity which is exaggerated self-consciousness. Alongside the hyper-reflexivity there is a diminished self-affection. Diminished self-affection is where one has diminished sense of existing as a vital source of awareness and action (Sass & Parnas, 2003).

Phenomenological understanding is based on intentionality and consciousness. Intentionality is a property of the mental process and can be described as being about something (Anscombe, 1987). For instance, a belief is about something i.e. an object. It does not necessarily mean the belief exists in reality. Within philosophy there is no definition of consciousness that is universally accepted. However, being conscious is often described as being in the state of having a first-person perspective or subjective view (Chung & Fulford, 2007; Sass & Parnas, 2003; Sass, Parnas, & Zahavi, 2011).

The phenomenological direction Sass and Parnas take in understanding Schizophrenia is by evaluating human experience and existence. They assess both the normal and abnormal forms of human experience and existence. The usefulness of the phenomenological analysis is that it concentrates on awareness. This is an essential part of Schizophrenia to be analysed because a large part of

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the disorder is experiencing and perceiving strange illusions. The use of phenomenology examines how different objects are presented to a person.

Sass and Parnas argue that we are always self-aware because we are always interacting with the world. We have a vital and first–person perspective sense of awareness because we are submerged in the world around us (Sass & Parnas, 2003). We are conscious of our thoughts and experiences believing that they are our own. Objects are known to us from a first- person mode of presentation and this is because of the vital property we have to be self-aware. This is what they describe as the self or ipseity. Sass and Parnas describe Schizophrenia as a disturbance of the self or ipseity, a disturbance of a person's sense of existence (Sass et al., 2011).

Positive, Negative and Disorganised symptoms

Sass and Parnas use the same explanations for positive, negative and disorganised symptoms. A summarised version of their explanation for the positive symptoms is reduced self-affection alongside a sense of hyper awareness and a diminished sense of self. Increased hyper-reflexivity can be used to explain the auditory hallucinations an individual experiences. The subject, through an exaggerated self-consciousness, expects something strange to happen, and becomes hyper-aware or overly sensitive. There becomes an increasing gap between consciousness and the sense of self. Inner speech no longer occurs, and thoughts are heard aloud. The subject does not realise this, believing that someone else has spoken to them (Sass & Parnas, 2003).

The individual no longer has the relationship with self or own body which they had before the onset of the illness. The subject loses interest in the independent occurrences of the surrounding world and begins to focus attention on environmental happenings to self. The person becomes increasingly detached from his/her surroundings, and parts of the self also become detached (Sass & Parnas, 2003). The parts of the self which become detached can include one's thoughts, arms and legs.

The mechanism for positive symptoms is the same for the negative symptoms in their view. This is a disturbance of the self-characterised by a diminished self-affection and hyper-reflexive awareness (Sass & Parnas, 2003).

Detecting Schizophrenia Early

Sass and Parnas have argued that their approach is useful in detecting Schizophrenia in the prodromal stages. They argue that disorders and anomalies of the self were the most common clinically detectable features in individuals with pre-onset Schizophrenia. They mention the Norwegian early intervention study which was carried out to detect the prodromal features (Moller & Husby, 2000; Sass & Parnas, 2003). The study showed losses of self-identity and also other self-disturbances in adolescents before the onset of Schizophrenia. There are aspects of depersonalisation which mark the early features of the illness. In another trial where twenty-one early onset subjects with Schizophrenia were given an in depth interview, a link was noted with these subjects being particularly occupied with supernatural and philosophical issues. Subjects noted something strange was happening and they began to detach themselves from society. They were not able to exactly pinpoint what was wrong (Moller & Husby, 2000; Sass & Parnas, 2003).

Sass and Parnas used the results from the The Bonn Scale for the Assessment of Basic Symptoms (BSABS) questionnaire in the Copenhagen study to highlight the presence of a self-disorder in the prodromal stages. This was an assessment of thought, language, perception, emotional reactivity through semi-structured interviews. Anomalies of the self, including self-estrangement and the diminishment of self-consciousness, were the most evident features present in pre-onset subjects. These anomalies helped differentiate individuals with a diagnosis of Schizophrenia from those with non-Schizophrenic type disorders (Sass & Parnas, 2003; Handest, 2003).

Limitations

Sass and Parnas argue that their idea of Schizophrenia should be placed in the DSM diagnostic system to improve understanding. But it is not convincing that we get a better understanding of

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Schizophrenia by describing it as a disorder of the self. We need to know more about the mechanism of normal perception, cognition and thought formation before we can understand what goes wrong with these in the person with Schizophrenia. This is an approach often taken by cognitive science which is based on the continuity between normal and abnormal perception and cognition.

