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REVIEW ARTICLE

RECENT ADVANCES IN THE APPROACH TO DISORDERS OF THOUGHT

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INTRODUCTION

According to Kandel[1] and Campbell's Psychiatric Dictionary[2], "the mind is a range of functions carried out by the brain. The actions of the brain underlie not only relatively simple motor behaviours, such as walking and eating, but all of the complex cognitive actions, conscious and unconscious, that we associate with specifically human behavior, such as thinking, speaking, and creating works of literature, music, and art. As a corollary, behavioral disorders that characterize psychiatric illness are disturbances of brain function, even in those cases where the causes of the disturbances are clearly environmental in origin." In the words of Satcher,[3] "the mind refers to all mental functions related to thinking, mood, and purposive behavior. The mind is generally seen as deriving from activities within the brain".

Cognition is one of the most important broad domains of the mind. By definition, cognition includes thought. According to Campbell's Psychiatric Dictionary[2], cognition denotes a high level of processing of information, including thinking, memory, perception, motivation, language, etc. Thinking is defined as the mental activity and processes used to imagine, appraise, evaluate, forecast, plan, create, and will.[4] Thought consists of patterns of neural firings in the brain; these patterns are translated into words when the person wishes to communicate them to a listener - the process of language.[2] Thought includes concepts, reasoning, problem-solving, imaginal operations and visual imagery etc.[5]

Descriptive psychopathology is the precise description, categorization and definition of abnormal experiences as recounted by the patient and observed in his behaviour.[6] Assessment of thought is an integral component of the psychiatric assessment. Eliciting, comprehending, documenting and reporting disorders of thought is often perceived as a challenging and formidable task, especially by postgraduate residents starting their career in Psychiatry. This review explores some of the controversies and difficulties that postgraduate students typically encounter during the study of symptoms and signs pertaining to thought, and suggests methods to resolve some of these difficulties. This article can be used as a "study guide" or a companion while navigating through the complex territories of thought disorder. The neurobiology of disorders of thought is beyond the scope of this article. The focus of the review is entirely on clinical issues pertaining to the assessment and reporting of disorders of thought. The goal of this short review is not to reproduce all definitions of disorders of thought published elsewhere. However, useful "signposts" are provided in the form of explicit citations and references. A few controversial definitions are analyzed, wherever relevant.

The need for a fresh and contemporary perspective

Postgraduate training in Psychiatry usually places a strong emphasis on the concepts of psychopathology described in the classic psychiatric literature. It is understood that we "stand on the shoulders of giants". Classic approaches to psychopathology have laid the foundation for modern and state-of-the-art knowledge about mental symptoms. Modern approaches to the definitions of psychiatric symptoms and signs often rely a lot upon the classic descriptions. Budding psychiatrists must certainly be taught to understand,

cherish and respect the history of psychiatry. Nevertheless, postgraduate psychiatry residents need to understand that a thorough understanding of modern and contemporary definitions of psychiatric symptoms and signs is absolutely essential for the successful practice of psychiatry. Trainees need to comprehend how our knowledge about the manifestations of mental disorders has evolvedand been refined over the decades. Anexclusive and dogmatic focus on historical concepts that precludesan acknowledgement of recent advances and current literature is detrimental to the advancement of psychiatric practice, and can be unfair to our patients too. It is well-known to the medical profession that what was considered state-of-the-art and relevant several decades ago might not always have the same degree of relevance at the present time. Science is dynamic and is in a state of perpetual flux. Students of Psychiatry should have an open mind and must learn to discriminate between concepts that have historical value and concepts with current value, during their study of psychiatric symptoms and signs. They need to take pride in the acquisition of the latest and current clinical knowledge, while retaining a healthy respect for seminal and historical expositions. Modern medical practice places a high premium on "staying up-to-date".Psychiatrists are expected to stay abreast of the most recent advances, with regard to the neurobiological and genetic basis of mental illness, and psychopharmacology. It stands to reason that a similar approach should apply to knowledge about definitions of psychiatric symptoms and methods of psychiatric assessment.

