Experimental Psychology

Goals of this course:
• Learn how to do psychology experiments
• Learn how to communicate the results of such experiments
• Learn about some psychological phenomena
• Become a better consumer of research results

How these goals will be accomplished...

General idea:
1. Lecture/textbook
2. Labs
3. Independent project
Who should care?
Grad school in cognitive psychology
Grad school in psychology
Grad school
Business
  advertising
  marketing
  human resource management
Engineering
  product design
  workplace design
Architecture
  building design
  community planning
Consumer of news and information
Problem with the preceding result (as described here):

The result is merely correlation—we know that basket usage co-occurs with buying unhealthy food, but that does not mean that basket usage causes people to purchase unhealthy food.
Bad science in the popular press

1. Correlational results assumed to imply causation
Homework:

Find an example of a scientific result reported in the popular press. Results with flaws are more fun to discuss.

Email it to me before class on Thursday.
Weird! You may have heard the theory of shopping for groceries with a basket, rather than a full-size shopping cart, as a trick to limit spending, especially on impulse purchases. Logically, this makes sense: With less space to carry groceries, there’d seem to be less chance for making bad decisions. But a new study shows that shoppers gathering groceries in baskets are more likely to make unhealthy, wasteful purchases.

Why might this be? The research of a group of European professors indicates that, oddly enough, the answer has something to do with how the basket shopper must flex his or her arm carrying the groceries. According to the study, in the Journal of Marketing Research:

We demonstrate that arm flexor contraction makes individuals more likely to choose immediately pleasing options. That’s another way of saying “instant gratification.” The tension and strain on the arm (and presumably, back and shoulders as well) makes shoppers more likely to pick up “vice products” such as candy and soda, apparently as some sort of unconscious counterbalance to the hassles of carrying a shopping basket. When pushing a shopping cart on wheels, there is no “arm flexor contraction” necessary.

The researchers make their case through a number of studies. In the first, they simply followed around random shoppers in a supermarket, noting who was shopping with a cart, who had a basket, and what they brought to the register. What the data indicated is that:

The odds of purchasing vice products at the cashier for a basket shopper is 6.84 times the odds of purchasing vices for a cart shopper, all other things being equal.

Wow. Those baskets seem to bring out the worst in people. But, generally speaking, aren’t the people shopping with baskets just plain different than those shopping with carts? Think about it. The individual shopping with a cart is probably not an amateur randomly looking for something to fill his belly. If you’ve grabbed a cart, you’re probably shopping for more than yourself. You probably have a list. You probably don’t want to have to visit the store more than once a week. You’re probably careful about what goes into the cart. The basket shopper, on the other hand, would seem to be more likely to be going to the store for one or two specific things—but who, when tempted or bored, might mindlessly toss a few other items into the basket.

In other words: Blame the shopper, not the shopping basket.

Yet, another study conducted by the researchers indicates that shopping basket shoppers—specifically the “arm flexion” involved in holding a shopping basket—tends to result in people choosing vice over virtue at the grocery store. In the experiment, participants were given a shopping list in which they had a choice of snacks—some healthy (apple, orange), some not to healthy (Twix, Mars bar).

You know where this is going: The shoppers holding baskets were more likely than the shopping cart shoppers to pick the candy bars over the fruit. And why is this so? Researchers say that uncomfortable body sensations, such as the strain of holding a shopping basket, induce a “present-biased preference.” For grocery shoppers, that means wanting chocolate asap. At least you shouldn’t have room in the basket for too many of them.

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**Sleep More, Weigh Less: the link Between Sleep and Weight Loss**

By Jenny Stamos Kovacs

WebMD Feature

Reviewed by Charlotte E. Grayson Mathis, MD

If you've been skipping out on snooze time to log more hours at the gym, you could be missing out on the easiest weight loss strategy ever—sleep. Here's how changing your sleep habits can help you lose weight.

When Losing Sleep Leads to Gaining Weight

“There are over two dozen studies that suggest that people who sleep less tend to weigh more,” says Sanjay Patel, MD, assistant professor of medicine at Case Western Reserve University, in Cleveland, Ohio. One such study, published in the Archives of Internal Medicine, examined approximately 1,000 people, and found a link between weight and time spent in bed. On average, people who were overweight slept 16 minutes less per day than normal weight people—a small, but significant difference. Recent research led by Patel followed 68,183 women, all part of the Nurses’ Health Study, for 16 years. The results: Those who slept 5 hours or less a night were nearly a third more likely to gain 30 pounds or more than women who slept 7 hours per night.
Bad science in the popular press

1. Correlational results assumed to imply causation
2. Selective sampling (subjects "select themselves" or are included due to some special attribute; "non-scientific" polls)
They like motion. According to psychologists at the University of Cambridge in England, boys prefer to watch mechanical motion over human motion. When they gave 12-month-old boys the choice of looking at people talking or windshield wipers moving, you can guess which the tots picked.