In order to understand Schizophrenia, and what it is a disorder of, we need to know more about normal cognitive functioning. For instance, cognitive scientists have listed a number of areas where there could be dysfunctions in individuals. These include a disorder in perception, attention or cognition (Hemsley, 1975; Hemsley, 1987). This assists in localising where the problem may be and in the future we may well be able to work on this area to find a mechanism of treatment. The advantage of their theory is that they first work out the normal functioning of the different parts of the brain and then assess how these go wrong in Schizophrenia. The phenomenological approach by Sass and Parnas although helpful fails to do this.

Mishara is against the idea that Sass and Parnas believe they can constrain neuroscience with their phenomenological account (Mishara & Aaron, 1997). They focus more on the disrupted consciousness of patients whilst ignoring the vital aspects of attention and perception which are disrupted in these individuals. These perceptual and attentional deficits are discussed by the cognitive scientists. Mishara argues that Sass and Parnas have excluded vital aspects of cognitive science backed by experimental support in their account. These include a disruption of perception, attention, and agency (Mishara & Schwartz, 1995).

It may be that what Sass and Parnas argue is accurate, but it has not yet been backed up by strong empirical evidence. Their theory is hypothesised from single case studies i.e. interviews and the BSABS questionnaire.

Cognitive Science Approaches to Schizophrenia

It is equally important to discuss the individual cognitive science approaches to explaining Schizophrenia before providing a hybrid account. Frith and Hemsley's respective cognitive and neuro-physiological accounts are outlined. What is appealing about their theories is that they have attempted to pinpoint the exact mechanism which if fails leads to psychotic symptoms. Both theoretical models are strongly supported by empirical evidence.

Explanation of Frith's Theory

Frith has devised a theory of motor control which is responsible for the control of action and awareness in an individual. When this goes wrong the clinical features of Schizophrenia are displayed. Put simply there is a defect in the central monitoring system, a failure to receive information about actions generated by an individual on his/her own merits (Frith & Done, 1989). The subject has difficulty in recognising which thoughts and movements are theirs.

It is necessary to define the difference between the terms agency and ownership, as adopted in Frith's proposal. The term agency is defined as the sense of being the initiator or fundamental source of an action, movement or thought (Chung et al., 2007). Having the sensation of ownership is that the individual believes they are the only person experiencing a particular thought or movement. When an individual carries out a voluntary or willed task, they declare both ownership and agency. However, when they carry out an involuntary motor action then although they would concede that they have ownership for the movement they do not possess a sense of agency. This is because they don't have any feeling of causing or controlling this involuntary movement. It is this disruption of agency that occurs in some positive symptoms of Schizophrenia. For instance, subjects with a diagnosis of Schizophrenia sometimes misattribute movements. They believe such movements are generated by some external source even though they declare ownership i.e. my lips are being forced to grimace by the neighbours (Cahill et al., 1996). Frith attempts to explain this disruption of agency.

Frith describes the motor system as a control system whereby there is an input i.e. a motor command which in turn leads to a movement by the individual. The output in such a system is the sensory outcome of the movement (Mlakar et al., 1994; Frith et al., 1995). If we attempt to produce a

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movement generated by our own goals the motor system has to first estimate our own position. Frith terms this the inverse model (Mlakar et al., 1994; Jordan, 1996; Kawato et al., 1987).

The outcome of these two mechanisms means the motor system can produce a number of motor commands which in turn should lead to a movement which is intended. However, the problem with the inverse model is that it is not possible to exactly determine the unorthodox sequences of motor commands that in turn generate a movement. This is where the benefits of what Frith terms the forward model comes into play. This allows the motor system to be aware of the predicted consequences of movement. The resulting movement from a given set of motor commands and the exact consequences can be noted because of this forward model (Castiello, 1996; Wolpert et al. 1995).

There are three internal states, the intended, predicted and estimated current state. The movement commands are generated from the inverse model on the basis of the current and the ideal state. The forward model exactly pinpoints the predicted effect of this motor command. The advantage of the forward and inverse models is that faults within the motor system can be detected and thereby corrected. If the actual outcome of a limb does not match the predicted outcome then this is corrected (Haggard & Eimer, 1999). A difference can be noted from the desired state generated by the inverse model and the predicted state which is generated by the forward model. According to the neurocognitive approach, the inverse model is more prone to errors and if this is detected by the forward model then these errors are more likely to be corrected (Decety et al., 1991; Feltz & Landers, 1983; Yue & Cole, 1992). Likewise, the forward model can also be corrected, and this highlights the advantages of possessing both states i.e. predicted and the intended state (Jordan & Rumelhart, 1992).

