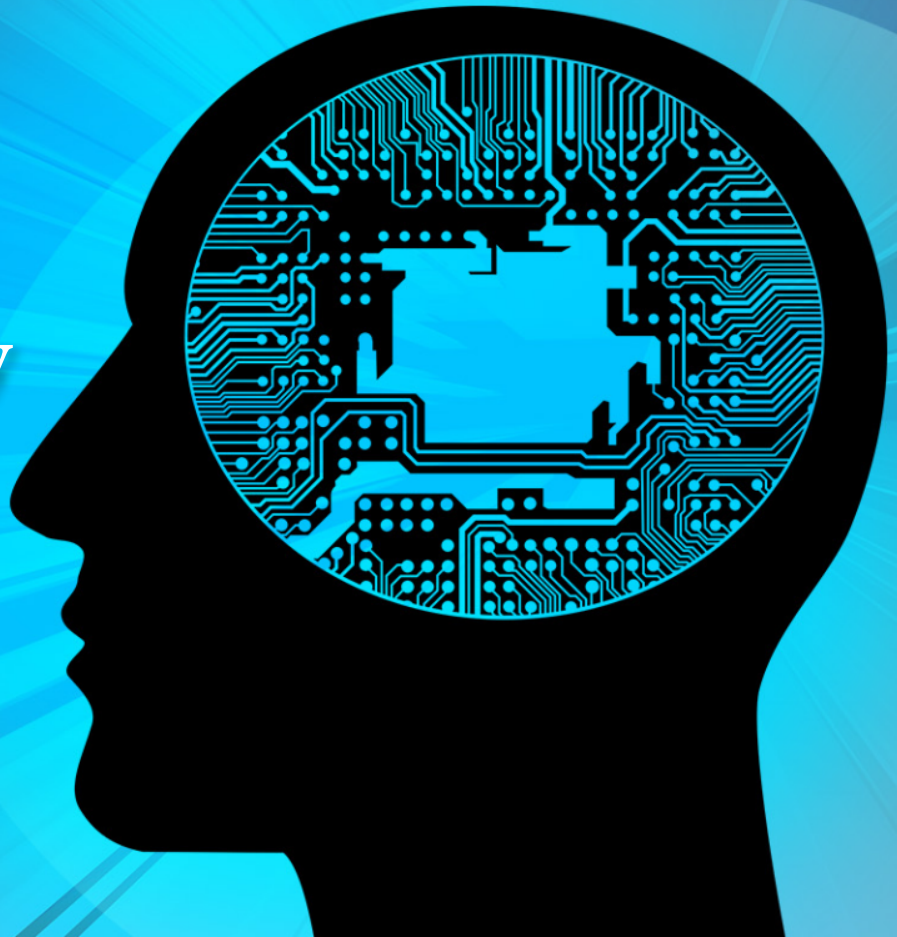
The study

Evaluating the feasibility and acceptability of the Italian version of CIRCuiTS



Aims

This study aimed to evaluate the **feasibility** and **acceptability** of the Italian version of CIRCuiTS for people with schizophrenia-spectrum disorders, **according to patients and clinicians' point of view** and to investigate **satisfaction** with CIRCuiTS.

Three studies

Study 1: to explore attractiveness, comprehensibility, cultural acceptability, and ease of use of the program in a **non-clinical sample.**

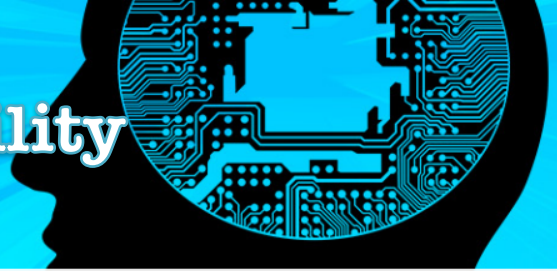
Study 2: to measure the perception of attractiveness, comprehensibility, cultural acceptability, and ease of use of a ***tailored experience*** with CIRCuiTS, in **patients and experienced CR therapists.**

Study 3: to evaluate adherence and satisfaction with CIRCuiTS in **patients**.

