Update on Cognition

DIRECT MEASUREMENT OF DISABILITY

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ABSTRACT

Schizophrenia is associated with substantial disability in everyday functioning. Environmental factors, such as disability compensation and opportunities, impact on the ability of people with the illness to perform real-world activities, particularly those that are vocational in nature. Measures of abilities to perform these functions have been developed that measure competence in social, everyday living, and vocational domains. These indices have measurement characteristics consistent with those of neuropsychological tests, indicating that they have the potential to be valid measures of the ability to perform in real-world functional situations. It is our belief that these measures will be widely employed in later research on functioning in schizophrenia, and many of these tests have the potential to be used in clinical settings.

KEY WORDS

schizophrenia, disability, everyday functioning

FUNCTIONAL DISABILITIES

One of the reasons that the interest in cognition in schizophrenia is so acute and sustained is that cognitive impairments are one of the strongest predictors of deficits in the ability to perform everyday tasks.[1] Such deficits, often referred to as "functional disability," are responsible for much of the cost of schizophrenia and other severe mental illnesses as well as being one of the major drivers for reduced subjective quality of life.[2] These impairments span productive activities, social functioning, and residential independence and maintenance. In fact, the majority of people with schizophrenia manifest these impairments and they are detectable at the time of the first identified episode, if not before.[3] The well-understood concept of "poor premorbid functioning" is really a description of impairments in functional outcomes that are identified prior to the onset of the formally diagnosed presence of the illness.

There are clear societal factors that lead to poor functional outcomes in the real world and these variables may impact real-world functioning more than cognitive impairments. These include the set of opportunities that are present in the immediate environment, contingencies associated with disability compensation and the availability of health insurance, and bias and

stigma associated with the presence of severe mental illness and its other correlates.[4] Further, there are other noncognitive factors associated with individuals with severe mental illness that affect functional outcomes; these include negative symptoms, such as reductions in motivation, and positive symptoms, such as hallucinations. Negative symptoms can influence the extent to which people with schizophrenia are motivated to engage in behaviors that lead to good functional outcomes. Psychotic symptoms can influence the people around the individual with severe mental illness and lead to loss of employment, withdrawal from the individual because of fear or anxiety, or other adverse real-world outcomes.[5] While these other influences have an impact on real-world functioning that is statistically smaller than cognitive impairments, their influence is notable.

Recent research has focused on differentiation of the multiple influences on successful real-world outcomes. In this process, it has become clear that a comprehensive assessment of these factors must also consider the influence of cognitive functioning on the actual abilities to perform real-world tasks, often referred to as "functional capacity." These abilities are aspects of competence, skills that determine what an individual is capable of, as differentiated from real-world performance of these adaptive skills. Performance, as noted immediately above, is influenced by many factors other than ability and may be a more challenging treatment target than functional capacity. Functional capacity establishes the limits of potential adaptive outcomes for an individual, and no one is able to accomplish tasks that require skills that they do not possess.

Assessment of abilities related to everyday outcomes initially began in the study of aging and conditions that develop during aging, such as dementia and mild cognitive impairments. Focused on the abilities required to perform age-appropriate activities of daily living (ADLs), these initial assessment procedures examined the financial, transportation, and communication abilities expected to be present in order for successful aging. Examining these abilities with performance-based tests, the Direct Assessment of Functional Status (DAFS)[6] is a comprehensive example of a test aimed at measurement of functional capacity in ADLs that has been widely used to index subtle alterations in ADLs in aging populations.

People with schizophrenia or severe bipolar illness are less likely to be impaired in aspects of basic self-care than individuals with dementia and they also have wide ranging social and vocational deficits. They often have no evidence of lifetime success in major social, residential, and vocational outcomes. As a result, functional capacity assessments in schizophrenia have focused on social and vocational abilities, as well as addressing functional limitations in relevant everyday skills, such as communication, financial, and medication-management domains.

