

Autobiographical Memory Retrieval in Schizophrenia and its Relationship with Symptom Severity

Wai Lam Asley TSUI & Professor Suzanne Ho-wai SO
Department of Psychology, The Chinese University of Hong Kong



INTRODUCTION

Schizophrenia

- A psychotic disorder with **heterogeneous** symptom constellations (APA, 2013)
- Schizophrenia symptoms fall into three categories (APA, 2013):
 - Positive:** thoughts/ feelings alteration
 - Negative:** abnormally absent symptoms
 - Disorganized:** speech/ behavior/ affect

Autobiographical Memory (AM)

- Mental representation of one's past events and semantic information **related to the self** (Brewer, 1986; Griffith et al., 2012)

AM Specificity (AMS)

- Whether or not an individual can recall an event at a particular time and place, with the recalled event **lasting for less than one day** (Williams et al., 2007)

AM Specificity and Schizophrenia

- Individuals with depression struggle to access specific AM (Farina et al., 2019)
- CaR-FA-X model: 3 possible underlying mechanisms (Williams et al., 2017)
 - Capture and Rumination
 - Functional Avoidance
 - Impaired Functioning
- Sumner (2012): potential applicability of this model to other disorders **beyond depression** e.g., MDD, PTSD → Schizophrenia

RESEARCH GAP

Established findings have shown impaired AM specificity in patients with *depression* and post-traumatic stress disorder.

While emerging research investigates the effect on schizophrenia, there is a lack of studies...

- showing empirical evidence of the relationship of **AM specificity** with **symptom categories** in schizophrenia
- examining the effect of the **emotional valence** of memories on AM retrieval
- considering the **confounding effect of depression** in AM retrieval

HYPOTHESES

H1: Group Comparison in AMS

Patients will demonstrate significantly **reduced AM specificity** compared to healthy controls.

H2: Effect of Emotional Valence on AMS

Both the clinical sample and healthy controls will demonstrate **greater difficulty** in recalling specific memories prompted by **negative cues** compared to **positive cues**. (i.e., negatively-cued scores < positively-cued scores)

H3a: Correlation of AMS and Symptom Severity

There will be a **negative correlation** between **AMS** and **schizophrenia symptom severity**, before and after considering the confounding effect of depression. (i.e., ↓ AM specificity → ↑ symptom severity)

H3b: Effect of Symptom Categories on AMS

There will be a **stronger correlation** between AMS and both **PANSS-Negative** and **PANSS-General** compared to the correlation with **PANSS-Positive**.

(i.e., $r(\text{AMS} \& \text{PANSS Negative}) > r(\text{AMS} \& \text{PANSS Positive})$
 $+ r(\text{AMS} \& \text{PANSS General}) > r(\text{AMS} \& \text{PANSS Positive})$)

METHODOLOGY

Measures

- Structured Clinical Interview for the DSM-IV (CB-SCID-I/P; So et al., 2003)
- Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987)
- Calgary Depression Scale for Schizophrenia (CDSS; Addington et al., 1990)
- Autobiographical Memory Test (AMT)**
 - Participants were prompted to verbally recall a personal memory in Cantonese within 1 minute
 - Minimum Instruction Variant** (Debeer et al., 2009): without the instruction to provide a specific memory
 - 5 positive cues: “能幹” competent, “成功” successful, “驚喜” surprised, “滿足” satisfied, “有信心” confidence
 - 5 negative cues: “孤單” lonely, “絕望” hopeless, “妒忌” jealous, “羞恥” shameful, “失敗” failure
 - 2 practice cues: “開心” happy, “擔心” worried
 - Cues were presented in a **predetermined sequence** alternating between positive and negative cues
 - Clinical group:** verbal responses were transcribed by the interviewer using pen and paper
 - Healthy controls:** verbal responses were recorded

Sample Recruitment and Procedure

Clinical Sample

Recruited from **psychiatric outpatient clinics** and day hospitals upon referral by psychiatrists

Clinical Assessment

(SCID-DSM-5, PANSS, CDSS, WAIS-IV [HK])

Inclusion Criteria

- Primary diagnosis of **Schizophrenia Spectrum Disorder (SSD)** in the SCID-DSM-5 within 10 years
- 18 to 65 y/o
- Native **Cantonese**
- Assessed with an **estimated IQ > 70** using WAIS-IV [HK]

AMT

Healthy Controls

Recruited through campus recruitment via **mass mail, poster advertisements and snowballing referrals**

Age and gender matching

with patients

Clinical Assessment

(SCID-DSM-5)

- #### Inclusion Criteria
- Without** any past or present DSM-IV Axis 1 disorders
 - 18 to 65 y/o
 - Native **Cantonese**

