



# Differentiation of *Zaghrouta*, Ululation to Express Joy in the Middle East, from Movement Disorders and Other Conditions

Tarek Elshourbagy <sup>1</sup>, Aliaa Mousa<sup>1</sup>, Mona Adel Mohamed <sup>1</sup> and James Robert Brasic <sup>1,\*</sup>

<sup>1</sup>Section of High Resolution Brain Positron Emission Tomography Imaging, Division of Nuclear Medicine and Molecular Imaging, The Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, Baltimore, Maryland, United States of America

\*Corresponding author: Section of High Resolution Brain Positron Emission Tomography Imaging, Division of Nuclear Medicine and Molecular Imaging, The Russell H. Morgan Department of Radiology and Radiological Science, The Johns Hopkins University School of Medicine, Baltimore, Maryland, United States of America. Email: brasic@jhmi.edu

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## Abstract

**Introduction:** Clinicians are trained to elicit symptoms and signs to formulate a differential diagnosis. Ruling out treatable diseases is crucial. Movement disorders specialists interpret observable behaviors as indicators of potential pathological processes. Movement disorders specialists must be able to identify symptoms and signs of organic disorders as well as actions that represent normal behaviors in healthy members of specific ethnic and cultural groups. The goal of this presentation is to describe *zaghrouta*, a manifestation of joy in the Middle East and other cultures, and to differentiate this normal expression of feelings from movement disorders, exaggerated startle responses, and functional disorders.

**Case Presentation:** A 29-year-old Egyptian woman observed the performance of *zaghrouta* frequently for happy events in her family, neighborhood, and community since early childhood as long as she can remember. Ten years ago she herself first performed *zaghrouta* at the engagement party of her friend. Since then she has performed *zaghrouta* five or six times a year to express happiness for cheerful events.

**Conclusions:** *Zaghrouta* may resemble pathological behaviors seen in movement disorders such as tardive dyskinesia, focal seizures, psychiatric manifestations such as catatonia in schizophrenia, tics in the syndrome of Gilles de la Tourette, and functional disorders. Therefore, clinicians around the world must be able to differentiate this normal behavior to express emotions from abnormal behaviors indicating pathology.

**Keywords:** Conversion Disorder, Contingent Negative Variation, Culture, Emotions, Grief, Happiness, Hyperekplexia, Malingering, Glycine Receptors, Focal Seizures

## 1. Introduction

Just as the difference between music and noise is in the ear of the listener, the perception of deviance in behavior is in the eye of the beholder. In other words, specific actions and behaviors that clearly are abnormal in one cultural setting may be normal expressions of emotion in other cultural contexts.

The meanings of movements are shaped by their cultural contexts. Actions and behaviors that are abnormal in one cultural setting may be normal expressions of emotion in others. Some voluntary behaviors interpreted as normal expressions of emotion in some cultures may be misinterpreted as pathological phenomena in others. Clinicians must be aware of the expressions of emotion in others cultures to differentiate normal from pathological behaviors (1, 2).

The goal of this report is to describe *zaghrouta* (*zagha-reetl* (3) is the plural), an expression of happiness common in women in the Middle East, to facilitate its differentiation from symptoms and signs of medical conditions, especially movement disorders (4) and other neuropsychiatric disorders.

Vocables are melodic and rhythmic utterances without semantic meaning. In the Levant, a section of the Middle East, *zaghrouta*, a form of ululation, is commonly performed at weddings to express joy (5, 6). Wailing is another form of ululation commonly utilized in the Middle East to express grief during mourning rituals for the deceased (3). The following discussion of *zaghrouta* applies equally to the wailing form of ululation in the Middle East.

*Zaghrouta* is a high-pitched shriek with a trilling movement of the tongue from side to side in the mouth lasting a few seconds and one hand held a few inches from

the mouth. A loud sound is produced by a forceful exhalation against a partially closed glottis as in a Valsalva maneuver. Initially the tongue is lifted slightly up. Then the tongue is moved rapidly side to side horizontally. The process ends by placing the tongue slightly up followed by tongue retraction and pulled lip corners (7-9). The hand is placed over the mouth to avoid spitting on people nearby. After deep breaths the process is repeated. *Zaghrouta* represents condensation and amplification of the acoustical movements, vibrations of air, created by the sound waves produced by the repetitive movements of the tongue.

This behavior is exhibited by celebrants at joyous events including weddings and births (6). Belly dancers often perform *zaghrouta* during their presentations to express their exuberance and ebullience.

Clinicians must be able to distinguish *zaghrouta*, a manifestation of exhilaration in healthy persons, from dyskinesias and other manifestations of illness in diseased people (1, 2). Additionally *zaghrouta* must be distinguished from other cultural expressions including exaggerated startle responses.