Frith argues that we are not aware of these processes taking place (Castiello et al., 1991). However, we are aware of the position of our limbs. We can make rapid corrections of our movements without being aware of these different models (Castiello et al., 1991). We can estimate the amount of time it will take for us to make a movement. We are similarly aware of the mistakes we can make by predicting our motor movement i.e. carrying an item that was heavier than expected (With the positive symptoms of Schizophrenia and in particular delusions of control, the argument is that the fault is with the forward model (Stirling et al., 1998) i.e. the predicted state of the system.

The subject is able to form a desired state and carry out commands necessary to achieve this desired state. What is missing is the awareness of the predicted state and the correction, or modification of actions. There is no act of will by the individual and it seems the action moves from the desire to be executed with no checking or modification in between. This is the reason the subject with Schizophrenia does not feel in charge of their behaviour. The negative symptoms of Schizophrenia are due to a poor representation of the patient's own intentions. This inability to perform spontaneous actions leads to the negative symptoms such as avolition.

More recently there has been a modification of Frith's theory into two stages (Frith et al., 1999; Mlakar et al., 1994; Stirling et al., 1987). There is impairment within the central control system of actions. Actions and behaviour come about because of two pathways. The willed pathway is responsible for the generation of internal intentions into action responses. The stimulus driven pathway is responsible for mediating actions to the current stimulus environment. The actions influenced by the environment are normally different from the person's goals. To accomplish a goal the individual has to suppress the stimulus driven pathway whilst activating the willed intention pathway. It has been explained that the inability to activate the willed intentional system can lead to the negative symptoms of Schizophrenia (Torres et al., 2004). A failure to completely inhibit the stimulus driven pathway leads to the disorganised subtype of symptoms. The stimulus driven pathway is shuffled with information from the willed pathway. This leads to the different disruptions in behaviour.

The performance of subjects on cognitive tasks can be predicted using Frith's hypothesis. The negative symptoms would lead to diminished goal directed responses by the subject whereas the disorganised symptoms would lead to increased distractibility and poor responses to the tasks. These predictions have been demonstrated by various studies in particular those carried out by Allen et al. (Anscombe, 1987; Torres et al., 2004). From a number of verbal and non-verbal tasks it has been shown that subjects with the negative symptoms of the disorder have diminished responding in such tasks whereas subjects with disorganised symptoms have provided incorrect responses coupled with easy distractibility.

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Limitations of Frith's Account of Schizophrenia

One of the arguments that contradicts Frith is that he claims that we must form an intention to think before we can think ourselves. This seems overly complex and does not intuitively follow sense. There is both a forward and inverse model mechanism taking place before we actually think a thought. What is more confusing is that if one must form an intention to think, one must first form an intention before this. Under Frith's model, it is necessary to have prior intention in order to have complete agency for one's thoughts. However, it is not feasible to have an intention to think in every case, without regressing to infinity (Gallagher, 2004).

Sometimes a thought can enter the mind, such as a tune heard on the radio that occurs without intention from the individual. However, from Frith's mechanism there is a comparator system which clears up faults in the mind such that unbidden thoughts are rejected as forbidden. It then becomes questionable how these forbidden thoughts still intrude into minds and is there still an intention to think in these cases. It is likely that that an intention does not precede every thought. In these circumstances one would declare a lack of agency for these thoughts but would not attribute these thoughts being from another agent, as they would ascribe in the phenomenon of thought insertion (Gallagher, 2004).

Hemsley's Contribution

Hemsley has primarily focused on the deficit in attention present in subjects (Hemsley, 1977) and from here has devised his own explanation for the symptoms (Hemsley, 1977; Hemsley 1987b; Hemsley, 1990). He has attempted to identify a single cognitive dysfunction integrating both the perceptual and neural aspects of Schizophrenia (Hemsley, 1977).

Hemsley explains that the symptoms of Schizophrenia are characterised by a dysfunction or weakness which leads to the reduction of stored memories of previous experiences (Hemsley, 1977; Hemsley, 2004). This means that memories fail to have an influence on current perception and therefore the subject with Schizophrenia is unable to filter redundant information. The result is that in the subject with Schizophrenia the demands of temporally and spatially redundant information processing are not reduced (Hemsley, 1987b). The automatic processing or analysis of the significance of a stimulus is impaired. There is empirical support for Hemsley's explanation demonstrated by both animal and human studies (Hemsley, 2005).

