Cognitive Symptom Trajectories among Forensic Inpatients Diagnosed with Psychotic Disorders

CSU Student Research Competition
May 4th-5th, 2018

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Disclosures

The statements and opinions expressed are those of the authors and do not constitute the official views or the official policy of DSH-Patton, the California Department of State Hospitals, or the State of California.

Funding:

- Undergraduate Research Opportunities Center (UROC)
- University of Minnesota Press: Test Division
Overview of Psychotic Disorders

Schizophrenia, Schizoaffective

Characterized by Hallucinations & Delusions

1% of U.S. population

(American Psychiatric Association [APA], 2013; Fazel & Danesh, 2002)
Clinicians need accurate information for:

- Assessment
- Understanding patient experience
- Treatment
Two-Part Cross-Sectional Study

Overall Cognitive Symptom Trajectory

Impact of Comorbid Mood Disorders
Cognitive Symptoms

Processing Speed
Reasoning
Verbal Memory
Working Memory
Attention/Vigilance

(Dickinson, & Harvey, 2009; Garcia, Viechtbauer, Simons, van Os, & Krabbendam, 2009; Keefe, & Harvey, 2012)
Research Question 1
What is the trajectory of cognitive symptoms for patients as they age?

Research Question 2
How would comorbid mood disorders impact cognitive symptom severity?
Research So Far

Follow Patients over Time

Compare across Age Groups

(American Psychiatric Association [APA], 2013; Fazel & Danesh, 2002)
Neurodevelopmental Trajectory Model

Severity of Symptoms

Young → Middle → Older

(Heaton et al., 2001; Kurtz, 2005)
Neurodegenerative Trajectory Model

Severity of Symptoms

Young  Middle  Older

(Irani et al., 2011; Herold, Schmid, Lässer, Seidl, & Schröder, 2017)
Research Question 1

What is the trajectory of cognitive symptoms for patients as they age?
Research Question 1

Hypotheses: Neurodegenerative Trajectory

Neurodegenerative Model

- Young
- Middle
- Older

(From: Irani et al., 2011; Herold, Schmid, Lasser, Seidl, & Schröder, 2017)

Neurodevelopmental Model

- Young
- Middle
- Older

(From: Heaton, 2001; Kurtz, 2005)
Mood Disorders

- Anxiety
- Depression
- Mania
Research Question 2

How would comorbid mood disorders impact cognitive symptom severity?

Exploratory Analyses:
Due to the limited and mixed research, we could not form formal hypotheses

(Bora, Yucel, & Pantelis, 2009; Depp et al., 2007)
Method
Sample
(N = 708)

- Male: 73.7%
- Caucasian: 27.4%
- African American: 17.4%
- Hispanic: 2.4%
- Asian American: 2.7%
- Other: 2.4%

Total: 100.0%
Not Guilty by Reason of Insanity
Mentally Disordered Offender
Incompetent to Stand Trial
Mentally Disordered Sex Offender
Prison Transfer
Other

Years at Hospital
$M(SD) = 2.46(4.30)$
Measures

Minnesota Multiphasic Personality Inventory – 2 Restructured Form (MMPI-2-RF)

- VRIN-r
- COG
Variable Response Inconsistency – Revised (VRIN-r)

<table>
<thead>
<tr>
<th>Reading Comprehension Problems</th>
<th>VRIN-r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncooperative</td>
<td></td>
</tr>
<tr>
<td>Cognitive Problems</td>
<td>Fatigue</td>
</tr>
</tbody>
</table>

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Variable Response Inconsistency – Revised (VRIN-r) [Diagram]

- Reading Comprehension Problems
- Uncooperative
- Cognitive Problems
- Fatigue

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Cognitive Complaints (COG) Scale

Reading Comprehension  Working Memory

Attention/Vigilance  Troubling Thoughts

(COG) (Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Cognitive Complaints (COG) Scale

- Reading Comprehension
- Working Memory
- Attention/Vigilance
- Troubling Thoughts

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Cognitive Complaints (COG) Scale