There are several unique and interesting aspects of functional capacity assessment. It has been shown, for instance, that performance on functional capacity measures may be intermediate between cognitive impairments and real-world outcomes.[7] In other words, the influence that cognitive deficits have on real-world outcomes may be to reduce the ability to perform the skills assessed with functional capacity measures. Thus, the influence of cognitive impairments on real-world outcomes may be indirect, with relatively limited direct influence of cognitive performance on real-world outcomes other than reducing functional capacity. Also, the influence of schizophrenia symptoms and other symptoms, such as depression, on measures of functional capacity seems limited, much like the correlation between cognitive deficits and these symptom domains. The separation of impairments on neuropsychological tests and on these performance-based measures of functional capacity has led to an increased understanding of the fact that the influence of motivational and symptomatic variables is not on what one can do, but rather on what one actually does.

Some performance-based measures of functional capacity are quite extensive and are not particularly practical in standard

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clinical settings. On the other hand, some of these assessments are quite pragmatic, being available in abbreviated versions as well as longer forms and would be easy to administer in office settings.[8] Following is a brief description of some of these types of instruments.

SOCIAL FUNCTIONING

Typically these measures have the participant engage in interactive role-plays.[9,10] These interactions are a mix of friendly interactions (e.g., introducing yourself to a new acquaintance) or instrumental (e.g., asking for assistance with a problem). For research purposes, these interactions are often recorded and scored later, but some of these assessments could be administered and interpreted in a real-time manner.

EVERYDAY LIVING SKILLS

These assessments typically involve the performance of real-world tasks with props. For instance, individuals may be asked to make telephone calls, manipulate currency, or pay bills with a check.[11,12] Some of these assessments go as far as having a realistic kitchen set-up and requiring actual cooking.[13] It has been found, however, that abbreviated assessments that include just a couple of subtests can be highly correlated with the results of much longer assessments. These abbreviated assessments can be performed in 10 minutes or less with real-time scoring.[8]

MEDICATION MANAGEMENT

Performance-based assessments of medication management generally involve demonstrating the ability to organize and plan medication self-administration. For instance, patients can be given several different bottles of pills and asked to organize a day's medications from the labels and other instructions. Other ways to assess medication management competence is to provide the medication and information about the medication and then ask the patient questions regarding aspects of self administration of the different medications, such as times per day and taking with food.[14]

VOCATIONAL POTENTIAL

While this may seem like a challenging area for performance-based assessment, there are existing systems that have been validated over time for the prediction of which jobs are within the range of an individual's current skills level. One such system, the Valpar International Computerized Assessment (COMPASS) system has been shown to be sensitive to levels of vocational decline associated with degenerative conditions.[15] This is a comprehensive, computer-based program that is widely available in vocational rehabilitation settings, with the complete assessment taking about an hour. The benefit of this system is that the output provides references to the United States Department of Labor dictionary of job titles, which can easily be interpreted in terms of their cognitive complexity.

GENERAL COMMENTS

Performance-based ability measures have been shown to be more convergent with neuropsychological test performance than interview-based measures of cognition. In fact, as we discussed in this column before,[16] patient self reports of cognitive impairments are poorly correlated with performance on cognitive tests and they are also poorly related to a patient's performance on functional capacity measures. Functional capacity measures have been shown to be sensitive to treatment with both pharmacological and behavioral interventions. However, the normative database on these measures is quite limited compared to neuropsychological tests, so it is not easily possible to tell "how impaired" a certain score is. Further, since these tests are sensitive to disability, there are some people with schizophrenia who obtain ceiling-level scores on the tests. This finding raises questions about some of these tests as treatment-outcome measures in research studies. A further issue with these functional capacity measures is that although they can be quite sensitive to the ability to

THE TAKE HOME POINTS

- Performance-based measures of functional capacity measure the ability of individuals to perform critical life skills.
- The impact of cognitive impairments on real-world disability may be through impact on the ability to perform these skilled acts.
- While normative standards are not yet developed for these measures, there are indications that could be clinically useful
- Stay tuned for much more research and clinical developments of these functional capacity measures.

perform critical life skills, they are also likely to be culturally specific. Their use in developing countries may be in question because the tasks may address skills with which an individual could possibly have never had the opportunity to perform. Thus, even in the US, their use in very deprived individuals may lead to exaggerated poor performance.

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