Tips for Designing a Research/SCE Poster:

Types of Acceptable Posters:

1. One Power Point slide printed out as a large scroll (posters like this can be seen throughout the Psychology Department)

2. No more than 16 individual Power Point slides, printed out and pinned on a poster board – mounting pages, construction paper and/or poster board help to prevent peeling corners.

Poster Printing:

- If you present your poster at a professional conference during your senior year or if your SCE advisor wants to use your poster for display purposes, the cost of your large poster will be free.
- If this is not the case there is a $25 fee for printing the large poster, which goes directly to printing costs; the check is paid to the order of Washington College and is given to the department Chair.

Acceptable Ways of Organizing Information:

- See sample layouts included in this packet, as well as throughout the Psychology Department (upstairs and downstairs)
- Items can be placed horizontally or in columns
- Information can be placed in boxes or it can stand alone

Design Tips:

Text:

- Don’t use too much text
- Use of bullets can be helpful
- Text should be readable from 6 feet away
- Use no smaller than size 24 font

Color:

- Efficient, professional-looking use of color can greatly enhance your poster
- Thus, poor color choices can ruin your poster
- Limit yourself to about 3 colors
- Think about complementary colors
- Pay attention to readability between the text and the background
- Look at sample design schemes in Power Point

Images/Icons/Pictures/Figures:

- Use tables and graphs to illustrate the findings
- Do not use too many pictures that may take away from the overall poster
Ensure that images are good quality because they will be blown up into large scale.

- Check for pixilation of images before you print
- Graphs generally come out more streamlined and professional if made in Excel versus SPSS
- Tables appear have a better appearance and conform better to APA standards if made in Word or Excel

Presenting Your Poster:
- Be very familiar with what you have put on your poster
- Have someone else look at your poster before you present it
- Be prepared to answer questions regarding your poster

Three poster examples are included:
1. A clinical Counseling (CC) data-driven poster
2. A combined Behavioral Neuroscience (BN) and CC theoretical review poster
3. A data-driven BN poster
Self-Reported ADHD Symptoms and Performance on Working Memory Tests
Ryan Beaston, Ashley Gilbert, Leslie Wagner, Lauren Littlefield

Abstract
The main purpose of this study was to examine the relationship between self-reported Attention Deficit Hyperactivity Disorder (ADHD) symptoms and select working memory tests. Seventy-seven college student participants were assessed with an ADHD self-report questionnaire and the Stroop Color and Word, WAIS Digit Span, and Trails B tests. Significant positive correlations were found between inattentiveness and both time and errors on Trails B. However, measures could not clearly identify participants with ADHD symptoms or diagnosed ADHD.

Introduction
Theoretical Background
Symptoms of ADHD include an inability to pay attention or keep focused, difficulty controlling emotions or impulsivity, and hyperactivity (APA, 1994). There are three subtypes to this disorder; predominantly hyperactive-impulsive, predominantly inattentive, and combined. Working memory refers to a simultaneous “temporary storage and manipulation” of information (Baddeley, 1992). Working memory affects many aspects of everyday life (Schweitzer, Hanford, & Medoff, 2006). Previous research indicates ADHD symptoms affect working memory and performance on working memory assessments.

Main Hypothesis
Higher ratings of ADHD symptoms should correlate with poorer test performance.

Secondary Hypothesis
There would be a meaningful difference in self-reported ADHD symptoms in clinical groups.

Tertiary Hypothesis
A presence of a diagnosed learning or emotional disorder (anxiety or depression) would correlate with poorer test performance.

Method
Participants
77 college students
- 16 males, 61 females
- 11 previously diagnosed with ADHD
- 7 previously diagnosed with a learning disorder
- 14 previously diagnosed with an emotional disorder (anxiety or depression)

Materials
Table 1. Measures used

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD Self-Report Questionnaire</td>
<td>Diagnostic criteria corresponding directly to DSM-IV-TR examining degree of severity ADHD symptoms</td>
</tr>
<tr>
<td>Trails B</td>
<td>Connect the dot activity that alternates between letters and numbers</td>
</tr>
<tr>
<td>WAIS Digit Span</td>
<td>Requires participants to repeat back a sequence of numbers forwards and then backwards</td>
</tr>
<tr>
<td>Stroop Color and Word</td>
<td>Participants are given 45 seconds to read color words, colored ink, and the color of the ink that color words are printed</td>
</tr>
</tbody>
</table>

Procedures
- Tests were individually administered by one of three examiners.
- The order of completion was...
  1. informed consent form
  2. demographic form
  3. ADHD self-report questionnaire
  4. three working memory tests, which were given uniformly with a strict adherence to standardized procedures
  5. debriefing form

Results
Main Hypothesis
- Self-reported inattentiveness correlated with greater time to complete Trails B, r (74) = .326, p = .005, r² = 108
- Higher inattentiveness correlated with more errors on Trails B, r (74) = .243, p = .037, r² = .062

Secondary Hypothesis
- Compared to non-diagnosed students, ADHD diagnosed showed a trend toward high inattentive ratings (p = .067) and more hyperactive-impulsive symptoms (p = .060).
- Participants diagnosed with an emotional disorder (anxiety or depression) endorsed more inattentive symptoms on the ADHD self-report questionnaire (M = 15.692, SD = 4.908) than participants not diagnosed with an emotional disorder (M = 12.984, SD = 4.249), p = .046.