Exploratory: **post-treatment changes**

to evaluate potential improvement

Study 1 Feasibility and acceptability in a non-clinical sample



- **30** participants aged **18–65 years matched to the patients enrolled in the Study 3 (gender and age).**
- An ad hoc program containing **20 tasks** (one-hour session of CIRCuiTS).
- After completing the training, participants filled-in the **Self-Assessment Measure (SAM)**, by using a **self-report 5-point Likert scale** (Reeder and colleagues, 2016).
- **Minimum performance targets: 70%** of satisfaction, i.e. Likert score equal or up to 4.

Study 1

Feasibility and acceptability in a non-clinical sample

SAM by Non-Clinical Subjects		
	Mean score (range)	**% of 4-5 or >1* (range)**
Attractiveness	4.6	**90.0**
Specific item ratings	4.3 (3.8 - 4.6)	63.3 - 93.3
Comprehensibility	4.5	**83.3**
Specific item ratings	4.3 (4.3 - 4.5)	83.3 - 90
Ease of use	4.7	**93.3**
Specific item ratings	4.6 (4.5 - 4.7)	93.3 - 96.7
Cultural Acceptability	4.7 (3-5)	**100***

Results demonstrate the general feasibility and acceptability of Circuits, according to non-psycotic subjects

Study 2 Feasibility and acceptability of tailored CIRCuiTS in patients

- **Five** patients received **10 hours of individual and tailored CIRCuiTS therapy**, based on his/her specific cognitive goals.
- At the end of each session, the participants completed and **adapted version** of the **Self-Assessment Measure 1 (SAM1)** (translated from Reeder et al., 2016).
- We set a minimum performance target of satisfaction on the SAM-1 at **60%** (i.e. Likert score **equal or up to 4**).

Study 2

Feasibility and acceptability of tailored CIRCuiTS in patients

SAM-1 for Tailored CIRCuiTS in Patients				
	After the 1st session		**After the 10th session**	
	mean	% 4-5	mean	% 4-5
Attractiveness	3.60	**60**	4.40	**100**
Specific items range	2.60 - 4	-	3.80 - 4.40	-
Comprehensibility	3.60	**60**	4.40	**100**
Specific items range	2.60 - 4	-	4 - 4.40	-
Ease of use	4.00	**100**	4.60	**100**
Specific items range	2.40 - 4	-	4.00 - 4.80	-
Acceptability	>1	**60**	>1	**100**

Results demonstrate the general feasibility and acceptability of tailored Circuits, according to patients.

Study 2 Feasibility and acceptability of tailored CIRCuiTS in therapists

1. Three experienced cognitive-remediation therapists followed **one-hour demonstration of CIRCuiTS**
   → Therapist Assessment Measure (**TAM**): **therapists' experience of accessing, interpreting and applying CIRCuiTS**, and **therapists' point of view about patients' experience** with the program (minimum target score of **60%**).
2. They **assembled a therapy program** each, for a hypothetical patient, to test **ease of use**.
   → Therapist Semi-Structured Interview (**TSSI**) (translated from Reeder et al., 2016), to assess **therapists' perceptions of the administrator interface** (three Likert- scored questions and two open-ended questions).

Study 2

Feasibility and acceptability of tailored CIRCuiTS in therapists

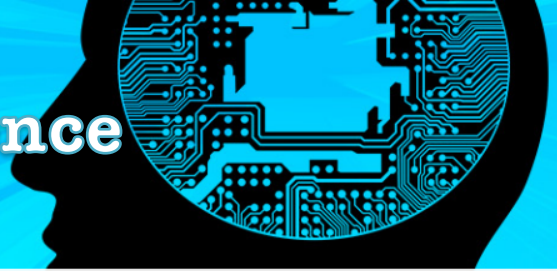
TAM for Tailored CIRCuiTS in CR Therapists		
	mean	% 4-5
Attractiveness	4.67	**100**
Comprehensibility	4.33	**100**
Ease of use	3.67	**66.6**

TSSI, all therapists described the administrator interface as **very interesting and useful.** Two therapists described the program-building function not easy to **understand**.