The problem of redundant terminology

Postgraduate students of Psychiatry are strongly urged to consult the paper titled "Ordered thoughts on thought disorder" by Ashley Rule.[7] This is an excellent reference that highlights the unfortunate redundancy in psychophenomenological terms used to describe thought disorder. Redundancyis the act of using a word, phrase, etc., that repeats something else and is therefore unnecessary. This author has identified 68 terms from several references (1978 to 2003) and concludes that there are more terms than significantly different concepts described. This implies that, though the author has identified 68 terms, this does not mean that there are actually 68 different phenomena. Thus, the psychopathology literature contains a significant amount of "noise" (information that is not wanted and that can make it difficult for the important or useful information to be seen clearly; irrelevant or meaningless data occurring along with desired information). Rule[7] observes that many of the terms reviewed are similar, and "the differences are best explained by remembering that they were described by different psychiatrists, practising in different eras and writing in different languages". This author emphasises that there is little difference between several psychopathological concepts defined, and highlights the existence of conflicting definitions. This can easily render the study of psychopathology confusing and unsatisfactory, and result in a difficult learning curve. Rule[7] concludes that the recognition of a few broad categories of disordered thought is usually sufficient to allow a diagnosis to be made, in routine clinical practice, when taken in context with other symptoms.It is also interesting to note that many "redundant terms" listed by Rule[7]do not feature in the DSM-5 Diagnostic and Statistical Manual of Mental Disorders.[8]

The need for simple, standard and uniformly accepted definitions

The authors of the SCAN (Schedules for Clinical Assessment in Neuropsychiatry) glossary[9] state that "the aim of the interviewer is to discover which of a comprehensive list of phenomena have been present during a designated period of timeand with what degree of severity". They add that "the (psychiatric) examination is therefore based on a process of matching the respondent's behaviour and description of subjective experiences against the clinical definitions provided".[9] These statements succinctly describe the cornerstone of the psychiatric evaluation. In addition to understanding and documenting the unique contextual (psychosocial/environmental) factors playing a role in the patient's illness and socio-occupational disability associated with the illness, it is imperative that a symptom-checklist-based approach is routinely incorporated into the psychiatric evaluation. Since psychiatrists are expected to match what they observe in a given patient to a definition of the phenomenon, and communicate with professional colleagues in a meaningful way, it is easy to understand why standardization of definitions is crucial to the scientific practice of Psychiatry. Attempting to match psychopathological phenomena observed in a patient to ambiguous and non-standard definitions can lead to errors in diagnosis and treatment. It is quite unfortunate that psychiatric symptoms are defined differently across various textbooks. Additionally, with regard to certain psychiatric symptoms, different chapters of the same textbook contain conflicting

definitions of the same psychopathological phenomenon. This is quite surprising, and adds to the burden of the psychiatry resident grappling with the complexity of psychiatric symptoms and signs.

Consider the postgraduate examination scenario wherein the candidate is expected to complete a full psychiatric evaluation (including a written report) in approximately 45-60 minutes. Also consider busy psychiatric outpatient facilities where time is in short supply. In such situations, there is an urgent need to quickly understand the patient and his/her unique sociocultural milieu, accurately label psychopathological phenomena, arrive at the most appropriate diagnosis and treatment plan in the shortest possible time. In these scenarios, simple and lucid diagnostic criteria and compact and uncomplicated definitions of psychopathological terms can be real life-savers.

A strong case for a step-wise, simplified approach

It would be prudent for the postgraduate students to consult advanced references such as the classic textbooks of psychopathology in the second year of training and beyond. An unreasonable insistence upon the acquisition of a deep and thorough understanding of classic psychopathology in the first year of postgraduate training is both unreasonable and unnecessary, and can make some fresh trainees feel demoralized and intimidated. Inspiring the student and instilling a deep passion for the subject (if it does not already exist) should be the primary goals of postgraduate training, especially in the first year. It is also wrong to look down upon modern, simple and compact definitions of psychiatric symptoms and conclude that they are in some way inferior to verbose and tedious explanations. On careful scrutiny, it is clear that these modern and compact definitions have, in fact, been worded very carefully and usually do not contain redundant words.