In animal studies it has been demonstrated that animals that are administered amphetamines are unable to use acquired knowledge in a new situation. This led to the animal being essentially bombarded with stimuli, which could explain the information overload present in subjects with Schizophrenia. The effect was reversed with neuroleptic medication (Feldon & Weiner, 1991; Solomon et al., 1981). In studies using subjects with a diagnosis of Schizophrenia, it was found that these subjects performed better than healthy controls in the pre exposure stage where the stimulus was first presented. However, when they had to make use of previous perceptual knowledge they performed poorly. After a six week course of anti-psychotic medication the performance of subjects in the pre exposure stage was markedly reduced (Hemsley, 1993).

Hemsley has linked his findings to the subdivisions of the characteristic schizophrenic symptoms and proposes that the magnitude of the illness is linked to the presence of symptoms (Hemsley, 1990; Hemsley & Richardson, 1980). Disorganised symptoms are the result of a more severe condition and negative symptoms are the results of a condition that is more severe again (Hemsley, 2005; Hemsley et al., 1993). If the threshold of the weakening of stored memories is reached, then the individual would display negative symptoms. They would be in a state of information overload and this would lead to symptoms like social withdrawal and avolition (Hemsley, 2005).

Limitations of the Hemsley Approach

Within Hemsley's model there are limitations. Although the theory may provide an explanatory framework for delusions it does not provide a complete explanation of the different hallucinatory experiences an individual may have. For instance, how redundant information coming into awareness provides an explanation of auditory hallucinations. A disorder of perception by itself cannot purely

provide the reasoning behind auditory hallucinations. Hemsley's account does not appear to provide a convincing explanation for the negative symptoms. For instance, anhedonia (which is the loss of pleasure) cannot be explained by a mere problem in perception.

Benefits of a Hybrid Account

Individually the phenomenological theory and the cognitive science theories have limitations. However, integrating the two approaches appears to result in a more robust approach that addresses the individual limitations of each. This has been attempted by Gallagher (Gallagher, 2004; Gallagher, 1992) and Mishara (Mishara & Schwartz, 1995; Ulhass & Mishara, 2006) to explain the mechanisms behind the positive symptoms. There is a need to devise a simplified explanation for all signs and symptoms by incorporating aspects from Frith's and Hemsley's cognitive science theories and from Sass and Parnas' phenomenological account.

The reason aspects of Frith's explanation were used in the overall hybrid theory is that it is supported by strong empirical evidence. Cognitive science has attempted to explain Schizophrenia scientifically by identifying the faulty mechanisms in the brain from which the symptoms arise. Any theory aimed at providing an explanation needs to rely on cognitive science in order to identify the causal mechanisms responsible for such symptoms. Among the cognitive science theories available in the literature, Frith's theory has the widest consensus and has the strongest empirical support. As noted in Ulhaas' paper (Ulhaas & Mishara 2006, 145) it has long been agreed that the core deficit in patients is within attention and perception.

Hemsley however, has gone further and clarified that the primary dysfunction is within the stored memories of previous perception (Hemsley, 2004). He has made further progress and explained why subjects with Schizophrenia form meaningful connections with the random events they experience. Within the cognitive science literature, his theory is one with the greatest explanatory power and combined with Frith's theory, can provide a comprehensive explanation for the symptoms.

Hemsley's explanation is perfectly compatible with the phenomenological accounts developed by Sass and Parnas. The abnormalities in perception described by Hemsley provide the foundation for those changes in self-experience that Sass and Parnas examined. Such abnormalities in perception are responsible for changes in the symptoms as the condition progresses. As stated by Sass and Parnas (Sass & Parnas, 2003; Sass et al., 2011), Schizophrenia is characterised, at the same time, by an abnormal increase in awareness and a reduced sense of ownership of one's subjective experience. Hemsley echoed (Hemsley, 2004), that the subject is unable to retrieve stored memories of perception.

When this element of his theory is linked to phenomenology, it provides a scientific explanation for the phenomenon of hyper-reflexivity. Many stimuli are perceived by the subject as being puzzling or novel and worth reflecting upon. One's reality is often tied to one's flow of perceptual experiences and a disorder in perception like the one Hemsley described could lead to one losing control over one's sense of reality. Negative symptoms could be seen as a compensatory mechanism for this information overload. The subject can feel so overwhelmed such that everything shuts down. The consequence is negative symptoms of the illness such as blunted or flattened affect.

