Cognitive remediation of autobiographical memory in schizophrenia and its relation with depressive mood.

SYLVIE BLAIRY
UNIVERSITY OF LIEGE - BELGIUM
Why it is important to improve AM is schizophrenia?

Schizophrenia is characterized by several cognitive dysfunctions (attention, executive functions, memory impairments).

This syndrome is accompanied by deficits in the specificity of autobiographical memory.

AM impairment is a better predictor of patient social functioning than other cognitive deficits or clinical symptoms.

AM is closely related to the self-identity.
How to connect AM and Self-identity?

The recollection of a personal specific memory is accompanied by a subjective experience called **autonoetic awareness**.

Autonoetic awareness allows individuals to relive past experiences with the feeling of individuality.

Impairment in autonoetic awareness in schizophrenia results from a failure of the strategic processes which bind the separated characteristics of the event (what happened, where, when, my feelings and thoughts during the event).
The therapeutic interventions to enhance the abilities to generate specific personal events in schizophrenia.


Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**The purposes of the intervention**

To increase the ability of schizophrenia patients to generate specific past events.

To increase the ability of schizophrenia patients to generate specific future events.

To improve the affective state (depression).

The efficacy has been tested at 3 months follow-up

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**Dependant measures.**

**Task for past events**
French version Autobiographical Memory Test (AMT) – 10 cues (5 positive & 5 negative)
« can you recall a personal event that the word .... evokes »

**Task for future events**
This is a replication of AMT- participants were instructed to imagine a future events that could occur to them in the future. « can you report a future personal event that the word….evokes »

**Intensity of affective symptoms**
Beck Depression Inventory

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**Autobiographical memory intervention**

Intervention: group setting - 10 weekly group sessions- 90 min

Psychoeducation about the aims of the intervention

**Personal diary - Homework** : Each participant has received a diary and was asked to report, every day a detailed personal event (what happened, when, where), the associated emotions, and an evaluation of the importance for oneself.

**During sessions** : Revisions on the content of the diary. Different exercises (games) to stimulate their thoughts about their personal identity have been proposed.

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**The control intervention**

Interventions: 10 weekly group sessions- 90 min
Psycho-education about schizophrenia and conversation trainings.

Same therapist for both groups (memory & control)

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

Results - AM specificity

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Past events</th>
<th>Future events</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AM (n = 15)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before treatment</td>
<td>4.93 (2.28)</td>
<td>4.53 (1.99)</td>
<td>4.73 (1.82)</td>
</tr>
<tr>
<td>After treatment</td>
<td>6.94 (2.60)</td>
<td>7.06 (1.94)</td>
<td><strong>7.00 (2.04)</strong></td>
</tr>
<tr>
<td><strong>Control (n = 12)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before treatment</td>
<td>3.92 (2.02)</td>
<td>3.66 (1.92)</td>
<td>3.79 (1.61)</td>
</tr>
<tr>
<td>After treatment</td>
<td>4.41 (1.97)</td>
<td>5.08 (2.37)</td>
<td><strong>4.75 (1.68)</strong></td>
</tr>
</tbody>
</table>

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**Results - Intensity of affective symptoms**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>AM intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before treatment</td>
<td>14.80 (10.62)</td>
<td>18.00 (4.94)</td>
</tr>
<tr>
<td>After treatment</td>
<td>14.20 (9.58)</td>
<td>19.20 (7.05)</td>
</tr>
<tr>
<td>Across treatment</td>
<td>14.50 (8.57)</td>
<td>18.60 (5.29)</td>
</tr>
</tbody>
</table>

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

Results from the follow-up – 3 months later – 10 subjects

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<tr>
<th>Intervention</th>
<th>Past events</th>
<th>Future events</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before treatment</td>
<td>5.10 (1.91)</td>
<td>4.30 (2.31)</td>
<td>4.70 (1.82)</td>
</tr>
<tr>
<td>After treatment</td>
<td>6.90 (2.29)</td>
<td>7.30 (1.63)</td>
<td>7.10 (2.11)</td>
</tr>
<tr>
<td>3 months later</td>
<td>7.10 (1.66)</td>
<td>5.60 (2.45)</td>
<td>6.35 (1.97)</td>
</tr>
</tbody>
</table>

Improvements in autobiographical memory in schizophrenia patients after a cognitive intervention.

**Discussion – main finding**

It is possible to improve the capacity of schizophrenia patient to generate past and future specific events by a cognitive intervention.

The cognitive intervention did not improve the affective symptoms.

the specific underlying cognitive mechanisms responsible for the changes are not identified.

No measure of autonoetic awareness

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

**Self-defining memories:** « memories that help you to define more clearly how you see yourself and that help to explain who you are to another person » (Singer, 2005).

Impairments in extracting meaning from personal memories could represent a core disturbance of autobiographical memory and has serious consequences in terms of personal identity and social adaptation.
Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

**Personal diary - homework**
Participants completed a detailed diary during the entire intervention (place, time, person, action, feeling). Revision of personal diary during all sessions.

