Silvano Arieti proposed an intriguing concept in his landmark book, *Interpretation of Schizophrenia*, pertaining to the experience of auditory-verbal hallucinations (AVHs) reported by patients with schizophrenia. He wrote:

“With the exception of patients who are at a very advanced state of the illness or with whom no relatedness can be reached, it is possible to recognize that the hallucinatory voices occur only in particular situations, ie, when the patient expects to hear them.”¹(p574)

By assisting patients in resisting this “listening attitude,” Arieti reported that their hallucinations improved. This psychotherapeutic strategy, as far as I know, has never been tested systematically, although it can be related to distraction and focusing strategies incorporated into cognitive behavioral treatment approaches.² Besides these therapeutic implications, prehallucination auditory expectancy described by Arieti may have significance as the experiential counterpart of a pathophysiological process.

This possibility was first suggested to us in the course of conducting repetitive transcranial magnetic stimulation (rTMS) clinical trials for AVHs.³,⁴ “Suppressive” 1-Hz rTMS is administered to hallucinators over temporoparietal regions that presumably underlie expression of perceptual attributes of AVHs. For patients whose voices improved significantly following rTMS, they often still reported the episodic sense of a “presence”—a feeling that there is a voice “out there” even though they cannot hear it. For those patients who experienced their voices as arising from one or more specific exteriorized locations, this sense of presence was experienced in a same location in space. These reports suggest episodic states of heightened auditory expectancy as precursors to hallucinatory percepts that may occur even if not followed by percept-like hallucinatory experience. These subjective reports of presence in the absence hallucinatory features are reminiscent of a case report of a patient with epilepsy undergoing presurgical evaluation using direct electrical stimulation in cerebral cortex.⁵ Stimulation at the left temporoparietal junction caused this patient to experience the temporary physical presence of an illusory “shadow person” sensed behind her.

Focused, prehallucination auditory attention was also suggested by a functional magnetic resonance imaging (fMRI) study by our group examining time course of regional activation concurrent with motorically signaled onset of AVHs.⁶ In this study of 6 dextral patients with schizophrenia, selective activation in the left anterior insula and the right middle temporal cortex was detected approximately 2–3 s “prior to” motorically signaled hallucination onset. It is noteworthy that left anterior insula activation has also been linked specifically to “auditory search” arising when subjects attempt to “hear”
acoustically ambiguous sound as comprehensible speech. Moreover, the right middle temporal cortex has been shown to activate while subjects “zoom in” their attention during a visual detection task. These studies of psychiatrically healthy persons suggest that activation in these same regions detected in our patients immediately prior to hallucination experience is due to heightened auditory attention. This state might then facilitate activation in posterior bitemporal regions via top-down processing that was observed to peak around the time of hallucination onset in our fMRI study. These activations presumably were responsible for the percept-like features of these hallucination experiences, given that these regions activate ordinarily during perception of external speech.

Possibly related also to our prehallucination regional activation findings is an fMRI study of Carmelite nuns. These individuals were able to invoke memories of prior mystical religious experiences of the presence of God during scanning that were compared with invoked memories of other intense personal experiences. Mystical religious experience was selectively accompanied by coactivation of the left insula and the right middle temporal cortex—the same regions showing activation prior to hallucination experiences in our fMRI study—as well as other brain regions associated with emotion processing. This convergence of fMRI findings bring to mind subjective reports arising from a phenomenological study of hallucination experience carried out by our group. One relatively consistent finding was that many patients remembered the circumstances of their first hallucination experience, for instance, driving cross-country in the middle of the night or getting stranded in the Munich airport at 2 AM. They often could remember the day and the hour, the precise words “heard,” and what the voice sounded like, as if it were a flashbulb memory. What is equally striking was how transformed these individuals felt by the experience, that somehow a portal had opened to another world—the voice world—a world that is very difficult for most of us to fathom. This world, at least for the patients enrolled in our rTMS trials whose AVHs remained persistent and severe, continues to retain a deep emotional salience that could lead naturally to a “listening attitude.” It may be that heightened expectancy of a message or presence utilizes a common physiological pathway—leading to hallucinations on the one hand and mystical/religious experience on the other, although they are obviously very different in terms of content and outcome.

We have also become more aware of profound social isolation characterizing the lives of many—though not all—of our hallucinating patients. For the former group, it often seems that the primary source of social communication available to them is their voices. This is likely to enhance states of heightened auditory attention or a “listening attitude.” As we have become more attuned to the possibility that these attentional states lead to hallucinations, we inquire directly whether our patients attempt to listen for their voices even when they cannot hear them. Almost universally the answer is “yes.” When asked why, some patients report that their voice experiences—at least some of them—are reassuring or otherwise positive. However, this is also frequently not the case. What remains is a worry or wariness that if the voices become silent, something sinister may happen. Hence there is a sense of needing to be attentionally “on guard.” As we explored this arena of experience further, we were surprised to learn that most of our patients also address or talk to their voices—not just in reply but also to initiate a verbal contact—even when verbal content of the hallucinations themselves is vulgar or degrading. Thus, we frequently detect not only a “listening attitude” but also a “conversational engagement attitude,” possibly to seek some partial sense of control of voice experiences. This has led to a simple behavioral intervention first developed by one of our patients, namely to practice not addressing voices through the use of daily logs and diversion techniques. These inner speech behaviors are more in the patient’s control compared with attentional shifts and therefore more amenable to tracking and feedback. Our preliminary impression is that these interventions can be helpful in some cases—but not when AVHs are very frequent during wakefulness.

These comments do not establish the claim that a “listening attitude” or heightened auditory attention actually causes hallucination experiences. Similar patterns of cortical coactivation do not establish commonality of mechanism, and a sequential ordering of activation does not establish causality. Nonetheless, Arieti’s formulation appears promising in light of our additional findings and clinical observations—suggesting the need for further study.

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