The reason to integrate the interpretation by Sass and Parnas alongside cognitive science theories is that by focusing exclusively on the mechanisms which fail in Schizophrenia, there is a neglect of what the experience of subjects with Schizophrenia is like. Alongside the abnormalities demonstrated by Frith and Hemsley, there has to be some reference to deep alterations in subjective experience and a disruption in the way in which one views oneself as being in the world. There is a need to describe and understand the conscious experience and the reports of individuals with Schizophrenia and the way in which their subjective experience is altered.

There are many advantages of the hybrid theory and one is that it can withstand criticisms from both the phenomenologist and cognitive scientist. The overall explanation takes into account significant contributions from both sides. The theory connects the phenomenological and cognitive science approaches and attempts to show that the cognitive science explanations support the changes in experience that are central to the phenomenological accounts. Moreover, it receives the same strong empirical support that Frith's and Hemsley's theories enjoy and the support of studies confirming that Schizophrenia is a disorder of the self.

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The overall theory is as follows:

The underlying dysfunction identified by the integrated model lies in the central monitoring system, whose role is to predict the consequences of an action from the intended sequence of motor commands, in the context of experiential memories. This can lead to an overload of information as the subject cannot distinguish between internal and external stimuli. They can no longer process spontaneous actions as they cannot predict the consequences nor monitor their experiences. The subject compensates by displaying hyper-reflexivity which is an exaggerated form of self-consciousness. They enter this phase because they want to discover what makes their experiences odd and why certain elements are absent from their experience that were not previously.

Subjects experience difficulty in accessing memories stored from previous perceptual experiences due to cognitive deficits in perception and attention. They struggle to filter out redundant information, leading to an overload of information and therefore a demand for processing that they cannot meet. There is a loss of manageable and meaningful connection with the outer world and so the individual attempts to compensate for this perceptual dysfunction with hyper-reflexivity and diminished self-affection, and ultimately by a compensatory shutdown manifest in the negative symptoms such as avolition, apathy and amotivation.

Discussion

A hybrid theory is proposed which covers the positive, negative, and disorganised symptoms of Schizophrenia. This may attract potential objections, which have been proactively addressed below, in response.

It is anticipated that there will be opposition from academics who work exclusively in cognitive science research or exclusively in phenomenology research who believe that the two theories should not or cannot be merged. For instance, Sass and Parnas provided a critique of the cognitive science approach. They believed they provided the complete theory (Parnas, 2005; Parnas et al., 2002; Sass & Parnas, 2003; Sass et al., 2011).

However, without strong empirical evidence in support it is not apparent why their hypotheses are superior and more credible than competing philosophical or cognitive accounts. The cognitive science account adds more detail to their existing description of Schizophrenia as a disorder of the self. The model by Sass and Parnas has its strengths in accounting for negative symptoms of Schizophrenia but less so in providing an explanation for other symptoms. Similarly, the cognitive science approach falls short of a full explanation of the symptoms. Symptoms cannot be explained by merely identifying the faulty mechanisms within the nervous system. There is a need to show how these faults impact on subjective experience. This is why the hybrid theory which takes the best from both phenomenology and cognitive science provides a promising route to a unified explanation.

Another argument in opposition to the hybrid theory could be that the combination of phenomenology and cognitive science is illogical as both use vastly different approaches in their explanation. Sass and Parnas provided critique of Frith's theory that it does not make sense to say that there is an intention to think before we can actually think. Sass and Parnas stated 'Schizophrenia is fundamentally a self-disorder' (Parnas, 2005; Parnas et al., 2002; Sass & Parnas, 2003; Sass et al., 2011;) whereas Frith described the primary deficit as 'a lack of central error correction' (Frith et al., 1999). An example of a connection is that both phenomenology and Helmsley's approach identify the disruption of perception as key in the aetiology. It has been highlighted that a deficit in the central monitoring system could lead to a compensatory response by the subject resulting in an abnormal increase in their self-consciousness (hyper-reflexivity), and eventually in compensatory shutdown seen in negative symptoms.

A further argument could be that it is not comprehensive enough to cover the vast array of symptoms. However, this is evidently the most comprehensive model to date to offer robust explanation, merging the leading theories from both phenomenology and cognitive science by forging the links between the two.

Conclusions

The current attempt was to sketch an innovative approach to explaining Schizophrenia by combining leading theories in phenomenological and cognitive science. This was to produce a more comprehensive theory which provides a robust explanation for the positive, negative, and disorganised symptoms of Schizophrenia. Schizophrenia is a most complex mental illness; a solely phenomenological or solely cognitive science-based approach is likely to be a disservice. There is a need for sensible and sensitive integration towards a robust and comprehensive approach, and this has been proposed. The journey of understanding the complexity of Schizophrenia continues. However, the current proposal not only progresses that journey but creates a framework for further progress.

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