Discussion
- The data gathered offered weak support for the hypothesis that higher scores on the ADHD self-report questionnaire would relate to poorer performance on the three working memory measures. Since difference were found on Trails B, perhaps assessments examining the ability to attend to more than one stimulus at a time could be useful at distinguishing between clinical and nonclinical populations.
- Participants who were previously diagnosed with an emotional condition indicated higher inattentive symptoms on the ADHD self-report questionnaire. This is understandable because these participants may often be preoccupied with anxious feelings or thoughts of the factors leading to their depression (Eysenck, 1988, Wilkinson & Goodyer, 2006).
- These three simple assessments of working memory and attention were not effective at distinguishing between participants with and without diagnosed ADHD. Continued projects should search for rapid cognitive assessments that can aid in differential diagnosis of ADHD and other disorders.
- More prominent differences may be found in unmedicated populations or with participants who suffer from more severe symptoms.

References
What is a Mirror Neuron?

- A Mirror Neuron is a neuron that fires both when an animal sees another one perform a particular action and when the animal carries out that same action on itself.
- The Mirror Neuron system is a system that theorizes to embody the interconnectivity of mirror neurons found in the human brain.
- The connection provides a system that is thought to be responsible for how we learn, carry out motor movements, socially relate, as well as how we perceive the intentions of others.

The History

- Mirror neurons were first discovered in 1992 by Giacomo Rizzolotti and Mike Graziano, PhD and his colleagues at the University of Padua (Watanabe, 2010).
- The study was published in 1997 when the scientists were first observing behavior in monkeys, hoping to learn more about their unique abilities. The initial findings sparked a wave of excitement, and research in mirror neurons continued to grow at an accelerated pace in the years to come. (Watanabe, 2010).

Visual Interaction

- A recent study examined mirror neurons activity using EEG during the observation of humans and other actions that contain human characteristics. The researchers indicated that there was an activation found in mirror neurons when observing the actions of another person. (Iacoboni, McLaren, Ramachandran, and Pinel, 2007)

Brain Locations

- Current studies are trying to determine if there is a link to athletic ability or injury recovery and mirror neurons.
- Dr. Daniel Gians and researchers at The University College of London conducted research on the role of mirror neurons in athletic competition. The researchers found evidence that mirror neurons are activated during athletic competition. (Gians, McLaren, and Addis, 2008)

For Example...

- Autism: The Broken Mirror?

- This theory examines whether or not there is a direct causal relationship between mirror neurons and the presence of autism. (Keysers and Perrett, 2004, 2005)
- Autism: Children can understand a model’s goal and evaluate it (similar to what normal children can do). However, when mimicry is set free, children with autism indicated no problem with imitating whereas the control children did. (Keysers et. al., 2004)

The Helping Relationship’s Best Tool

- Empathy and imitation are still the key components of a therapist’s ability to understand and connect with their clients.
- The presence of mirror neurons in the brain adds another layer to a therapist’s ability to understand their clients.
- When we understand our clients’ perspective, we are more likely to understand their emotions and experiences.

The Inability of Mirror Neurons to Explain Everything

- Mirror neurons may be the link to why pornography is so popular and sexually explicit images are so powerful. (Keysers, 2005)
- When imaging a box that is 3 millimeters by 3 millimeters, the sound of a bell that is 3 millimeters by 3 millimeters, or a sound of a bell that is 3 millimeters by 3 millimeters, the sound of a bell that is 3 millimeters by 3 millimeters, the sound of a bell that is 3 millimeters by 3 millimeters, the sound of a bell that is 3 millimeters by 3 millimeters.
- A recent study found that mirror neurons are activated when the monkey was observing a person’s actions. (Gians, McLaren, and Addis, 2008)

What We Won’t Know, But What We Need To Do

- Three important questions about an MNS in humans.
- We cannot efficiently detect a single mirror neuron in human brain tissue we can in monkeys.
- When imaging a brain at 3 millimeters by 3 millimeters, we need to know if we could easily contain within it hundreds of mirror neurons. (Watanabe, 2010)
- When we specifically are looking at the specific mirror neuron (Watanabe, 2010)
- Hopefully future technology will provide advances that will allow us to probe a single neuron with a mini-invasive procedure.