Exaggerated startle responses. Exaggerated startle responses may represent normal behaviors in some cultures and pathological syndromes in some cultures as well as pathological disorders (10). For example, primary exaggerated startle disorders include hereditary hyperekplexia (11), an inherited disorder characterized by dysfunction of glycine receptors and consequent dysfunction of neuronal Cl<sup>-</sup> channels manifesting involuntary jerking. Additionally, an example of a normal startle response with a secondary abnormal response is startle epilepsy, a condition in which a normal startle results in a focal frontal lobe seizure (10, 12). Examples of exaggerated startle responses that may represent pathological syndromes in specific ethnic groups (10, 12) include Latah in Malay people (13-15), Jumping Frenchmen of Maine (16), and Ragin' Cajuns of Louisiana (17). For example, Latah can be triggered by sudden shock resulting in screaming, dancing and cursing. Additionally functional exaggerated startle may resemble exaggerated startle responses with organic causes (12). Electrophysiological procedures may help to differentiate functional and organic exaggerated startle responses (12).

## 2. Case Presentation

A 29-year-old Egyptian woman observed the performance of *zaghrouta* frequently for joyous events in her family, neighborhood, and community since early childhood as long as she can remember.

Ten years ago she herself first performed *zaghrouta* at the engagement party of her friend. Since then she has per-

formed *zaghrouta* five or six times a year to express happiness for cheerful events.

Before episodes of *zaghrouta*, she experiences a sense of well-being. She is joyful about the celebrated event. In order to express her exuberance to others present she voluntarily performs *zaghrouta*. Similarly she deliberately ceases to perform *zaghrouta* at will. She is not motivated to perform the movements for economic gain, to avoid legal responsibility, or improve physical well-being.

She voluntarily produced *zaghrouta* to demonstrate its expression (Supplementary Files 1 and 2).

## 3. Discussion

Clinicians become expert in the diagnosis and treatment of conditions prevalent in their communities. At the same time clinicians may be expert in the management of the disorders that they frequently see and unaware of behaviors common in other regions. Particular actions and gestures may have vastly different meanings in different cultures. Thus, clinicians will benefit from an awareness of behaviors that are common in particular regions in order to distinguish health from pathology.

*Zaghrouta*, a normal behavior to express joy in the Middle East, may resemble abnormal behaviors seen in many neurological and psychiatric disorders. The expression of *zaghrouta* is a vocalization to show happiness at marriages and festivals, to foster good luck, and to ward off the evil eye.

Clinicians must be able to distinguish *zaghrouta*, a manifestation of exhilaration in healthy persons, from dyskinesias and other movement disorders (4), exaggerated startle responses, and other manifestations of illness. The differential diagnosis of *zaghrouta* includes movement disorders, exaggerated startle responses, and functional conditions.

*Zaghrouta* must be differentiated from functional disorders, including functional neurological symptom disorder (conversion disorder), factitious disorder, and malingering. *Zaghrouta* and movement disorders may be mimicked by functional neurological symptom disorder (conversion disorder), a distressing neurological symptom without a physical cause; factitious disorder, the deliberate presentation of oneself as ill, impaired, or injured without any apparent reward; and malingering, the deliberate presentation of oneself as ill, impaired, or injured for gain, e.g., avoiding work, school, or jail, (18, 19). Characteristics to facilitate the separation of *zaghrouta* from other components of the differential diagnosis are tabulated in Table 1. Whether or not items in Table 1 are voluntary may be resolved by electrophysiological measurements

(12, 20). The presence of a Bereitschaftspotential or contingent negative variation, a slow negative electroencephalographic signal before self-initiated movement, may help to determine if an activity is voluntary or involuntary (21-23). Additionally ethnographic filmmaking of individuals performing the behaviors in their natural environment may facilitate documenting and interpreting the actions in their cultural contexts (24).

In conclusion, *zaghrouta* represents a voluntary expression of joy in the Middle East. *Zaghrouta* is a learned phenomenon that is willfully expressed by performers for happy occasions. Clinicians must distinguish *zaghrouta* from movement disorders (4), exaggerated startle responses, and functional disorders. Electrophysiological (12, 21-23) and sensory measurements (20) are promising tools to establish unique signatures of *zaghrouta* and related items in the differential diagnosis. Further research is needed to identify physiological characteristics that distinguish *zaghrouta* from neuropsychiatric disorders.

### Supplementary Material

Supplementary material(s) is available [here](#) [To read supplementary materials, please refer to the journal website and open PDF/HTML].

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### Footnotes

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Table 1. Differential Diagnosis of *Zaghrouta*

Condition	Voluntary	Truthful Report	Deliberate Fabrication of Subjective Complaints	Falsified Signs	Motivation to Assume Sick Role	Motivation for Economic Gain	Motivation to Avoid Legal Responsibility	Motivation to Improve Physical Well-Being
Factitious disorder (18)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Functional neurological symptom disorder (conversion disorder) (18)	No	Yes	No	No	Yes	Yes	Yes	Yes
Jumping Frenchmen of Maine (16)	No	Yes	No	No	No	No	No	No
Latah (13-15)	No	Yes	No	No	No	No	No	No
Malingering (18)	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Ragini' Cajuns (17)	No	Yes	No	No	No	No	No	No
<i>Zaghrouta</i> (1-3, 5)	Yes	Yes	No	No	No	No	No	No

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