Clues to the Cognitive and Perceptual Origins of Social Isolation and Psychosis in Schizophrenia

In this issue, two articles by three leading research groups provide intriguing evidence of the cognitive and perceptual impairments that lead to key difficulties in the way patients with schizophrenia experience their own emotions and perceive the emotions of others. Ultimately, these papers may help identify origins of the problematic thinking and behavior that comprise the syndrome of schizophrenia.

The processes by which humans report internal experiences are complex. When healthy people describe how they felt in the past or how they anticipate feeling in the future, they tend to err on the positive side, reporting more pleasure than they actually had at the time and anticipating more pleasure than they are likely to have. Anyone who treats or loves someone with schizophrenia knows that affected patients have fewer of these healthy biases; they tend to describe a less rose-colored picture, with fainter memories of pleasure and less expectation of pleasure in the future. In this issue, Strauss and Gold (1) present a thoughtful review of the concept of anhedonia in schizophrenia and make a strong argument that the concept, and in fact the term itself, requires updating. Patients with schizophrenia are clearly able to report current pleasure, and in fact they are similar to the rest of the population in this regard, so in the current moment they are not anhedonic at all. Their inability to report past pleasure and anticipate future pleasure suggests that they appear anhedonic to themselves and to other people not because of an incapacity to experience pleasure but because of their cognitive failures.

The article by Gold et al. (2) suggests that impairments in the ability to recognize the emotions of others, which have been reported repeatedly in people with schizophrenia, may be mediated by very basic auditory processing deficits, such as difficulties in matching tones of varying frequency (pitch). In this study, auditory tone matching performance predicted ability to detect happiness and anger in recorded voices when the emotional expressions were based on voice pitch, but not if they were based on voice intensity or loudness. These results suggest that auditory tone matching ability has an impact not on the more obvious emotional expressions, such as yelling louder when one is angry, but on the more subtle expressions of anger and happiness, such as understated joy, that enrich human interaction.

These two articles have immediate treatment implications. Cognitive-behavioral therapies that specifically target cognitive impairment and negative (or nonpositive) expectations have recently been found to improve symptoms and functional ability (3), and cognitive remediation programs that target a range of perceptual (4) and higher-order (5) cognitive abilities have demonstrated clinically meaningful efficacy (6). Yet profound deficits remain in these patients, and better treatments are needed. Programs that target the specific social deficits seen in schizophrenia are in development (7; see also http://clinicaltrials.gov/ct2/show/NCT01422902). The Gold et al. study (2) suggests that remediation programs targeting the components of auditory processing that most strongly convey emotional meaning may be the
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what in the world will make me happy, the path of least resistance may circle me back to a resting point of externally incorrect but internally rewarding thoughts and fantasies. As with all Hebbian models of healthy neuroplasticity (16), the more this path is engaged, the more solidified it will become. Odd interpretations well worn and untested develop into delusional beliefs; a system that rewards an internally directed focus enlivens thoughts to hallucinations.

It is unclear whether cognitive and perceptual impairments precede or follow the emotional and social difficulties of people who have schizophrenia or are destined to develop it. Work is under way to address this question empirically (17). It seems likely that the arrow of causality moves in both directions. Regardless, as a result of the efforts of scientists such as those whose work appears in this issue of the Journal, we are beginning to learn the complex feedback mechanisms between perceiving, thinking, and feeling in people with schizophrenia. This work not only helps provide important background for the development of novel treatments for schizophrenia, but it may someday lead to behavioral or pharmacological interventions that will prevent psychosis altogether.

References

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