Reading Comprehension

Working Memory

COG

Attention/Vigilance

Troubling Thoughts

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Cognitive Complaints (COG) Scale

- Reading Comprehension
- Working Memory
- Attention/Vigilance
- Troubling Thoughts

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Cognitive Complaints (COG) Scale

Reading Comprehension | Working Memory
---|---
Attention/Vigilance | Troubling Thoughts

(Ben-Porath, 2012; Ben-Porath & Tellegen, 2008/2011)
Procedures: RQ 1

- Young (18-34 years)
- Middle (35-49 years)
- Older (≥ 50 years)

Removed Invalid Protocols for COG analyses

(Burchett & Ben-Porath, 2010; Ben-Porath, 2012)
Procedures for Research Question 1

- Analysis of Variance (ANOVA) to compare mean scores across 3 groups
Procedures: RQ 2

Schizophrenia (Sz)

- Sz Only
  - Young
  - Middle
  - Older

- Sz + Mood
  - Young
  - Middle
  - Older
Procedures for Research Question 2

- Independent Samples $t$-tests to compare mean scores across 2 groups
Procedures for Research Question 2

<table>
<thead>
<tr>
<th>Sz Only</th>
<th>Sz Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>Young</td>
</tr>
<tr>
<td>Middle</td>
<td>Middle</td>
</tr>
<tr>
<td>Older</td>
<td>Older</td>
</tr>
</tbody>
</table>
Procedures for Research Question 2

- **Sz Only**
  - Young
  - Middle
  - Older

- **Sz Mood**
  - Young
  - Middle
  - Older
Procedures for Research Question 2

- Sz Only
  - Young
  - Middle
  - Older

- Sz Mood
  - Young
  - Middle
  - Older
Results
Research Question 1

What is the trajectory of cognitive symptoms for patients as they age?

**Neurodegenerative Model**
- Young
- Middle
- Older

**Neurodevelopmental Model**
- Young
- Middle
- Older

(Irani et al., 2011; Herold, Schmid, Lässer, Seidt, & Schröder, 2017)

(Heaton, 2001; Kurtz, 2005)
Research Question 1

Hypotheses: Neurodegenerative Trajectory

Neurodegenerative Model

Severity of Symptoms

Young | Middle | Older

Itani et al., 2011; Herold, Schmid, Lasser, Seidl, & Schröder, 2017

Neurodevelopmental Model

Severity of Symptoms

Young | Middle | Older

Heaton, 2001; Kurtz, 2005
VRIN-r ANOVA Results

Severity of Symptoms

- Young ($n = 236$): 59.94
- Middle ($n = 338$): 59.36
- Older ($n = 134$): 57.12
No significant differences were found

\[ F(2, 705) = 1.52, \ p = .22 \]
COG ANOVA Results

Severity of Symptoms

- Young: 51.18 (n = 148)
- Middle: 50.37 (n = 148)
- Older: 51.84 (n = 95)
COG ANOVA Results

No significant differences were found

$$F(2, 456) = .69, p = .51$$

Severity of Symptoms

- Young ($n = 148$): 51.18
- Middle ($n = 148$): 50.37
- Older ($n = 95$): 51.84
Research Question 1

Hypotheses: Neurodegenerative Trajectory

Neurodegenerative Model

Neurodevelopmental Model

(Irani et al., 2011; Herold, Schmid, Lasser, Seidl, & Schröder, 2017)

(Heaton, 2001; Kurtz, 2005)
Research Question 1

Results: Neither Trajectory
Research Question 2 🙁

How would comorbid mood disorders impact cognitive symptom severity?