A lofty and blanket disdain for simplicity is to be condemned. It is high time we abandoned rigid academic orthodoxy in favour of simpler, more "user-friendly" and clinically relevant methods of teaching and learning psychiatric symptoms and signs. It is true that the mind is deep and complex, and it is well-known that psychopathology can be hard to fathom. But academic approaches that make something that is inherently complex appear even more complicated should be discouraged. The study of psychopathology should not be over-simplified, but can certainly be simplified, at least for the sake of first year postgraduate residents in Psychiatry. The study of psychiatric symptoms and signs should have tight integration with practical psychiatric assessment and diagnosis in outpatient and inpatient scenarios, and should not be conceptualized as an independent, theoretical, "stand-alone" sub-speciality of psychiatry.

An overview of relevant resources

There are currently two widely established systems for classifying mental disorders - Chapter 5 of the International Classification of Diseases (ICD-10) produced by the World Health Organization (WHO)[10] and the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[8] published by the American Psychiatric Association (APA). Both systems have developed excellent glossaries - the ICD-10 Symptom Glossary for Mental Disorders[11] and the DSM-5 glossary of technical terms[8].SCAN (Schedules for Clinical Assessment in Neuropsychiatry)[12] is a set of instruments and manuals developed by the World Health Organization, aimed at assessing, measuring and classifying psychopathology. The SCAN glossary[9] provides very useful differential definitions of various psychiatric symptoms and signs. Many of the definitions provided in the ICD-10 glossary are based on the SCAN glossary. Unfortunately, the exemplary ICD-10 symptom glossaryis now approximately two decades old. It is hoped that a new and enhanced symptom glossary will be released along with ICD-11 in 2017. Since the DSM-5 glossary is the most "recent" glossary at the present, it is cited frequently in this review.

The advantage of a modern glossary such as the one available in DSM-5 is that it is clearly linked to diagnosis, and is designed for practical application. Glossaries and clinical acumen complement each other, and are the two primary forces that facilitate a quick and reliable diagnosis.It is noteworthy that the DSM-5 glossary[8] and the ICD-10 symptom glossary[11] focus on presenting clear definitions and explanations of psychiatric symptoms and signs that are used in their diagnostic criteria - nothing more and nothing less. In other words, these definitions are tailor-made for application in the clinical scenario.

It is strongly recommended that 1st year postgraduate residents first read simple and fundamental references such as the DSM-5 glossary,[8] and the lucid,user-friendly Introductory Textbook of Psychiatry by Black

and Andreasen[13] for crisp and simple definitions of psychiatric symptoms and signs. Additionally, the Introductory Textbook of Psychiatry by Black and Andreasen[13] gives excellent examples. These basic references can serve as stepping stones towards more advanced resources such as Sims' Symptoms in the Mind - Textbook of Descriptive Psychopathology,[6] which is consulted ideally in the 2nd and 3rd years of postgraduate training.

At the beginning of the chapter titled "Schizophrenia spectrum and other psychotic disorders" (pages 87-88) in DSM-5[8], the authors have provided excellent and compact descriptions of psychotic symptoms, including delusions and disorganized thinking (speech). When used along with the glossary provided at the end of the book (pages 817-831), these descriptions are reasonably adequate.Resources such as Introductory Textbook of Psychiatry by Black and Andreasen[13], Kaplan and Sadock's Synopsis of Psychiatry by Sadock et al[14] and structured interviews such as the Mini-International Neuropsychiatric Interview (M.I.N.I.)[15] also provide several structured clinical questions that can be used to elicit psychopathology. In addition to these, postgraduate residents can develop their own personal database of reliable questioning techniques, aided by their teachers.

