*Within the United States, 18.5 million individuals aged 12 and older meet criteria for an alcohol use disorder (AUD) 1.
*AUDs have been associated with substantial negative health, social and economic consequences for both the individual and society 2-5.
Impaired problem recognition is consistently identified as a significant barrier that must be overcome in order for one to perceive the need for treatment and for treatment interventions to be successful. However, the neurocognitive mechanisms underlying impaired problem recognition are poorly understood.

The Self-Schema Model of the Self-Concept has the potential to illuminate the neurocognitive structures and functioning underlying IPR in AUD.

Once the neurocognitive structures are identified, theoretically and empirically grounded interventions focused on modifying the structural properties can be pursued.

The Self-Schema Model of the Self-Concept posits that the self-concept is comprised of multiple, domain-specific, self-referential memory structures called self-schemas.

Self-schemas have been shown to be critical in all aspects of processing self-relevant information including directing attentional focus, influencing what information is encoded within the self-concept, recollection, self-perception and meaning making; and in guiding behavior.

Self-schemas reflect long term, stable yet malleable neural pathways established over time, as a result of repeated behavioral and social experience within a specific domain.

Availability and the structural properties of valence and elaboration of self-schemas, have been found to be crucial in influencing cognitive processing and behavior.

*Background and Significance*

*Theoretical Framework*

*Self-Schema Model of the Self-Concept*
*Integrative Review of the Literature*

*Purpose: To synthesize the existing research concerning self-schemas with alcohol use disorder, in order to better understand the structural properties and effect of the drinking-related self-schema within AUD*

1. What is known about the availability, structure and effect of the drinking-related self-schema among persons with an AUD?
2. How are drinking-related self-schemas operationalized within the health and psychosocial literature?

*State of the Science*

7 primary-research studies were available that examined the drinking-related self-schema. All retrieved studies supported availability of a DRSS. 5 studies found that the degree of elaboration of the DRSS was a key structural property influencing drinking behaviors. No studies identified the content or valence of the DRSS. Diverse methods were used to operationalize elaboration. 4 schema-based models of alcohol use were identified. All models posited that the self-concept undergirded behavior within the domain of drinking. None of the retrieved models identified the cognitive mechanisms behind how the self-concept influenced drinking-related behavior.

*Self-Schema Model of Impaired Problem Recognition*

Model Tenets
1. Individuals experiencing alcohol use disorder with low problem recognition possess a drinking-related self-schema that is positively valenced:
   - Misattribution
   - Positivity bias
   - Neurotoxic effects of alcohol

2. As the drinking-related self-schema becomes more elaborate drinking patterns become increasingly automatic and reflexive.

* SS-IPR Tenet 1

* SS-IPR Tenet 2

* Model Tenets 1 & 2

* Published in Satpute and Lieberman (2006)
3. As one continues to accumulate negative drinking-related experiences the content of the drinking-related self-schema shifts in valence from positive to negative and becomes compartmentalized. This compartmentalization results in impaired problem recognition.

4. As the drinking-related self-schema becomes the most elaborate and as such predominant schema, it begins to overshadow the remaining self. Exacerbated by the loss of social roles that one can encounter with chronic alcohol use, however, increased elaboration of negatively valenced content also results in increased problem recognition.
1. To identify the structural properties (availability, valence, and elaboration) of the drinking-related self-schema among individuals who meet DSM-5 criteria for moderate to severe AUD

2. To determine the relationship between the structural properties of the drinking-related self-schema and problem recognition
Inclusion Criteria:
1. 21 years and older
2. Either having been convicted of an alcohol-related offence within 12 months or answering “yes” to 2+ CAGE items
3. Able read and write English

Exclusion Criteria:
1. Intoxicated at time of data collection
2. MMSE-2 score <24
### Measures

<table>
<thead>
<tr>
<th>Activity Code</th>
<th>Measure Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Informed Consent</td>
</tr>
<tr>
<td>2</td>
<td>Alcohol Breathalyzer</td>
</tr>
<tr>
<td>3</td>
<td>CAGE</td>
</tr>
</tbody>
</table>
| 4             | Mini Mental Status Examination / MMSE-7 |}

### Data Analyses

<table>
<thead>
<tr>
<th>Data Analyses</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 1</td>
<td>Descriptive analysis &amp; Wilcoxon</td>
</tr>
<tr>
<td>Age 2</td>
<td>Descriptive analysis &amp; Pearson Correlation</td>
</tr>
<tr>
<td>Age 3</td>
<td>Multiple regression</td>
</tr>
</tbody>
</table>

