

Echothymia: Environmental Dependency in the Affective Domain

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Echothymia is stimulus-bound affective behavior, an echophenomenon in the domain of affect. Like echolalia and echopraxia, it is a concomitant of the environmental dependency associated with dysfunction of the frontal–striatal systems that mediate so-called frontal lobe functions. The authors introduce the definition and phenomenology of echothymia, overview its differential diagnosis and clinical significance, and suggest ways in which understanding echothymia may contribute to clinical management.

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Diseases affecting the frontal lobes and their associated frontal–striatal circuits are often associated with environmental dependency. As the capacity for initiative and flexible thinking declines, behavior is increasingly controlled by the environment. This may present as disinhibition or mirroring. Mirroring implies that behavior itself conforms to the sensory–motor structure of the environmental. In echopraxia (imitation behavior), the patient raises a hand when, for instance, someone else raises a hand. In echolalia, the patient repeats what someone else says. And in utilization behavior, the patient, in a similarly automatic fashion, grasps or begins to use an object simply because it is within view or within reach, for example, beginning to eat as soon as food is within reach.

All are characterized by the seemingly automatic tendency to imitate another person's speech (echolalia), gestures (echopraxia), or affect (echothymia). In echothymia, behavior is bound to affective features of the

environment. In utilization behavior, the sensorimotor stimulus elicits seemingly automatic motor behavior that reflects the conventional social meaning of the stimulus. In a descriptive sense, disinhibition and mirroring both reflect environmental dependency because the balance between "independence" and "dependence" is shifted toward dependence.¹ L'Hermitte introduced the term "environmental dependency," referring to a syndrome, not a simple behavior or "symptom," in which patients carry out complex behaviors elicited by their environment, for example, behaving like a doctor.

"Utilization behavior," also introduced by L'Hermitte, refers to similar environmental dependency, evidenced by automatic behavior in the more restricted setting that permits bedside testing. In this latter respect, utilization behaviors are similar to the echophenomena described here: they are simple observations made in a clinical setting, although they may be part of a more complex environmental dependency syndrome. In this article, environmental dependency refers to the former, a description of the fact that the patient's behavior mirrors, or "echoes," features of the environment. We propose that echothymia, as well as echolalia, echopraxia, and utilization behavior, are all, in this descriptive sense, signs of environmental dependency.

Echophenomena are named for the Greek nymph, Echo, who attempts to protect Hera from learning of Zeus' infidelities by talking to her incessantly. When discovered, Hera, Queen of the Greek pantheon, curses Echo: she shall speak only what others speak to her. Echothymia is thus named for Echo and *thymos*, spiritedness. *Thymos* relates echothymia to other contemporary terms rooted in disturbances of emotion, for example, dysthymia and cyclothymia. Thus, echothymia is a behavioral phenomenon in which a person's affect automatically reflects or mirrors the perceived affect of the social or physical environment.

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CASE REPORTS

Case 1

"Mrs. C," an 83-year-old widowed homemaker with dementia of the Alzheimer's type, was admitted because of depression, anxiety, and suicidal ideation. She presented multiple symptoms of depression, including depressed mood, anxiety, decreased sleep, decreased interest, frequent crying, decreased concentration, and paucity of speech. On the Montreal Cognitive Assessment (MoCA) scale, she scored 21/30, with particular difficulty in visuospatial/executive function and attention tasks. Neuropsychological testing showed impaired verbal and nonverbal memory, poor performance on the Wisconsin Card-Sorting Test, and difficulty with initiation and perseveration in drawing and writing.

Team members noted that Mrs. C was especially sad after visits from her supportive but anxious daughter. In private, the daughter acknowledged that she felt helpless and guilt-ridden about her mother's decline. Over several days, team members observed that Mrs. C is generally in good spirits, but her mood downturns during and immediately after the daughter's visits. Eager and anxious to see how mother is doing, the daughter begins each visit with an anxiety laden, "Hi, Mom, how ARE you? Are you feeling better yet?" and presents these questions with an apprehensive intonation and facial expression.

Discussing these observations with the team, the daughter acknowledged the possibility that her emotional state may be influencing her mother's. After the staff helped the daughter to become aware of this, the family's visits take a different turn. The daughter prepared herself for the visits by being aware of her own feelings, and she developed a more upbeat way of greeting her mother. She came prepared to offer her mother pleasant recollections of Mrs. C's grandchildren. The daughter promptly recognized the improvement in her mother's emotional state and also felt empowered by her ability to benefit her mother. After only 3 days' hospitalization, Mrs. C. was discharged home, where follow-up confirmed that she remained euthymic, despite moderate cognitive impairment and apathy.