AMT

Coding Memory Specificity

- Following Mediavilla et al. (2021):
 - Specific memories: unique events occurring **within a single day + not from the past seven days** (e.g., “on my 13th birthday”) → Labeled as “1”
 - Non-specific memories → Labeled as “0”

AMT Scores Calculation

- AMT-Positive** = sum of positively cued item scores
- AMT-Negative** = sum of negatively cued item scores
- AMT-Total** = sum of all item scores

KEY RESULTS

Sample Characteristics

- Clinical sample ($n = 43$); Healthy controls ($n = 43$)
- 46.50% Female (matched with gender and age with maximum 5 years of difference)

H1: Group Comparison in AMS ✓

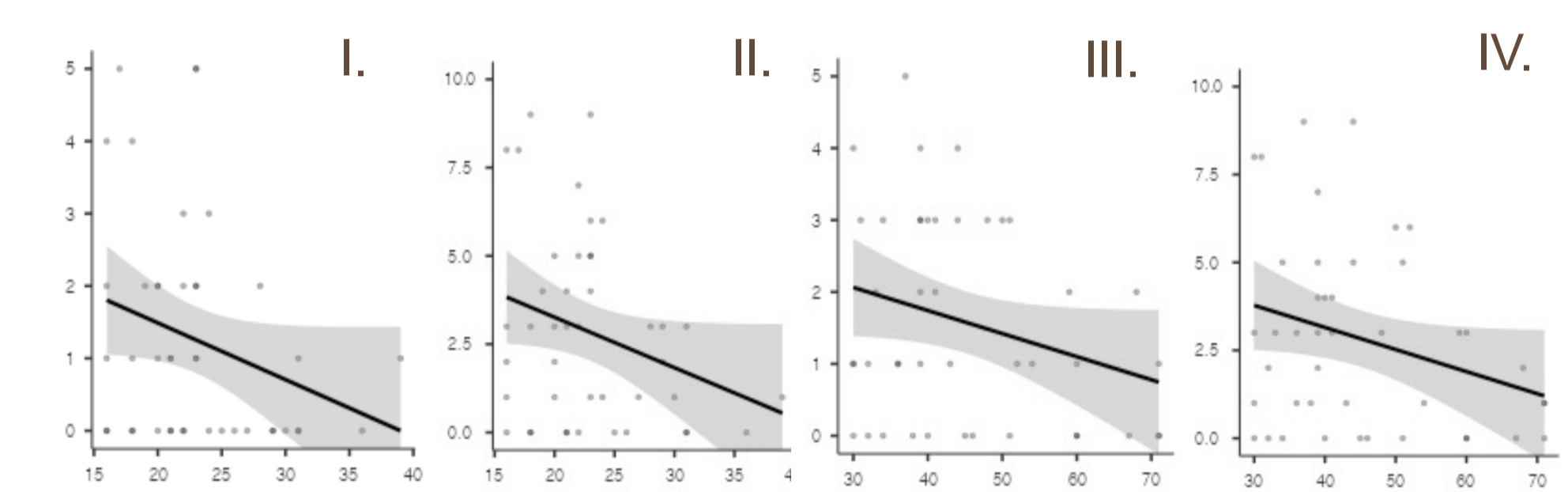
- Significant group difference in AM specificity, $t(84) = -2.98, p = .002$

H2: Effect of Emotional Valence ✓

- Clinical group:** significant effect
 - more specific AM prompted by negative cues than **positive cues**, $t(42) = 1.71, p = .047$
- Control Group:** significant effect
 - more specific AM prompted by negative cues than **positive cues**, $t(42) = -1.70, p = .048$

H3a: Correlation (AMS and Symptom Severity) ✓

Before controlling for depression, there was a significant effect for the negative correlation between:
I. PANSS-General & **AMT-Negative** ($r = -0.28, p = .035$)
II. PANSS-General & **AMT-Total** ($r = -0.29, p = .030$)
III. PANSS-Total & **AMT-Positive** ($r = -0.28, p = .035$)
IV. PANSS-Total & **AMT-Total** ($r = -0.30, p = .029$)