According to therapists, CIRCuiTS is an attractive and comprehensible tool for patients.
They highlighted the importance to be well trained and supervised at the start.

Study 3

Satisfaction and adherence to CIRCuiTS

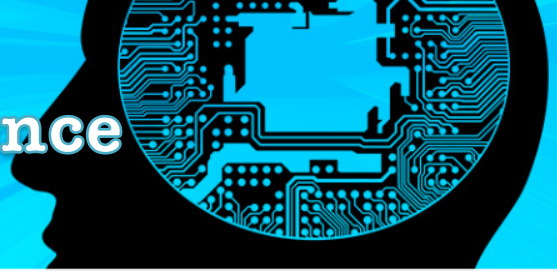


Questions

1. How many patients **agree** to take part to the program? How many of them **complete** the program?
2. How much they are **satisfied** ?
3. Do they **improve** at the end of the treatment?

Study 3

Satisfaction and adherence to CIRCuiTS



We proposed CIRCuiTS to inpatients and outpatients who had a schizophrenia-spectrum diagnoses (ICD-9: 295)

Inclusion criteria

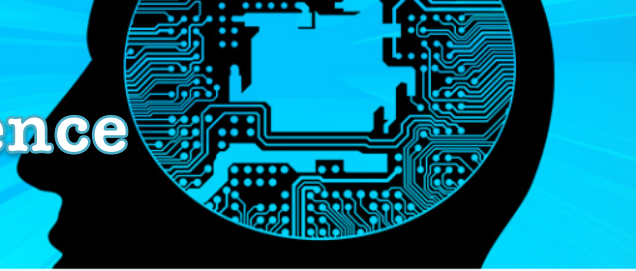
(1) diagnosis of **schizophrenia-spectrum disorder**;
(2) at least **one-year contact** with mental health services;
(3) age **18 to 65** years;
(4) **social and cognitive impairment** (poor memory performance and/or poor cognitive flexibility) as recorded in clinical data, referred by clinician or complained about by patients.

Exclusion Criteria

(1) a plan to **change medication** during the study;
(2) **substance dependence**, apart from tobacco;
(3) evidence of **organic causes of cognitive impairment**;
(4) **IQ less than 50**;
(5) **acute positive symptoms**.