**Self-defining memories training**
From session 6 to session 10: a specific retrieval task
Participants were trained to recover significant personal events or self-defining memories from childhood, adolescence, adulthood and the previous year.

1. Session 6: Childhood games
2. Session 7: My first communion day (8-9 years of age)
3. Session 8: A party from adolescence
4. Session 9: A trip from last year
5. Session 10: Christmas dinner from the previous year

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

The control group - 10 weekly group sessions- 90 min

Participants took part in treatments targeting social skills and occupational therapy.

The same therapist for both groups.
Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

The dependant measures

The intensity of depressive symptoms
Beck Depression Inventory

Memory specificity
Autobiographical Memory Test (AMT) – 10 cues (5 positive & 5 negative)
« can you recall a personal event that the word .... evokes »
Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

The dependant measures

**Autonoetic awarness** - Autobiographical Memory Enquiry

Four periods:
- From childhood to 9 years of age
- From 10 years to the onset age of illness (before diagnosis)
- From the onset age of illness to one year before the test
- The year prior to the present assessment

Four each period, participants were asked to report a specific event related to
1. Personal events
2. Other persons
3. Social events
4. Family events
5. Trips or journey

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

**How to measure the state of awareness?**

The remember-know-guess procedure

Specific characteristics emerged: the perceptions, thoughts or feelings experienced at the same time of the event. **Remember response.** (3 pts)

Simply knows some characteristics of the event without conscious recollection. **Know response.** (2pts)

The characteristics of the event were guessed and not consciously recalled or known. **Guess response** (1pt)

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

Changes in memory specificity and BDI scores after the treatments

<table>
<thead>
<tr>
<th></th>
<th>CONTROL GROUP</th>
<th>MEMORY GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Number of specific events (AMT)</td>
<td>4.61 (2.7)</td>
<td><strong>5.34 (3.1)</strong></td>
</tr>
<tr>
<td>BDI scores</td>
<td>12.42 (10.2)</td>
<td>11.92 (11.0)</td>
</tr>
</tbody>
</table>

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

Changes in autonoetic awareness

<table>
<thead>
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<th>CONTROL GROUP</th>
<th></th>
<th>MEMORY GROUP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Total score</td>
<td>46.19 (9.7)</td>
<td>45.88 (9.2)</td>
<td>41.54 (7.0)</td>
<td>47.08 (7.6)</td>
</tr>
<tr>
<td>Pre-diagnosis period</td>
<td>23.80 (4.9)</td>
<td>24.07 (4.6)</td>
<td>22.25 (4.2)</td>
<td>24.75 (3.5)</td>
</tr>
<tr>
<td>Post-diagnosis period</td>
<td>22.48 (6.5)</td>
<td>21.81 (5.6)</td>
<td>19.29 (4.1)</td>
<td>23.33 (4.7)</td>
</tr>
</tbody>
</table>

Effects of event-specific memory training on autobiographical memory retrieval and depressive symptoms in schizophrenic patients.

**Main findings**

1. Changes in specificity of autobiographical memory were produced independently of changes in depressive symptomatology.

2. The training program produced an improvement in the consciousness of post-diagnosis events.

3. Emotional recovery after the AM intervention.

Effects of positive events training on autobiographical memories in people with schizophrenia.

**Summary of the Intervention**

Life review therapy based on positive events (LRTspev)

Individual weekly sessions during 4 weeks
Each week, 5 specific **positive events** from different life period were explored

Week 1: childhood (five positive events)
Week 2: adolescence (five positive events)
Week 3: adult life (five positive events)
Week 4: the last year (five positive events)

The therapist insists to obtain an exhaustive description of unique events with sensory and perceptual details

Effects of positive events training on autobiographical memories in people with schizophrenia.

Summary of the main findings

<table>
<thead>
<tr>
<th></th>
<th>LRTspev (n = 16)</th>
<th>TAU (n = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Number of specific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>memories</td>
<td>3.93 (3.15)</td>
<td>6.37 (3.24)</td>
</tr>
<tr>
<td>Number of recovered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>details</td>
<td>9.37 (6.17)</td>
<td>15.12 (6.72)</td>
</tr>
<tr>
<td>Mood (BDI scores)</td>
<td>13.75 (10.49)</td>
<td>11.43 (10.58)</td>
</tr>
</tbody>
</table>

BDI scores decreased for both groups after treatment

Conclusions

The specific questions asked to the patients during the interventions seem to facilitate the retrieval of memory details – and probably provide to the patient a recollection strategy. The learning could be preserved at least 3 months after the intervention.

Schizophrenia patients may improve their ability to project themselves specifically in the future.

Autobiographical training based on specificity doesn’t seem efficient enough to reduce depressive symptoms in schizophrenia.

Future perspectives

Schizophrenia patients exhibit higher prevalence of autobiographical memories of negative traumatic events than controls (Berna et al., 2011).

These negative experiences need to be integrated into the self to avoid their negative effects on mood (Ricarte et al., 2014).

The emotional recovery could be higher with combined interventions on AM and on depression.