

Rhythm and Abnormal Processing

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Mini Review

The plight of Johann Wolfgang von Goethe's tortured protagonist, Werther, started the phenomenon known as Werther-Fieber ("Werther Fever") which caused young men throughout Europe to dress in the clothing style described in *The Sorrows of Young Werther*. The 1774 novel is also thought to have inspired other, less adaptive, modelled behaviors such as suicide.

The influence of art's content on human behavior is of interest to the field of Psychiatry. An individual's mental status is comprised of several components that can be taught by course directors in Psychiatry using the acronym ABC STAMP LICKER [1]. The "T" in the acronym stands for "Thought" which may be subcategorized into thought content and thought process. Simply stated, thought content is what we think (our ideas) while thought process is how those ideas are expressed (e.g. in an organized or disorganized form).

While the content of artistic expression (including literature and music) has been the subject of prior debate [2], its process may play an equally important role in the imitation of maladaptive behaviors. At Rutgers Robert Wood Johnson Medical School, the mental status exam (MSE) is taught to psychiatry residents in training in a didactic titled "Musical Rhythm and Abnormal Thought Process." What differentiates our didactic from other pedagogical courses is that we use examples from art including film and music to reach course objectives. This paper focuses on one example of music, rap (MCing), and reviews how it may be used to illustrate common deficits in thought process.

Methods

Common MSE findings in formal thought disorder

The concept of a formal thought disorder is appreciated when differentiating a psychotic disorder (such as schizophrenia or shared psychotic disorder) from someone's personality (e.g. schizotypal traits). Schizotypal Personality Disorder occurs in about three percent of the population. The gender ratio is unknown. The disorder is characterized by thoughts, beliefs, and behaviors that are socially isolative and bizarre as is illustrated by Martin Scorsese's character, Travis Bickle, in *Taxi Driver* (1976). In the absence of abnormal thought process, it was purely the movie's content that allegedly triggered John Hinckley's attempted assassination of President Ronald Reagan (1981). Hinckley stated that his actions were an attempt to impress actress Jodie Foster by modelling Travis's mohawk appearance at a political rally (his attorney concluded his defense by playing a movie clip for the jury). Individuals with a schizotypal personality may display evidence of deficits in thought content (such as paranoid beliefs) albeit in an

attenuated form. They therefore may manifest paranoia and talk to themselves (see example of Travis Bickle below).

Despite a greater association of schizotypal cases existing among the biological relatives of patients with schizophrenia, the two conditions are separate diagnoses. Given the overlap, how does one differentiate an individual with schizotypal personality from one afflicted with a psychotic illness? The single best answer is that the former does not display aspects of a formal thought disorder. Stated differently, an individual with a schizotypal personality characteristically does not portray deficits in thought process. In *Taxi Driver*, Bickle looks into a mirror imagining a confrontation which would give him a chance to draw his gun. His infamous soliloquy illustrates abnormal thought content with normal thought process (Table 1).

		Is there a deficit in Thought Process?	
		Yes	No
Is there a deficit in Thought Content?	Yes		Travis Bickle ^a
	No	Raymond Babbitt ^b	

^aTaxi Driver (1976); ^bRain Man (1988).

Table 1: Film depictions of mental status exam deficits.

"You talkin' to me?"

You talkin' to me? You talkin' to me?

Then who the h-ll else are you talkin' to?

You talkin' to me?

Well I'm the only one here.

Who the f-ck do you think you're talking to?"

Like Bickle, "schizotypal personalities" are often able to clearly articulate their ideas in an organized and logical manner no matter how bizarre those ideas may be.

Another famous movie scene illustrating these definitions is *Rain Man*. In the 1988 drama, Dustin Hoffman's character, Raymond Babbitt, speaks about Qantas' unprecedented safety statistics (thought content) in a stereotyped, repetitive manner (i.e. disorganized thought process). Watching *Taxi Driver* and *Rain Man* as a double feature is an innovative way to demonstrate the two examples of MSE findings where one element of "thought" is abnormal while the other is preserved (Table 1).

Didactics that teach the different components of the MSE may be supplemented by examples from music. In this way, thought process is the "rhythm" of our thoughts/speech while thought content is the lyrical score. Course directors in psychiatric medical education are

delegated with the responsibility of teaching the MSE. This task is traditionally approached with bedside teaching providing an experiential component to a core didactic. One potential barrier to this approach is the inconsistency of clinical findings to supplement what is taught in the classroom. We advocate for the use of music to supplement the traditional model. Music is one medium that allows for simple, consistent, demonstrable findings that students can access via a university's iTunes or intranet. In the following section, MSE terms that describe thought process are defined and lyrics from rap music are provided as examples.