Exploratory Analyses:
Due to the limited and mixed research, we could not form formal hypotheses

(Bora, Yucel, & Pantelis, 2009; Depp et al., 2007)
VRIN-r Independent Samples \( t \)-test Results

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sz Only</td>
<td>59.03</td>
</tr>
<tr>
<td>Sz + Mood</td>
<td>60.82</td>
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\( n = 116 \) (Young) \( n = 120 \)
VRIN-r Independent Samples $t$-test Results

<table>
<thead>
<tr>
<th>VRIN-r Mean Scores</th>
<th>Sz Only</th>
<th>Sz + Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young (n = 116)</td>
<td>59.03</td>
<td>60.82</td>
</tr>
<tr>
<td>Middle (n = 172)</td>
<td>59.44</td>
<td>59.29</td>
</tr>
<tr>
<td>(n = 120)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 166)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VRIN-r Independent Samples $t$-test Results

No significant differences

VRIN-r Mean Scores

- Sz Only
- Sz + Mood

Young: $(n = 116)$ $(n = 120)$
  - VRIN-r Mean Scores: 59.03, 60.82

Middle: $(n = 172)$ $(n = 166)$
  - VRIN-r Mean Scores: 59.44, 59.29

Older: $(n = 65)$ $(n = 69)$
  - VRIN-r Mean Scores: 57.12, 57.12
COG Independent Samples t-test Results

- Sz Only
- Sz + Mood

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Score</th>
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<tbody>
<tr>
<td>Sz Only</td>
<td>50.52</td>
</tr>
<tr>
<td>Sz + Mood</td>
<td>51.99</td>
</tr>
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</table>

Sample sizes:
- Sz Only (n = 81)
- Sz + Mood (n = 67)
COG Independent Samples $t$-test Results

- **Sz Only**
  - Young: $n = 81$ Mean = 50.52
  - Middle: $n = 116$ Mean = 50.59

- **Sz + Mood**
  - Young: $n = 67$ Mean = 51.99
  - Middle: $n = 100$ Mean = 50.12
COG Independent Samples $t$-test Results

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Sz Only</th>
<th>Sz + Mood</th>
<th>No significant differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>50.52</td>
<td>51.99</td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>50.59</td>
<td>50.12</td>
<td></td>
</tr>
<tr>
<td>Older</td>
<td>50.46</td>
<td>53.14</td>
<td></td>
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</tbody>
</table>
Research Question 2

Results:
Comorbid mood disorders did not significantly impact cognitive symptom severity.
Conclusions & Future Directions
Research Question 1
Patients may not experience increased cognitive symptom severity as they age

Research Question 2
Having mood disorders may not impact cognitive dysfunction
Clinicians may not have to worry about cognitive symptoms worsening over time due to age.

Comorbid mood disorders may not impact the level of treatment needed for cognitive symptoms.
Future Directions in Research

- Use more direct and specific measures of cognitive symptoms
- Among larger samples and younger age groups
- Controlling for additional variables
Acknowledgements

**Mentor:** Danielle Burchett, PhD
Department of Psychology

**Collaborator:** David M. Glassmire, PhD, APPB


References


Thank you!

Questions?
## DSM-IV-TR Diagnostic Codes

<table>
<thead>
<tr>
<th>Schizophrenia Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia Disorders: 295.10, 295.30, 295.40, 295.50, 295.60, 295.90</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Schizophrenia with Mood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizoaffective Disorder: 295.70, 295.770</td>
</tr>
<tr>
<td>Depressive/Anxiety Disorders: 296.22, 296.24, 296.30, 296.31, 296.32, 296.34, 296.35</td>
</tr>
<tr>
<td>Bipolar Disorders: 296.00, 296.40, 296.41, 296.42, 296.43, 296.44, 296.45, 296.46, 296.50, 296.51, 296.52, 296.53, 296.54, 296.55, 296.60, 296.7, 296.70, 296.62, 296.64</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Excluded from Analyses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-Induced Psychotic Disorders: 291.3, 291.50, 292.10, 292.11, 292.12</td>
</tr>
<tr>
<td>Psychotic Disorders due to Medical Condition: 293.81, 293.82</td>
</tr>
<tr>
<td>Mood Disorders due to Medical Condition: 293.83</td>
</tr>
<tr>
<td>Delusional Disorders, Brief Psychotic Disorder, Psychotic Disorder NOS: 297.10, 298.8, 298.9</td>
</tr>
</tbody>
</table>