Study 3

Satisfaction and adherence to CIRCuiTS

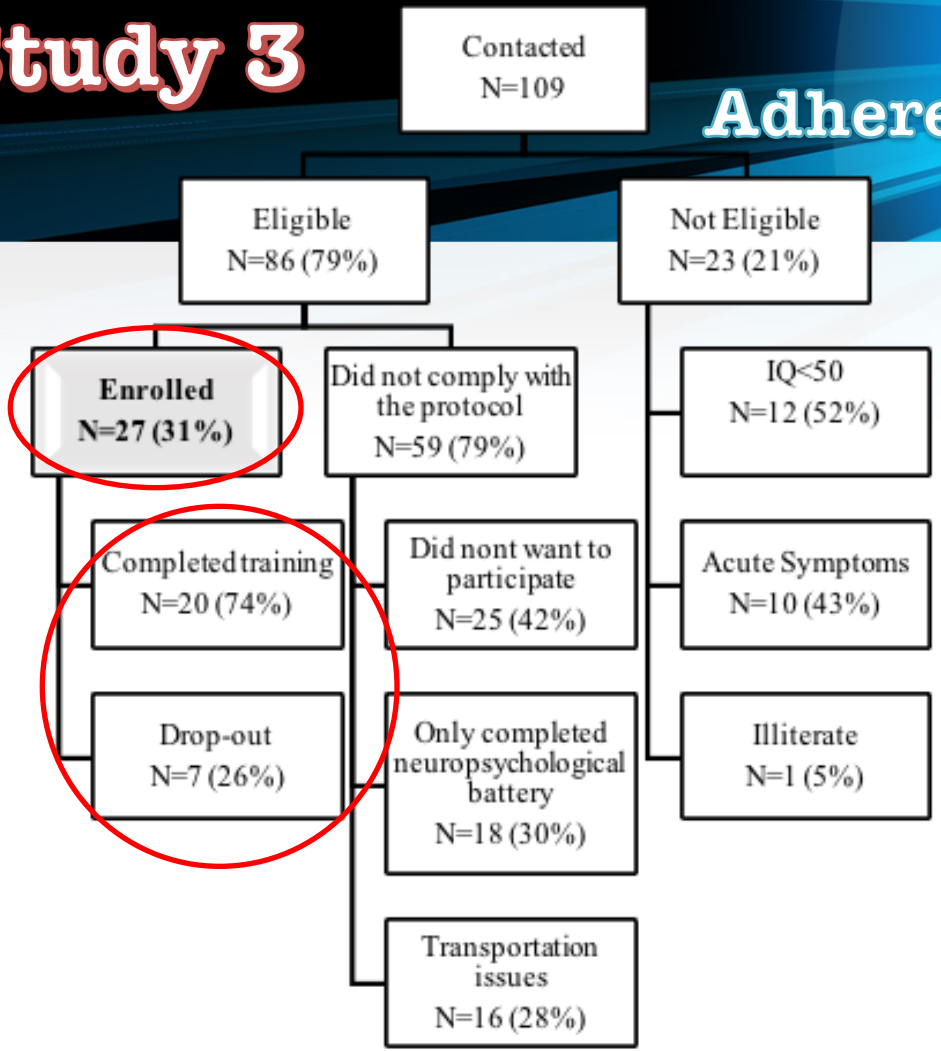


The assessment battery administered before the training included:

1. Positive and Negative **Symptoms** Scale (**PANSS**) (Kay et al., 1987);
2. Global Assessment of **Functioning** (**GAF**) (Jones et al., 1995);
3. **Rosenberg** (Prezza et al., 1997) to test **self-esteem;**
4. Wechsler Adult Intelligence Scale (**WAIS**) – Abbreviated version (Velthorst et al., 2013) for **IQ**;
5. **Digit Span** (forward/backwards) (Monaco et al., 2013) for **verbal memory**;
6. **Rey Complex Figure** (copy/deferred) (Caffarra et al., 2002) for **non verbal memory;**
7. Wisconsin Card Sorting Test (**WCST**) (Heaton et al., 2000) to assess **executive functions.**

Study 3

Adherence to CIRCuiTS



31% compliance

27 patients were able to start the treatment package: CIRCuiTS was delivered **two times a week** (completion threshold of **20** sessions).

74% adherence

patients who completed the training performed a median of **23.5 sessions** (mean=24.25, SD=4), and a median of **249.5 tasks** (mean=236.1, SD=35.4).

(Drop-out completed **6 sessions**)

Study 3

Satisfaction for CIRCuiTS

Satisfaction Questionnaire for Patients Adherent to CIRCuiTS			
Item	mean	(min-max)	**% of 3 -4**
1. Perception of reception received	3.81	(3 - 4)	**100**
2. Satisfaction of the activities done	3.71	(3 - 4)	**100**
3. Would you recommend CIRCuiTS	3.29	(1 - 4)	**95.20**
4. Satisfaction expectations	3.52	(3 - 4)	**100**
5. Would you reuse CIRCuiTS	3.24	(2 - 4)	**85.70**
6. Therapists satisfaction	3.95	(3 - 4)	**100**
7. Improved thinking skills	3.48	(3 - 4)	**100**
8. Difficulty using PC for CIRCuiTS	3.19	(2 - 4)	**90.40**
9. Transfer to daily activities	3.52	(3 - 4)	**100**

Patients were satisfied with the proposed activities.

Moreover, they denoted an improvement of their thinking skills and ability to transfer them in everyday activities.