Case 2

"Mrs. D" is a 78-year-old woman with vascular dementia, admitted to the medical service because of pneumonia. At baseline, she was generally pleasant, but

at times she was irritable. She is moderately impaired cognitively. When approached by staff, she smiles and laughs at some points, but becomes annoyed and impatient at others. At times, she is physically aggressive. The Medicine team considers an atypical antipsychotic and a mechanical restraint for "agitation," but first elects to consult Psychiatry.

The consulting psychiatry team learned that Mrs. D's nurse has been somewhat harsh with Mrs. D and her roommate. The consultant learns that the nurse was indeed in great distress because she just learned that her own elderly mother may have cancer. She acknowledges that her emotions have been "getting the best of her" and that she may be displacing them onto her patients, especially onto the irritable patients—Mrs. D., in particular.

In her interview with the inpatient team, Mrs. D initially is quite angry about all the disruption on the unit. However, when addressed respectfully and sympathetically, she collects herself promptly. She becomes tearful briefly when asked about her deceased husband, but she is easily distracted by the upbeat mention of her daughter and grandchildren. She scores 21/30 on the MoCA, with particular difficulty on the Trails B, Clock-Drawing, Delayed Recall, and Word Fluency items. Mrs. D also demonstrates intermittent echolalia; that is, she occasionally repeats short phrases used by the examiner, and utilization behavior, for example, stirring an empty cup with a spoon at the bedside and repeatedly reaching for the examiner's pen when it is presented to her. Bilateral palmar grasp reflexes were also present; however, echopraxia could not be elicited.

The psychiatry consultant discussed echothymia with Mrs. D's nurse. Understanding that her affect is being mirrored by Mrs. D. provided the nurse with a medical understanding of her own behavior so that she does not feel admonished for letting her personal problems intrude into the clinical setting. In short order, the medical team observed that Mrs. D became calmer and more manageable. Follow-up confirmed that Mrs. D's behavior had improved without pharmacotherapy or physical restraints.

DISCUSSION

Echothymia is best considered a behavioral symptom, although such symptoms are sometimes characterized as a syndrome or a disorder; for example pathological crying or pathological laughter characterized as instances of Involuntary Emotional Expressive Disorder

(IEED).² Diagnosis of echothymia requires clinical observations demonstrating that affective behavior is directly mirroring the affective behavior of others. Also, clinical assessment should demonstrate that it is associated with other evidence of frontal-striatal system dysfunction, for example, reduction in mental control, word fluency, abstraction, motivation, and/or social propriety. Echothymia needs to be distinguished from socially appropriate expression of empathy, or polite behavior, both of which present as a mirroring of affect and are both normal and adaptive. Therefore, diagnosis requires judgment of the social context of the patient's behavior.

Echothymia should not be equated with hypersensitive or increased reactivity. For example, if anger elicits tearfulness in a patient with dementia, the patient's emotionality, as in echothymia, may be an intensified reaction to the social environment; however, the patient's tearfulness is not an "echo" of the other's anger, and thus not an instance of echothymia. Other conditions, for example, IEED or depression, may intensify the patient's affect; diagnosing the response as echothymia would require discriminating the roles of the other condition, and the environmental dependency, that define echothymia.

The term echothymia has been used previously, but to describe different clinical phenomena.³ Brugger refers to echothymia as a psychological component of autoscopic phenomena, which are experiences of seeing one's self as located outside of the body.⁴ Echothymia, therefore, would be the experiencing of one's emotions as outside the body. Kovalev, referring to children and adolescents, regards echothymia as maladaptive social mimicking of others' affective behavior, although it is not clear whether such echothymia includes the subject's actual experiencing of the mimicked affect.⁵ Incidentally, the usage we suggest here is described in a 2009 political blog to describe a woman who "imitates the mood or affect of the person speaking to her." The blogger adds, "This is not uncommon, as we all do it a bit in conversation, and demented folks do it more. Children do it sometimes, though not as often as we'd wish."⁶

Environmental dependency is the essential feature shared by echothymia, echolalia, and echopraxia. Environmental dependency is also characteristic of utilization behavior. Other terms used to describe such stimulus-bound behaviors are imitation, enslavement, and mirroring. Echothymia could be defined with comparable clarity as "stimulus-bound" responding in the domain of affect. The term "stimulus-bound" is probably more

familiar to neuropsychologically-oriented practitioners. Environmental dependency conveys similar meanings in more conventional terms and thus is probably more effective for communicating assessment and management of echophenomena to non-specialist audiences. Environmental dependency also conveys more fully the social or interpersonal context of "echo" symptoms, and thus adds to the ease of describing their functional significance.

In either case, echophenomena and utilization behavior indicate that the patient's behavior replicates or is controlled by sensory, linguistic, or social features of the environment—the imbalance between environmental independence and dependence, as described by L'Hermitte.¹ In all instances, "environmental dependency" or "stimulus-bound" terms designate a behavioral characterization and do not otherwise represent a mechanism of the symptom.