It is strongly recommended that postgraduate students consult the DSM-5 glossary[8] for the following definitions in the context of disorders of thought and speech: Alogia (p. 817), compulsion (p. 819), delusion (with 13 types) (p. 819), echolalia (p. 821), flight of ideas(p. 821), ideas of reference (p. 823), incoherence (p. 823), magical thinking(p. 824), obsession (p. 826), overvalued idea (p. 826), pressured speech(p. 827) and racing thoughts(p. 828). DSM-5[8] defines tangentiality in p.88, though this term does not feature as a main entry in the DSM-5 glossary.

The ICD-10 symptom glossary[11] also contains lucid definitions of "pressure of speech" and "flight of ideas". This glossary considers "flight of ideas" to be equivalent to "thoughts racing". However, the DSM-5 glossary[8] provides distinct definitions for "pressured speech", "flight of ideas"and "racing thoughts".

The SCAN glossary[9] provides simple definitions of other terms pertaining to thought disorder such as thought blocking, circumstantiality, neologisms, perseveration, poverty of content of speech, etc. Alternative definitions of pressure of speech, flight of ideas and incoherence too are available in the SCAN glossary.[9] This glossary uses the term "knight's move" in the context of derailment.[9]

Additionally, postgraduate students are encouraged to refer to Andreasen's popular Scale for the Assessment of Thought, Language, and Communication[16] for lucid definitions and examples of the following 18 terms: Poverty of speech, poverty of content of speech, pressure of speech, distractible speech, tangentiality, derailment, incoherence, illogicality, clanging, neologisms, word approximations, circumstantiality, loss of goal, perseveration, echolalia, blocking, stilted speech and self-reference.

Certain published rating scales can serve as excellent aids to the study of psychiatric symptoms, in addition to glossaries. For example, the Scale for the Assessment of Positive Symptoms[17] has lucid descriptions of delusions. Other good examples are the explicit descriptions of derailment and incoherence provided in the Scale for the Assessment of Thought, Language, and Communication (TLC)[16]. Such rating scales have specifically been designed for the purpose of psychiatric assessment and thus provide simple, practical and applicable definitions of psychopathology. Therefore, postgraduate students can take heart from the fact that the study of psychiatric symptoms and signs does not always have to involve tiresome wading through copious amounts of long-winded and abstruse text.

Assessment of thought and speech

Postgraduate residents need to remember an important point with regard to the assessment of thought and speech. Examination of thought and speech happens nearly throughout the interview session. Though thought and speech are reported under a particular section of the mental status examination, it does not mean that we wait till we get to a particular stage of the interview before we elicit and document thought disorder. For example, evidence for derailment might be evident 5 minutes into the psychiatric interview; suicidal thought content might emerge towards the end of the interview. Information about the patient's speech and thought elicited/observed/reported during the interview will be documented as a part of the mental status examination. Information about the patient's speech and thought prior to the interview will be documented as part of history. A designated space is kept ready in the template for noting down clinically useful speech samples, whenever they become available. The interviewer needs to keep a blank and comprehensive template with "placeholders" ready,

so that information about psychopathology can be documented in exclusive slots, in whatever sequence the symptoms/signs happen to be expressed/elicited. Such a template will also ensure that vital components are not missed. Of course, such a template can easily be incorporated into a printed psychiatric workup form. The shuffling of the sequence to conform to the standard and accepted method of reporting can be done in real-time, during the presentation. In other words, symptomatology need not be, or sometimes cannot be elicited in the same sequence as it has to be reported during a case presentation; often, symptomatology cannot be presented in the same sequence as it was elicited.