Perseveration and verbigeration

Perseveration is the inappropriate repetition of a thought after the causative stimulus has ceased. It is differentiated from verbigeration in that the latter is a repetition of a particular response such as a word (e.g. "clean") or phrase. Usually caused by brain injury or another organic disorder, the verbigeration also persists despite the termination of a stimulus:

My gun dirty, my brick clean
Im ridding dirty, my d-ck clean
She talk dirty but her mouth clean
"MC Hammer" by Rick Ross [3]

Looseness of associations

"Looseness" is a process of thinking in which the association of ideas is so vague, fragmented, diffuse, and unfocused so as to lack any logical sequence or relationship to any preceding concepts or themes:

I'm sticking to the script like lint on denim
I'mma say it if the rules aint bent don't bend em'
real n-gga talking
check shut the f-ck up hoe
gotta do it one time for Haiti, wattung zoe
Weezy F Baby and the F is for Front though
cause thats why I bring it
Soo Woo if you banging
"Miss Me" by Drake [4]

Verbigeration with Looseness of Associations

Patients often come to clinical attention with multiple deficits in thought process as exemplified by the following songs:

She she got that good good
she got that got that good
she got she got that got that
she she got that good good,
she michael jackson bad im attracted to her for her attractive-ss
"I Am Not A Human Being" by Lil Wayne [5]

Looseness of associations with rapid speech (Flight of ideas)

In addition to the following taken from No Love (2010) illustrating looseness of associations, Eminem rapidly completes the entire verse in less than 90 seconds [6].

I'm alive again
More alive than I have been in my whole entire life
I can see these people's ears perk up as I begin
To spaz with the pen, I'm a little bit sicker than most
Sh-t's finna get thick again
They say the competition is stiff
But I get a hard d-ck from this sh-t, now stick it in
I ain't never giving in again
Caution to the wind, complete freedom
Look at these rappers, how I treat them
So why the f-ck would I join them when I beat them
They call me a freak because
I like to spit on these p-ssies fore I eat them
Man get these whack c-cksuckers off stage
Where the f-ck is Kanye when you need him?
Snatch the mic from him, b-tch I'mma let you finish in a minute
Yeah the rap is tight
But I'm 'bout to spit the greatest verse of all time
So you might want to go back to the lab tonight and um
Scribble out them rhymes you were going to spit
And start over from scratch and write new ones
But I'm afraid that it ain't gonna make no difference
When I rip this stage and tear it in half tonight
It's an adrenaline rush to feel the bass thump
In the place all the way to the parking lot, fellow
Set fire to the mic and ignite the crowd
You can see the sparks from hot metal
Cold-hearted from the day I Bogarted the game
I so started to rock fellow
When I'm not even in my harshest
You can still get roasted because Marsh is not mellow
Til I'm toppling from the top I'm not going to stop
I'm standing on my Monopoly board
That means I'm on top of my game and it don't stop
Til my hip don't hop anymore
When you so good that you can't say it
Because it ain't even cool for you to sound cocky anymore

People just get sick cause you spit
These fools can't drool or dribble a drop anymore
And you can never break my stride
You never slow the momentum at any moment I'm about to blow
You'll never take my pride
Killing the flow, slow venom and the opponent
Is getting no mercy, mark my words
Ain't letting up, relentless
I smell blood, I don't give a f-ck: keep giving them hell
Where was you when I fell and needed help up?
You get no love

Non sequiturs

Non sequiturs are responses that have no relevance to what precede it or conclusions that do not follow from the premise:

You're broke, the kid ain't yours, and e'rybody know
Your old man say you stupid, you be like, "So?"
I love my baby mother, I never let her go"
"Party Up" by DMX [7]

Clang associations

In "clanging," words are chosen or repeated based on similar sounds instead of semantic meaning. Given the importance placed on "sound over meaning," all types of music have their representative examples of clanging. Examples from rap include "I'm Going In" by Lil Wayne (2009) and "Monster" by Kanye West and Jay-Z (chorus by Nicki Minaj) [8]:

Bad to the brissle
Half to the rissle
I'm so official all I need is a whistle
B-tch named Crystal
Let her s-ck my pistol
Lil Wayne
With a bad b-tch that came from Sri Lanka
Yeah I'm in that Tonka, colour of Willy Wonka
You could be the King but watch the Queen conqu-a
Nicki Minaj

Neologisms

First attested in English in 1772, a neologism is a newly coined word or phrase that may be in the process of entering common use (hip hop), but has not yet been accepted into mainstream language:

And I be stuntin' like my daddy
Stuntin' like my daddy
Stuntin' like my daddy

I be stuntin' like my daddy
I'm the, young stunna
Stuntin' like my daddy
Stuntin' like my daddy
I be stuntin' like my daddy
"Stuntin' Like My Daddy" by Lil Wayne [9]

Thought blocking

Thought blocking is a deficit in thought process experienced when one's train of thought is curtailed absolutely:

Yo, Drizzy sayin' get her I'ma get her
I get the kind of money that make a broke bitch bitter
I got that kinda..... [thought block] wait..... wait fixate!
"Up All Night" by Nicki Minaj [10]

Discussion

Much has been debated about the modelling effect of art's content [2]. For example, it has been hypothesized that The Basketball Diaries (1995), which features a fantasy sequence with the antagonist wearing a black trench coat and using a shotgun on his classmates while roaming the school's hallways, inspired the Columbine High School massacre. While we continue to ponder the conscious and unconscious motivation of such violent acts, the process by which the content is conveyed has largely gone under-recognized.

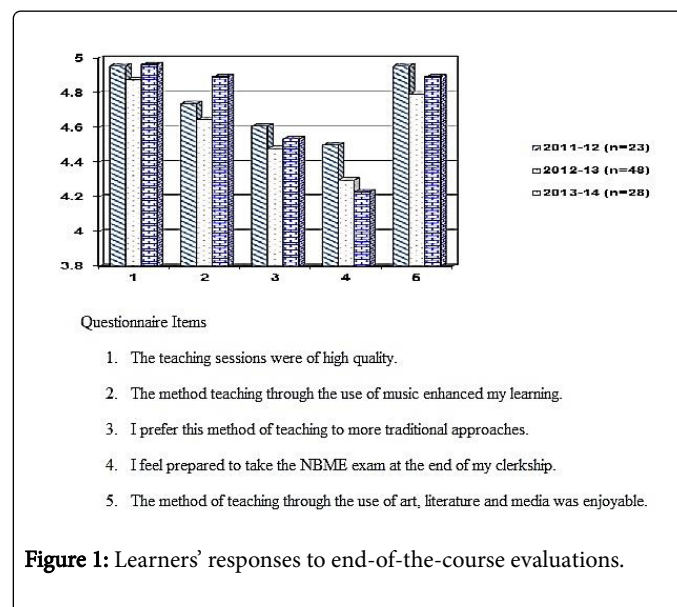


Figure 1: Learners' responses to end-of-the-course evaluations.

The MSE is traditionally taught in the basic science years of medical education with video clips or simulated patients demonstrating the topic of discussion (e.g. thought process). At our medical school, we found that the use of film supplemented with examples from music (Table 2) was well-received by residents and students (Figure 1). While the results provide information on the strengths and weaknesses of the curriculum and help identify areas of potential quality improvement, they are limited to subjective survey results. Future research should include data such as NBME scores to measure objective outcomes.

While the use of music has had success in illustrating aspects of the MSE, the clinical application of music's role is a topic of future research [11,12]. Another limitation of our study is that if taken out of context,

it may contribute to cultural bias. Course directors need to exercise caution by introducing the didactic with specific goals and objectives including the demonstration of MSE findings.

Deficit	Description ^a	Example	Example
Perseveration	Pathological repetition of the same response to different stimuli	MC Hammer by Rick Ross	I Am Not A Human Being by Lil Wayne
Verbigeration	Meaningless repetition of words or phrases		
Looseness of Associations	A disorder in the logical progression of thoughts; unrelated ideas shift from one subject to another	Miss Me By Drake	
Flight of Ideas	Rapid succession of fragmentary thoughts or speech in which content changes abruptly	No Love by Eminem	
Clang Associations	Speech directed by the sound of a word rather than by its meaning	Monster by Lil Wayne (chorus by Nicki Minaj)	
Neologisms	New word whose derivation cannot be understood or that has been incorrectly constructed but whose origins are understandable	Stuntin' Like My Daddy by Lil Wayne	

^aSadock BJ, Sadock VA (2007) Kaplan and Sadock's Synopsis of Psychiatry tenth edition. Philadelphia, PA: Lippincott & Wilkins.

Table 2: Summary of cognitive deficits on mental status examination.

Conclusion

The assessment of thought content and process is germane to post-graduate education. Residents and medical students rotating through psychiatry must adeptly perform the MSE and analyze their findings in the context of observed and reported behavior. To assist in this task, course directors often use simulated patients and other media to illustrate MSE findings. A medium such as music has the advantage of familiarity such that the learner can apply a new principle to a previously known song. The opportunity to apply, analyze, synthesize, and evaluate information in this way is necessary for integration of knowledge [13] and thus underscores the importance of media's role in medical education.

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