Study 3

Improvement after CIRCuiTS

Comparisons between baseline, post-treatment and follow-up clinical and neuropsychological scores of patients who completed CIRCuiTS

Mean (SD)

	Baseline	Post-treatment 12 weeks	Follow-up 26 weeks	χ^2 (df=2)	p	Effect-size
PANSS Positive	12.6 (3.8)	10.9 (4.1)	9.7 (3.5)	23.3	**<0.001**	**0.583**
PANSS Negative	17.26 (5.9)	15.1 (6.6)	14.2 (6.7)	10.1	**0.004**	0.267
PANSS General	33.9 (9.2)	28.4 (9.5)	25.3 (6.6)	21.7	**<0.001**	**0.544**
GAF Social Functionig	61.3 (12.4)	72 (9.6)	70.5 (14.1)	8.8	**0.008**	0.220
Rosenberg Self-esteem	28.3 (5.4)	31.4 (5)	30.9 (6.2)	8.4	**0.010**	0.211
Visual immediate memory	26.3(8.3)	30 (6.5)	28.9 (7.1)	7.2	**0.026**	0.182
Visual recall memory	6.4 (5.4)	12.4 (7.3)	14.6 (8.4)	20.1	**<0.001**	0.503
Digit Span	4.7 (0.9)	5.2 (0.9)	5.3 (1)	5.9	**0.048**	0.148
Working memory	2.8 (1)	3.3 (0.8)	3.5 (0.9)	8.3	**0.014**	0.209
WCST Perseveration	26.3 (13.5)	11.8 (7.3)	9.2 (6.8)	25.0	**<0.001**	**0.625**
WCST Total Errors	51 (19.7)	23.3 (16.8)	16.9 (12.9)	23.5	**<0.001**	**0.589**

Friedman's Test, with Kendall's W test for effect sizes (ranging from 0 to 1), and Wilcoxon test for post hoc pairwise comparisons.

Study 3

Improvement after CIRCuiTS

Comparisons between baseline, post-treatment and follow-up clinical and neuropsychological scores of patients who completed CIRCuiTS

Mean (SD)

	Baseline	Post-treatment 12 weeks	Follow-up 26 weeks	χ^2 (df=2)	p	Effect-size
PANSS Positive	12.6 (3.8)	10.9 (4.1)	9.7 (3.5)	23.3	**<0.001**	**0.583**
PANSS Negative	17.26 (5.9)	15.1 (6.6)	14.2 (6.7)	10.1	**0.004**	0.267
PANSS General	[illegible]	[illegible]	[illegible]	[illegible]	**<0.001**	**0.544**
GAF Social Functionig	[illegible]	[illegible]	[illegible]	[illegible]	**0.008**	0.220
Rosenberg Self-esteem	[illegible]	[illegible]	[illegible]	[illegible]	**0.010**	0.211
Visual immediate memory	[illegible]	[illegible]	[illegible]	[illegible]	**0.026**	0.182
Visual recall memory	[illegible]	[illegible]	[illegible]	[illegible]	**<0.001**	0.503
Digit Span	[illegible]	[illegible]	[illegible]	[illegible]	**0.048**	0.148
Working memory	2.8 (1)	3.3 (0.8)	3.5 (0.9)	8.3	**0.014**	0.209
WCST Perseveration	26.3 (13.5)	11.8 (7.3)	9.2 (6.8)	25.0	**<0.001**	**0.625**
WCST Total Errors	51 (19.7)	23.3 (16.8)	16.9 (12.9)	23.5	**<0.001**	**0.589**

Patients further improved at ***follow-up***, as compared with post-treatment, in **general** (z=-2.1, p=0.033) and **positive** symptoms (z=-2.5, p=0.01), and **executive functions** (WCST)- total errors (z=-2.1, p=0.038).

Friedman's Test, with Kendall's W test for effect sizes (ranging from 0 to 1), and Wilcoxon test for post hoc pairwise comparisons.

Thank You

Prof. Daniele La Barbera
Dr Matteo Cella
Dr Fabio Seminerio
Dr Alessandra Scaglione
and the CIRCuiTS Team