Validation of an automated rule switching test of executive function

K. Wesnes; R. Wojciak; H.J. Feaster; M. Pinho; D. Krefetz; D. Gruener; L. Brownstein; S. Glass; H. Hassman

1Bracket, Goring on Thames, United Kingdom; 2Bracket, Wayne, PA, USA; 3CRI Worldwide - Lifetree Clinical Research, Philadelphia, PA, USA
Validation of an automated rule switching test of executive function

K. Wesnes1; R. Wojciak1; H.J. Feaster2; M. Pinho3; D. Krefetz3; D. Gruener3; L. Brownstein3; S. Glass3, H. Hasman3

1Bracket, Goring on Thames, United Kingdom; 2Bracket, Wayne, PA, USA; 3CRI Worldwide - Lifetree Clinical Research, Philadelphia, PA, USA keith.wesnes@bracketglobal.com

BACKGROUND

The CDR System Rule Switching Task, a measure of executive control/function, has been validated in healthy controls.

The RST showed acceptable test-retest reliability and correlated appropriately with the Trail Making Task.

This study was conducted to investigate the task in patients with schizophrenia.

The study was conducted in conjunction with CRI Lifetree, Mount Laurel, NJ, USA.

30 patients with schizophrenia on stable medication were studied.

17 females mean age 40 years (range 29 to 59).

On the first study day, the following tests were performed:

- Trails B-A Difference between Part B and Part A
- CDR System Executive Function Test

METHODS

PROCEDURE

On the first study day, the following tests were performed:

- UPSA-B
- CDR System Executive Function Test
- Trail Making Task
- NAB Mazes (from MATRICS)

On the second and third study days, the following tests were repeated:

- CDR System Executive Function Test
- Trail Making Task
- NAB Mazes (from MATRICS)

THE CDR EXECUTIVE FUNCTION TEST

The test involves the presentation of strings of identical digits, e.g.

In the first part, for each of 36 strings, the subject has to decide whether or not the value of the digit is greater or less than five.

The NAB Mazes and the Trail Making test show large effect-sized improvements due to training which will make these tests unsuitable for repeated administration in clinical trials.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

All measures showed clear differences between patients and controls, with effect sizes ranging from (1.53 to 1.95).

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

RESULTS

The strong correlation of the CDR System Executive Function test to the UPSA-B indicates the behavioural relevance to the clinical symptoms.

Compared to NAB Mazes and the Trail Making test the CDR System has comparable or better statistical properties.

The NAB Mazes and the Trail Making test show large effect-sized improvements due to training which will make these tests unsuitable for repeated administration in clinical trials.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

All measures showed clear differences between patients and controls, with effect sizes ranging from (1.53 to 1.95).

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

DISCUSSION & CONCLUSIONS

Correlations Between CDR System and the Trails & NAB Mazes Task

The CDR System Executive Function Score correlated appropriately with the Trail Making Task, and also the UPSA-B.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.

The average completion time for the task was just under 6 minutes, which compared to around 20 minutes for NAB Mazes.

The CDR System Executive Function test has sound statistical properties and does not show training effects over three test sessions in patients with schizophrenia.