### Results
Sample Characteristics

- N=55
- 36% Women, 64% Men
- 20% currently in recovery (abstinent)
- 73% reported receiving some professional treatment for alcohol use in the past

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>23</td>
<td>73</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>Education (years)</td>
<td>7</td>
<td>18</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td># of drinking days per week</td>
<td>.00</td>
<td>7.00</td>
<td>4.44</td>
<td>2.65</td>
</tr>
<tr>
<td># of drinks per drinking day</td>
<td>.00</td>
<td>29.67</td>
<td>8.28</td>
<td>7.44</td>
</tr>
<tr>
<td># of lifetime convictions for alcohol-related offences</td>
<td>.00</td>
<td>21.00</td>
<td>2.15</td>
<td>3.23</td>
</tr>
<tr>
<td>DSM-5 Score (12 months)</td>
<td>4.00</td>
<td>11.00</td>
<td>8.36</td>
<td>2.35</td>
</tr>
<tr>
<td>DAST-10 Total Score</td>
<td>.00</td>
<td>10.00</td>
<td>3.41</td>
<td>3.23</td>
</tr>
</tbody>
</table>

RQ 1: Availability
- All participants displayed availability of a drinking-related self-schema
- Statistically significant difference in self-schema scores for DSM-5 moderate to severe group (M= 24.47, SD=10.42) and those who did not meet (M= 9.8, SD=8.98; w(58)= 1774.50, p=.006). The magnitude of the difference in the means was moderate to large (eta squared= 0.138)

Alt. 1

...
RQ 2: Valence

DRSS was composed of 47% negatively valenced content ($M = 46.92, SD = 27.10$). In contrast, the remaining self-concept excluding the DRSS was composed of 26% negatively valenced content ($M = 25.69, SD = 17.17$).

One-sample t-test found a statistically significant difference in negatively valenced content between the drinking-related self-schema and the content of the overall self-concept ($t(54) = 12.84, p < .000$).

RQ 3: Elaboration

Descriptive analysis revealed that the DRSS encompassed 43% of one’s overall self-concept ($M = 43.40, SD = 12.71$).

Of participants who displayed availability of a recovery-related self-schema ($N = 11$), the recovery-related self-schema encompassed 3% of their overall self-concept ($M = 3.43, SD = 9.50$).

No statistically significant relationship between elaboration of the DRSS and problem recognition.

Negative valence and problem recognition

$r = .49, n = 55, p < .01$, with a high degree of negativity within the drinking-related self-schema associated with higher levels of problem recognition.

Positive valence and problem recognition

$r = -.40, n = 55, p < .01$, with a high degree of positivity within the drinking-related self-schema associated with lower levels of problem recognition.
**Exploratory Analyses**

### Aims 3

#### Multiple regression analysis for variables explaining Problem Recognition (N=55)

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.05</td>
<td>0.05</td>
<td>0.252</td>
<td>[0.23, 0.28]</td>
</tr>
<tr>
<td>Problem Recognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>0.38</td>
<td>1.03</td>
<td>0.008</td>
<td>[0.06, 0.04]</td>
</tr>
<tr>
<td>Electrolog of RRS</td>
<td>0.19</td>
<td>0.45</td>
<td>0.161</td>
<td>[0.04, 0.26]</td>
</tr>
<tr>
<td>Negative Valence</td>
<td>0.76</td>
<td>2.08</td>
<td>0.019</td>
<td>[0.25, 0.27]</td>
</tr>
<tr>
<td>Positive Valence</td>
<td>0.41</td>
<td>-3.46</td>
<td>0.001</td>
<td>[1.01, 0.09]</td>
</tr>
<tr>
<td>Age</td>
<td>0.12</td>
<td>1.12</td>
<td>0.062</td>
<td>[0.06, 0.22]</td>
</tr>
<tr>
<td>Drinking days per week</td>
<td>0.09</td>
<td>0.02</td>
<td>0.003</td>
<td>[0.02, 0.01]</td>
</tr>
<tr>
<td>Stress per drinking day</td>
<td>-0.02</td>
<td>-0.50</td>
<td>0.594</td>
<td>[0.24, 0.26]</td>
</tr>
<tr>
<td>Years of sobriety</td>
<td>0.06</td>
<td>0.70</td>
<td>0.584</td>
<td>[0.24, 0.26]</td>
</tr>
</tbody>
</table>