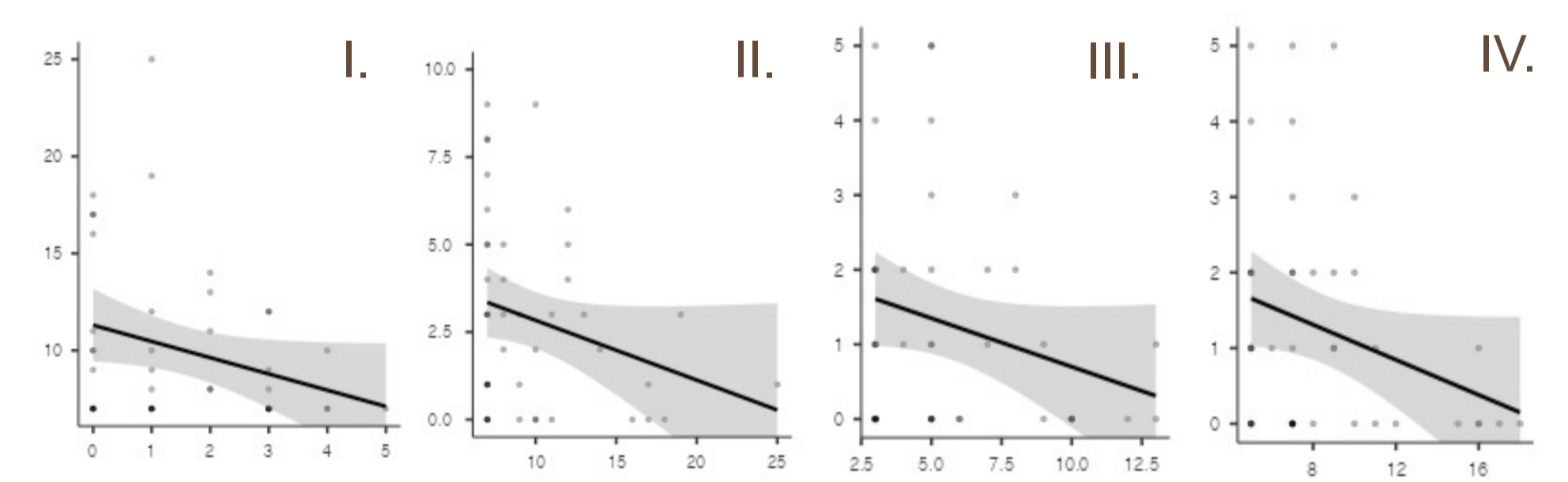


After controlling for depression, there was a significant negative correlation between:

- PANSS-Positive & **AMT-Positive** ($r = -0.27, p = .045$)
- PANSS-General & **AMT-Total** ($r = -0.28, p = .037$)
- PANSS-Total & **AMT-Positive** ($r = -0.29, p = .031$)
- PANSS-Total & **AMT-Total** ($r = -0.28, p = .039$)

Classifying symptoms with five-factor models by Wallwork et al. (2012) and Lim et al. (2021), significant correlations were found between:

- Lim-Negative** & **AMT-Positive** ($r = -0.29, p = .031$)
- Lim-Negative** & **AMT-Total** ($r = -0.27, p = .043$)
- Wallwork-Depression** & **AMT-Negative** ($r = -0.25, p = .050$)
- Lim-Depression/anxiety** & **AMT-Negative** ($r = -0.28, p = .033$)



H3b: Effect of Symptom Categories on AMS ✓

- Correlation with PANSS-Negative is larger than that of PANSS-Positive ($z = 2.82, p = .002$)
- Correlation with PANSS-General is larger than that of PANSS-Positive ($z = 4.61, p < .001$)

DISCUSSION

- Patients with schizophrenia demonstrated a **lower tendency to recall specific AM** than controls ($d = -0.64$)
 - Harvey et al. (2004): cognitive processes implicated in psychopathology may occur **trans-diagnostically**
- AM prompted by **negative cues** is **more difficult to recall** than by **positive cues**:
 - Negative cues naturally bring forth negative emotions → explained by functional avoidance in CaR-FA-X model
- Lower AMS is significantly correlated with elevated **general** and **overall symptomatology** after controlling for depression, but not with positive and negative symptom severity
 - contrary to the idea that memory deficit is more related to positive symptomatology (D'Argembeau et al., 2008)
 - significant after controlling for depression → deficits **distinctively linked to schizophrenia symptoms**
- With the five-factor models of PANSS, there is a **small but significant negative correlation** between overall and **positively cued** AMS and the **negative symptomatology** factor
 - negative symptoms such as anhedonia and blunted affect may diminish the emotional salience of positive cues
- Implications:
 - This study provides new insights into schizophrenia **symptomatology** and potential **treatment** involving AMS
 - Further research can be done on (1) **emotion-cognition interactions** in schizophrenia; (2) **AM detailedness** and its relationship with AM specificity in schizophrenia; (3) ways to **classify** schizophrenia symptoms; (4) applicability of short-lived and immediate symptom improvement of **Memory Specificity Training (MeST)** in schizophrenia

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