Several authorities [18–20] include thought in tandem with speech in the format for reporting the mental status examination. This seems absolutely rational. The "speech - mood/affect - thought" sequence doesn't, in fact, make perfect sense. It does not seem quite logical to speak about the patient's mood/affect right after presenting details about the patient's speech, before talking about the patient's thought. This format conveys the erroneous impression that speech is somehow completely distinct from thought. Thought and speech go hand in hand, since it is only through the patient's speech that we usually derive inferences about the patient's thought. From a broad perspective, the patient's language (speech and writing) is a window into the patient's thought. This logic is brought forth clearly in the popular phrase "Thought, language and communication" propounded by Andreasen,[16,21] a distinguished leader in the field of thought disorder. Andreasen emphasizes that thought disorder is usually inferred from the patient's language behaviour; we can only infer a person's thoughts from his/her speech, though thought and language are not perfectly correlated.[21] Though thought is not dependent on words,[2] the association between thought and speech holds good In the context of practical psychiatric assessment. Of course, in a typical mental status examination, a large proportion of the data is derived from the patient's speech, apart from information about thought. This includes details about mood, perception, sensorium and judgement too. It is also well known that findings recorded under various domains of the mind clearly influence each other. All things considered, it is advisable for postgraduate residents to present details about patient's thought right after describing patient's speech, in tandem.A sample of the patient's speech and a recent written sample, if available, will make a vital contribution towards the assessment and interpretation of thought.

A vital issue needs to be borne in mind during the assessment of thought and speech. Certain neurological conditions may be associated with a speech disorder that may be mistaken for "thought disorder". Neurological speech disturbances and "organic" disorders of language will always have to be considered in the differential diagnosis and ruled out, before concluding that the "thought disorder" is part of a primary psychiatric disorder. Of course, this is in line with one of the cardinal tenets of clinical psychiatry - Psychiatric disorders due to another medical condition ("secondary mental disorders") need to be ruled out before considering a primary mental disorder.The broad categories of "organic"speech disturbance are as follows: dysphonia, which is caused by a local problem in the larynx; dysarthria, which can occur in association with lesions affecting the brain stem, muscle or cerebellum; and dysphasia (also termed aphasia), which is due to lesions of the cerebral cortex.[22] The relationship between thinking and language is as complicated for "organic" disorders as it is for schizophrenia: there can be quite marked disturbance in the use of language with no apparent thought disorder.[6] Postgraduate residents are urged to consult standard textbooks of neurology to update their knowledge about various neurological speech disturbances and "organic" disorders of language. Sims' Symptoms in the Mind - Textbook of Descriptive Psychopathology[6] also contains useful material that assists in the differentiation of "organic" disorders of language from schizophrenic language disorder. (Note: According to ICD-10[10], the term "organic" means simply that the syndrome so classified can be attributed to an independently diagnosable cerebral or systemic disease or disorder. Example: Cerebrovascular disease)

A bipartite approach to thought disorder

The bipartite assessment and reporting of thought disorder under the categories of process and content is supported and endorsed by the following contemporary and authoritative references -

- APA Guidelines on Psychiatric Evaluation of Adults[23]
- Kaplan and Sadock's Comprehensive Textbook of Psychiatry by Sadock et al[24]
- Kaplan and Sadock's Synopsis of Psychiatry by Sadock et al[14]

- The Psychiatric Interview: Evaluation and Diagnosis by Tasman et al [25]
- Psychiatryby Tasman et al[20]
- American Psychiatric Publishing Textbook of Psychiatry by Hales et al[18]
- The Medical Basis of Psychiatry by Fatemi et al[19]

Thought process refers to how thoughts are formulated, organized and expressed.[14] According to Akiskal,[19] thought form/process refers to how ideas or associations are put together in an observed sample of speech and in what sequence and speed.Thought content is essentially what thoughts are occurring to the patient.[4] This is inferred by what the patient spontaneously expresses, as well as responses to specific questions aimed at eliciting particular pathology.[4]Disorders of content of thought include abnormalities in beliefs and in interpretation of experiences.[26]