Evaluating the MNS

- The mirror neuron system may not yet have physical proof, but the thought of its existence in humans is certainly not an outlandish or impossible one.
- The research that is being conducted seems to indicate the presence of a system that has sparked the imagination of researchers all over the world. Through new ideas for experimentation, researchers may continue to further explain human and animal behavior, continuing to shed light on the basis of these actions. Working to find answers to such questions as to why we are social beings and empathize, how our conditions, and even providing answers to questions such as what are mirror neurons and what do they do? (Watanabe, 2010)

Brainstorming: Help, I Can’t Think

- The MNS or Theory of Mind as a whole has already begun to open, and could linked to the theory behind mirror neurons.

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A Rodent Model of Parkinson’s Disease: 6-Hydroxydopamine (6-OHDA) Lesions of the Striatum

Marissa Babnew ¹, Dominique Scutella ¹, Jesse Nunn ² & Michael Kerchner ¹

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² Brown University, Providence, RI

Introduction
Parkinson’s Disease (PD) plagues over one million people in the United States, with the risk being highest for those over sixty according to the American Parkinson’s Disease Association. PD causes positive symptoms including muscular rigidity and a tremor at rest, along with negative symptoms including bradykinesia, a poverty or slowing of movement, disturbances of posture, and cognitive difficulties (Deumens, Blokland, & Prickaerts, 2002). PD is a progressive neurodegenerative disease with an onset of symptoms that is slow and subtle; most patients do not realize they have the devastating disease until it is too late.

Aim
The aim of this study was to utilize a unilateral lesion of the striatum to create an accurate rodent model of Parkinson’s Disease. This model will then be used to further refine surgical procedures and protocols as well as investigate the protective effects of melatonin in PD.

Method
Surgical Procedures
Unilateral depletion of dopaminergic striatal neurons was achieved via stereotaxic administration of the neurotoxin 6-hydroxydopamine (6-OHDA) hydrobromide (20µg/20µl saline; Sigma, St. Louis, MO). Coordinates for these injections were determined using the Paxinos and Watson atlas (AP: 1.0 mm anterior to bregma, L: 2.6 mm from midline, D: 4.5 mm from the dura).

The animals were allowed to recover for 12-14 days before behavioral testing began. There were 3 6-OHDA lesion animals and 3 controls that received the identical surgical procedure with the absence of the injection of 6-OHDA, which served as controls.

Behavioral Measures

- **Behavioral Measures**
  Multiple behavioral tests were employed to assess the degree to which unilateral 6-OHDA lesions in the right stratum had depleted dopamine, thereby leading to contralateral sensorimotor deficits.

- **Open Field Activity**
  The animals were observed in an open field for 10 minutes for any indication of motor deficits or dyskinesia.

- **Rearing Measure**
  The animals were placed in a clear plastic cylinder for 5 mins. or until they had reared 10 times. The preferred paw during rearing was recorded to measure motor impairments in the paw contralateral to the lesion.

- **Rotation Measure**
  The animals were placed in the same cylinder and the number of ipsilateral and contralateral turns were recorded. Ipsilateral turning was considered evidence of sensorimotor deficits contralateral to the lesion.

- **Rubber Band Measure**
  To assess any fine sensorimotor impairments in the forepaws, an orthodontic rubber band was fitted around the right and then the left forepaw. The duration of time spent attending to the band as well as whether it was removed, and the latency to do so was recorded.

- **Drug-induced Rotation Measure**
  The animals were treated with the dopamine receptor agonist apomorphine (1 mg/kg), and placed in the same cylinder in which they performed the drug free rotations. The number of contralateral and ipsilateral turns were recorded. Contralateral turning in response to an apomorphine challenge signals depletion of dopamine in the lesioned striatum.

- **Fruit Loop Task**
  The animals were placed in their home cage and given fruit loops. The task measured any fine motor deficits that were apparent while grasping, manipulating and eating the fruit loop.

Results

Key Findings

- Although no significant motor deficits were found in the open field activity, there was observable swaying in the majority of the 6-OHDA lesioned animals.
- Use of the ipsilateral paw in rearing increased in the lesioned group across the five trial days while it decreased in control animals.
- A general increase in drug free ipsilateral rotations was found in the lesioned group as compared to a general increase in contralateral rotations in the control group.
- A significantly higher number of ipsilateral rotations were found in the lesioned group in response to an apomorphine drug challenge.
- The rubber band and fruit loop tests showed no significant fine motor or sensory impairments in the lesioned animals.

Conclusions

- Lesions which cause dopamine depletion in the striatum cause Parkinson’s like symptoms in the rodent
- TH-IHC is necessary to verify the location and extent of the lesions
- Dopamine depletion causes motor deficits in rearing and rotation in the paw contralateral to the lesion
- Lesions of the striatum do not cause fine motor and sensory impairments
- Higher concentrations on 6-OHDA are necessary to create more immediate symptoms of PD

Literature Cited

Acknowledgements
We wish to thank Gail Russell for technical assistance throughout this project. Funding for this research was provided by a grant from the Hodson Trust awarded to M.B. and D.S.