Differential diagnosis of echothymia focuses on primary mood disorders and neuropsychiatric syndromes of affective regulation or emotional expression. Thus, in addition to distinguishing primary mood and anxiety disorders, delirium, and substance abuse/substance withdrawal, differential diagnosis focuses on involuntary emotional expressive disorders (IEED), including pathological crying (or laughter) and pseudo-bulbar affective display.^{2,7} This differential diagnosis is complicated by the fact that diseases causing IEED are associated with other features of frontal-striatal system dysfunction, and thus, co-occurring echothymia or other environmental dependency symptoms.

Echophenomena are described in a variety of disorders, but there is little information regarding their frequency and association with other "frontal" signs, whether behavioral or cognitive. An extensive study by Besnard et al. suggests that imitation behavior and utilization behavior are associated with executive cognitive dysfunction when there is frontal lobe injury.⁸ However, for posterior and subcortical brain regions, executive cognitive dysfunction is less often associated with these environmental dependency symptoms. Echophenomena are reported in childhood disorders, for example, Tourette's syndrome² (in fact, echolalia is so common in Tourette's syndrome that Gilles de La Tourette mistakenly included it as one of his criteria for the "maladie des tics"), autism,⁹ mental retardation,¹⁰ and visual impairment, as well as, in adulthood, for example, in schizophrenia,¹¹ Ganser syndrome,¹² frontal lobe lesions,¹³ delirium,¹⁴ and in elderly persons, for example, in Alzheimer's disease¹⁵ and

frontotemporal dementia.¹⁶ Echophenomena are also recognized in various stroke and aphasia syndromes, especially, perhaps, in transcortical aphasia.^{17,18}

Assessment of the patient with echothymia requires comprehensive medical and neuropsychiatric assessment. Cognitive assessment, including executive cognitive evaluation, is necessary, of course. Laboratory screening is similar to that for patients with disturbances of mood or cognition. Brain imaging and EEG may be indicated, as well, for example, to exclude seizure disorder. As the case illustrations demonstrate, psychosocial assessment is of particular importance in evaluation of echothymia. In particular, the patient's caregiving environment, whether personal or professional, needs to be evaluated carefully. Repeated observation of the interaction between patient and caregiver is usually necessary to establish the correspondence between the patient's affect and the caregiver's behavior. These observations can be complemented by obtaining a history of the relationship between patient and caregiver. It can be helpful to obtain this history in the presence of the patient so that the interaction of the two can be directly observed.

From the standpoint of pharmacotherapy, the main benefit of diagnosing echothymia and other echophenomena is that it avoids unnecessary pharmacological treatment. An echothymic, cognitively-impaired person misdiagnosed with depression or "agitation" is at risk for minor or major complications of psychoactive medication, for example, falls, confusion, hyponatremia, extrapyramidal symptoms, etc. On the other hand, echophenomena may benefit from SSRIs, minor tranquilizers, antipsychotic medication, stimulants, dopamine agonists, and cognitive enhancers. Their benefit may be mediated by biological, neuropsychological, or psychological change.

Thus, pharmacological improvement of mood, anxiety, or judgment may itself reduce the propensity for emotional lability or emotional distress. Cholinesterase inhibitors and other cognitive enhancers (e.g., memantine, amantadine), if they improve cognition, may improve echothymia and other environmental dependency phenomena. Presumably, such improvement reflects improved judgment due to enhanced emotional state or

cognitive capacity. For the same reasons, treatment of medical conditions that aggravate executive cognitive dysfunction may also improve echothymia; for example, sleep-disordered breathing, hypothyroidism, or congestive heart failure. Such improvements may reduce environmental dependence by improving judgment or level of arousal.

It should be noted that all such symptomatic improvements may reduce echothymia in two ways: directly, because the patient's behavior becomes less stimulus-bound; or indirectly, because the patient's behavior becomes less distressing to the caregiver, and therefore the caregiver's behavior itself improves and is thus less likely to be mirrored by the patient.

As suggested by our case examples, the specific treatment for echothymia is psychoeducation and training for caregivers. For highly motivated, intuitive, and intelligent caregivers, even a few minutes can make a big difference: by simply pointing out that the patient is responding to the caregiver's affect, or by explaining that neurological disease increases the tendency to mirror others' emotions. Occasionally, it may be helpful to provide a more extensive discussion of neurological disease and the role of frontal lobe function as a mediator of emotional behavior.

If assessment discloses personality disorder or long-standing conflict with the patient, interventions are more complex. Also, treatment may have to focus on the realities of caregiver burden and the challenge of handling one's own stress or depression. In some instances, psychiatric referral will be indicated. More extensive efforts will be required for providers—personal or professional—who do not understand that brain disease alters social judgment and emotional responsiveness. Educators and administrative supervisors will likely find that discussion of echothymia and other echophenomena increase the value of dementia-education and provide staff with readily-understood neuropsychiatric concepts that they can apply to improve clinical care and caregiver satisfaction.

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