It is useful to remember, at this juncture, that the various functional components of the mind such as emotion, thought, perception etc., are artificial and abstract. These are not like, for instance, the chambers of the heart or the lobes of the lung. These domains of the mind have profound interconnections. Because the mind is so incredibly complex and deep, we certainly need a convenient framework for the practical assessment and reporting of psychopathology. But, the same system can become counter-productive and complicate matters by the introduction of too many headings and sub-headings. The postgraduate resident needs to focus on eliciting and documenting psychopathology rather than become confused over "where do I fit this sign/symptom"! Our primary aim is to diagnose and treat the patient who has approached us or has been brought to us for relief of suffering. This needs to be done in the shortest possible time. The goal of psychiatric assessment should be to understand the patient and arrive at a reliable diagnosis as quickly as possible and should not merely be an academic exercise involving the laborious and futile slotting of mental symptoms into innumerable compartments that have poor validity and dubious clinical utility.

The traditional method of reporting disorders of thought under four headings - stream (tempo and continuity), possession (obsessions, compulsions and thought alienation), content (delusions) and form - does not have adequate support in the current psychiatric literature. This scheme can safely be replaced by the broad, contemporary, bipartite "process and content" format without any loss of clinical data.

The term "thought process" appears to be much more frequently used, in contrast to the term "form of thought" in contemporary textbooks. Andreasen has attempted to clarify the distinction between these terms, but admits that the boundary is not clear.[26] A few authors[14,19] use these two terms interchangeably. Based on this review, it is safe to conclude that formal thought disorder can be considered to be equivalent to and subsumed under disorders of thought process.

Postgraduate students should note that the form-content distinction is employed in another context too, which can be a source of confusion. This is the larger context of phenomenology as a whole. Sims' Symptoms in the Mind - Textbook of Descriptive Psychopathology[6] provides a description of the form-content distinction with reference to phenomenology in general, in the introductory chapter. This can be illustrated through an example. In a given patient, is a particular phenomenon a disorder of perception, or a disorder of thought? Is the patient "hearing voices" or "having strange thoughts?" Is it a hallucination or a delusion, or an overvalued idea? This is the "form" of the psychopathology. What are the voices saying? This is the "content" of the psychopathology. What are the strange thoughts about? Once again, this is the "content" of the psychopathology. This can be clarified further using an example provided in Sims' Symptoms in the Mind - Textbook of Descriptive Psychopathology[6] - "Hypochondriacal content can occur in more than one form. It could take the form of an auditory hallucination in which the patient hears a voice saying 'you have cancer'. It could be a delusion, in that he holds with conviction the false belief that he has cancer."

Recommended template for describing speech and thought

Speech

Comment on the following parameters: Fluency, amount, rate, tone, and volume[4]

Look for pressured speech, poverty of speech, poverty of content of speech etc.

Thought process (form)

Is the patient's thought process linear, organized and goal-directed?[14]

Are the patient's responses relevant? Is his/her speech coherent?

Look for major signs of disorganized thought such as derailment, incoherence, tangentiality

Look for circumstantiality, clanging, flight of ideas, illogicality, neologisms, perseveration, racing thoughts, thought blocking etc. (listed here in alphabetical order)

Thought content

Delusions, overvalued ideas, ideas of reference, magical thinking, obsessions, compulsions, worries andpreoccupations, suicidal themes, phobias etc.

It is noteworthy that, in routine case presentation formats, there exists overlap between various parameters used to describe speech and parameters used to describe thought process. This overlap is apparent in several contemporary textbooks, and is visible in the template provided above. For example, postgraduate residents are often expected to comment about relevance and coherence of the patient's speech. These two parameters are actually related to thought process. There does not seem to be a simple solution to this problem, other than merging the sections pertaining to speech and thought process. Akiskal combines speech and thought into one section, in his description of the format of the mental status examination.[19]