Overall R²=0.47, adjusted R²=0.37, F(8,46)=4.99, p<0.000. *significant

#### Multiple regression analysis for variables explaining taking steps (N=55)

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>0.39</td>
<td>0.94</td>
<td>0.005</td>
<td>[0.26, 1.01]</td>
</tr>
<tr>
<td>Electrolog of RRS</td>
<td>0.17</td>
<td>-0.66</td>
<td>0.541</td>
<td>[-0.14, 0.14]</td>
</tr>
<tr>
<td>Experience of RRS</td>
<td>0.22</td>
<td>0.45</td>
<td>0.151</td>
<td>[0.12, 0.26]</td>
</tr>
<tr>
<td>Stress per drinking day</td>
<td>0.04</td>
<td>0.10</td>
<td>0.225</td>
<td>[0.03, 0.05]</td>
</tr>
<tr>
<td>Years of sobriety</td>
<td>0.01</td>
<td>0.03</td>
<td>0.809</td>
<td>[-0.02, 0.02]</td>
</tr>
</tbody>
</table>

Overall R²=0.54, adjusted R²=0.46, F(8,46)=6.81, p<0.000. *significant

#### Multiple regression analysis for variables explaining ambivalence (N=55)

<table>
<thead>
<tr>
<th>Variable</th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>0.34</td>
<td>0.91</td>
<td>0.007</td>
<td>[0.22, 1.03]</td>
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<tr>
<td>Electrolog of RRS</td>
<td>0.21</td>
<td>0.53</td>
<td>0.126</td>
<td>[0.11, 0.33]</td>
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<tr>
<td>Experience of RRS</td>
<td>0.32</td>
<td>0.89</td>
<td>0.000</td>
<td>[0.27, 1.07]</td>
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<tr>
<td>Stress per drinking day</td>
<td>0.03</td>
<td>0.07</td>
<td>0.211</td>
<td>[-0.06, 0.06]</td>
</tr>
<tr>
<td>Years of sobriety</td>
<td>0.02</td>
<td>0.07</td>
<td>0.211</td>
<td>[-0.06, 0.06]</td>
</tr>
</tbody>
</table>

Overall R²=0.27, adjusted R²=0.15, F(8,46)=1.62, p=0.025. *significant
Multiple regression analysis for variables explaining frequency of drinking (N=55)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.24</td>
<td>[1.56, 6.78]</td>
<td>0.00*</td>
</tr>
<tr>
<td>Elaboration of DRSS</td>
<td>0.29</td>
<td>[0.01, 0.14]</td>
<td>0.03*</td>
</tr>
<tr>
<td>Elaboration of RecRSS</td>
<td>-0.32</td>
<td>[-0.13, -0.012]</td>
<td>0.02*</td>
</tr>
<tr>
<td>Negative Valence</td>
<td>-0.09</td>
<td>[-0.06, 0.03]</td>
<td>0.50</td>
</tr>
<tr>
<td>Positive Valence</td>
<td>0.09</td>
<td>[-0.03, 0.06]</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Overall R²=0.29, Adjusted R²=0.24, F(4,50)=5.17, p<0.001. *significant

Results illuminated previously unidentified cognitive mechanisms undergirding existing alcohol use models
- Cognitive Dissonance
- Overriding Self-Concept
- Results provided direction for the formation of interventions for impaired problem recognition and AUD
- Two separate drinking and recovery networks
- Existing health interventions

*Implications*

National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- Five year strategic plan identifies the need for research identifying how the emergence and progression of drinking behavior is influenced by changes in biology, psychology, and in exposure to social and environmental inputs over a person’s lifetime

*Future Steps*
Acknowledgements

References

1.  Substances abuse and mental health services administration. (2011). Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings. No. HHS (SMA) 11-4658). Rockville, MD: Department of A  
   Mental Health and Substance Abuse, General.
   Alcohol and Food. New York, NY.
   drinkers. Alcohol and Crime. (9), 747-754. doi: 10.1017/S0033291700041258
   Change Readiness and Treatment Eagerness Scale (SOCRATES).
   memory and memory creates self. In C. Sedikides & M. B. Brewer (Eds.), Memory and the self. New York, NY:  
   Psychology Press
   memory and memory creates self. In C. Sedikides & M. B. Brewer (Eds.), Memory and the self. New York, NY:  
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   memory and memory creates self. In C. Sedikides & M. B. Brewer (Eds.), Memory and the self. New York, NY:  
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