Notes on certain controversial / complex thought phenomena

Thought insertion, withdrawal, broadcastingand passivity phenomena

According to several contemporary and modern references[4,8,13,14,19,27], thought insertion, thought withdrawal and thought broadcasting are clearly classified as delusions. All delusions are always reported under content of thought. Therefore, it follows that thought insertion, thought withdrawal and thought broadcasting have to be reported under thought content. The fact that ICD-10[10] has listed these symptoms under a separate group "(a)" in the list of diagnostic criteria for schizophrenia without actually calling them delusions can be a source of confusion. It is noteworthy that the SCAN glossary adopts a complex approach and uses the term "delusional physical explanations" to represent "delusional explanations" of "experiences" such as thought insertion or broadcast.[9]It would be interesting to see how these controversial issues are resolved in ICD-11. However, it is clear that the majority of current references classify the aforementioned phenomena as delusions and it safe for postgraduate residents to adopt this approach. Passivity of affect('made' feelings), passivity of impulse('made' drives) and passivity of volition('made' volitional acts) are all equivalent to delusions of control.[6] Passivity of thought is a delusion of control of thought.[6] Thus, all passivity phenomena can conveniently be reported under content of thought.

Derailment and incoherence

Point "(f)" in the ICD-10 criteria[10] for schizophrenia reads as follows: "breaks or interpolations in the train of thought, resulting in incoherence or irrelevant speech, or neologisms." It is apparent that ICD-10 implies disorder of form of thought through this statement, but does not use terms such as derailment or loosening of association. Correspondingly, the ICD-10 symptom glossary[11] does not contain an entry for derailment or loosening of association. Instead the ICD-10 symptom glossary[11] provides a simple and succinct definition of incoherence - "Incoherence is a disorder of speech (and thought), in which the main features are distortion of grammar, unexplained shifts from topic to topic and lack of logical connection between parts of speech." The ICD-10 symptom glossary's concept of incoherence is thus, quite broad. It seems to encompass both derailment and incoherence as described by DSM-5[8]and Andreasen[13,16,26].The DSM-5 glossary[8] does not have a separate entry for derailment, though the term is explained clearly in the context of incoherence. It is noteworthy that this distinction between incoherence and derailment provided by the DSM-5 glossary is in concordance with that provided by Andreasen.[16,26] According to DSM-5[8], "incoherence is speech or thinking that is essentially incomprehensible to others because words or phrases are joined together without a logical or meaningful connection. This disturbance occurs within clauses, in contrast to derailment, in which the disturbance is between clauses. This is sometimes referred to as word salad".

In this context, it is pertinent to point out that the DSM-5[8] criterion A for schizophrenia exemplifies how evolution and simplification can happen simultaneously. There are just five straightforward components listed - delusions, hallucinations, disorganized speech (e.g., frequent derailment or incoherence), grossly disorganized or catatonic behavior and negative symptoms. Of these, two (1 and 3) are primarily disorders of thought.

Of course, these are similar to what appeared in DSM-IV too. It is also noteworthy that the terms "disorganized thought", "disorganized speech" and "formal thought disorder" are used interchangeably.[8,13] DSM-5[8]suggests derailment and incoherence as examples for disorganized speech, implying the importance of these two terms. Postgraduate students are urged to read the excellent examples of derailment and incoherence provided in the Introductory Textbook of Psychiatry by Black and Andreasen,[13] and the Scale for the Assessment of Thought, Language, and Communication.[16]

Andreasen does not recommend usage of the term "loose associations" and states that the term "derailment" is to be preferred and describes reasons for the same.[21] The term "loosening of association", frequently used in psychiatric case presentations, is not a main entry in the DSM-5 glossary, though it is mentioned as a synonym for derailment,within parentheses, in the section describing disorganized thinking in p.88 of DSM-5.[8]

Thought echo, loud thoughtsand audible thoughts

Point "(a)" in the ICD-10 criteria[10] for schizophrenia includes the term "thought echo."The SCAN glossary[9] classifies both loud thoughts and thought echo as "subjectively described" thought disorder. It is interesting to note that neither of these terms are included in the DSM-5 glossary and index[8].

According to the ICD-10 symptom glossary[11] and the SCAN glossary,[9]thought echo is "the experience of one's own thoughts being repeated or echoed (but not spoken aloud), with a few seconds' interval between the original and the echo. This must be differentiated from auditory hallucinations of voices repeating one's thoughts. In thought echo, the repetition itself is perceived as a thought."

The SCAN glossary[9] defines loud thoughts as follows: "Respondents say that their own thoughts seem to sound 'aloud' in their head. Respondents recognize that thinking, which is normally a silent process, is now taking the form of sound. The symptom has to be distinguished from auditory hallucinations, where respondents no longer experience the loud thoughts as their own. Hallucinations of voices repeating one's thoughts are classified under hallucinations (voices commenting on thoughts or actions)."The SCAN glossary[9] emphasizes that loud thoughts are distinct from thought echo. It is also evident from the aforementioned descriptions that neither of these phenomena are to be interpreted as perceptual abnormalities.

Oyebode[6] defines audible thoughts as "the patient's experience of hearing his own thoughts said out loud. The symptom sometimes carries its German name, Gedankenlautwerden, or its French one, *écho* de pensées. The patient may hear people repeating his thoughts out loud just after he has thought them, answering his thoughts, talking about them having said them audibly or saying aloud what he is about to think so that his thoughts repeat the voices. The patient knows that they are his thoughts, yet he hears them audibly while he is thinking them, just before or just after."Oyebode[6] reiterates that this is a disorder of perception, an auditory hallucination. Synopsis of Psychiatry[14] defines audible thought as "a form of auditory hallucination in which everything the patient thinks or speaks is repeated by the voices, and adds that's this is also known as thought echoing."It is noteworthy that this term does not appear in the DSM-5 glossary and index.[8]

The passages presented above bear clear testimonyto the tenacious controversies that continue to plague certain areas of psychopathology. Definitions of "audible thoughts" provided in Sims' Symptoms in the Mind[6] and Synopsis of Psychiatry[14] thus seem to be somewhat different from the definition of "loud thoughts" provided by the SCAN glossary.[9] Besides, Synopsis of Psychiatry[14] considers "audible thoughts" to be equivalent to "thought echo". The clinical/diagnostic utility of these confusing terms and the prevalence of these phenomena remain unclear. A search was conducted across all fields of the PubMed database using these terms, with no filters activated, to ascertain the approximate frequency of appearance of these terms in published research literature. A search for the term "thought echo" yielded 6 citations. A search for the term "loud thoughts" yielded one citation. A search for the term "audible thoughts" returned 2 citations. In comparison, a search for the term "delusion" yielded10, 234 results, while a search for the term "hallucination" returned 14,667 results. Note that PubMed comprises more than 24 million citations for biomedical literature, according to the statement that appears on the PubMed website.

A word of caution

Postgraduate students need to be warned about mislabelling, "false positives" and "false negatives".

Psychotic patients are often bewildered and find it difficult to comprehend their complex psychotic experiences. Key relatives of such psychotic patients too are likely to be puzzled, and are often not aware of the precise nature of the psychotic thought phenomena being experienced by the patient. Often, patients find it difficult to understand the questions the clinician asks, even if the clinician and patient share the same degree of fluency in the language being used for the interview. An impatient postgraduate resident, armed with a handful of glossary terms and a list of structured questions, glancing anxiously at the clock ticking away, can easily lead or "mislead" a psychotic patient into giving inaccurate and superficial responses. In addition, socio-cultural factors contribute significantly to this problem. We have seen eager postgraduate residents perform a seemingly thorough psychiatric assessment and report phenomena such as delusions of control or derailment, when they, in fact, do not exist in the given patient. These are complex symptoms that need to be elicited with extreme care and diligence. Sometimes, crucial symptoms are missed too. Needless to say, empathy, rapport, language, practice and sociocultural sensitivity are of paramount importance. These vital elements increase the probability that the assessment of thought will be a fruitful and productive endeavour.

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