Bad science in the popular press

1. Correlational results assumed to imply causation
2. Selective sampling (subjects “select themselves” or are included due to some special attribute; “non-scientific” polls)
3. Absence of needed comparison (or “control”)
Measles cases in the U.S. are at the highest level in more than a decade, with nearly half of those involving children whose parents rejected vaccination.

“Measles cases in the U.S. are at the highest level in more than a decade, with nearly half of those involving children whose parents rejected vaccination.”

Measles cases in the U.S. are at the highest level in more than a decade, with nearly half of those involving females and the other half males.

Concern: Of the people who do not get measles, how many of them received the vaccine? What if 50% of healthy people didn’t receive the vaccine?
Before their strokes, younger patients who saw chiropractors were more likely to have complained beforehand of head and neck pain — symptoms often preceding a stroke — suggesting they had undiagnosed dissections and had sought out chiropractors for relief, not realizing a stroke was imminent.

Studies that followed suggested a link. One at Stanford that surveyed 177 neurologists found 55 patients who suffered strokes after seeing chiropractors. Another, published in the journal Neurologist, said young stroke patients were five times more likely to have had neck adjustments within a week of their strokes than a control group.

Give Yourselves a Hand for Driving Safely

Nearly two-thirds of Americans (64%) always buckle up when driving or riding in an automobile. That's the good news from Traffic Safety Now, a nonprofit organization in Detroit. The current figure—based on its survey of 3000 U.S. residents earlier this year—represents a whopping increase of 236% over seat belt use in 1984, when Traffic Safety Now conducted its previous survey. Use of seat belts saved 29,568 lives in this country between 1983 and 1991, according to the National Highway Traffic Safety Administration. Among those saved, 21,915 were in states that have mandatory seat belt laws.

Forty-two states currently have such laws. The eight holdouts: Kentucky, Maine, Massachusetts, New Hampshire, North Dakota, South Dakota, Vermont and West Virginia. Looks like it's time for their legislators to wake up and buckle up.
Bad science in the popular press

1. Correlational results assumed to imply causation
2. Selective sampling (subjects “select themselves” or are included due to some special attribute; “non-scientific” polls)
3. Absence of needed comparison (or “control”)
4. Conclusions that are inconsistent with the data reported

“In a recent major university double-blind study not only did the participants lose weight…”
Yet another study is warning parents to limit soda consumption with children. While previous studies have linked soda consumption with higher rates of obesity, a study published in the journal Pediatrics, says it also causes aggressive, violent behavior in children as young as 5 years old.

The study:
Researchers at Columbia University followed the habits of about 3,000 mother-child pairs from 20 large cities in the United States. While the children were followed since birth in the long-term study, the data pertaining to soda consumption was compiled when the children were 5 years old. Researchers asked the mothers to self-report how many servings of soda their child drinks on a typical day, and then answer a series of behavioral questions.

The results:
Children who consumed at least four servings of soda per day were twice as likely than those who didn’t drink any soda to display aggressive violent behaviors - such as destroying other people’s belongings, starting physical fights and verbally attacking other children. The kids were also more likely to have trouble paying attention to instructions, and were more withdrawn socially compared to 5-year-olds who didn’t consume soda. “There was a dose response,” said Shakira Suglia, study author and associate professor of epidemiology at Columbia University. “With every increase in soda consumption, we saw an increase in behavior problems. It was significant for kids who consumed as few as one serving of soda per day.”

The association was present after researchers adjusted for parenting styles, and socio-demographic factors such as how much violent television the children were exposed to, their sleep schedule, and candy consumption.

Limitations:
Because researchers relied on self-reporting by mothers, they were unable to pinpoint the type of soda (diet versus regular), or the exact serving size associated with the increase in negative behavior. The American Beverage Association disagrees with the findings of this study. In a statement to CNN, the group said: “It is a leap to suggest that drinking soda causes these or any other behavioral issue. The science does not support that conclusion. The authors themselves note that their study ‘is not able to identify the nature of the association between soft drinks and problem behaviors.’ Importantly, our member companies do not promote or market the consumption of soft drinks to children in the age group examined in this study.”

Takeaway:
The researchers say their findings add to the mounting evidence that soda consumption has a negative effect for children. Other experts warn to limit soda consumption. “Despite the multitude of studies exposing the negative effects of soda consumption, Americans continue to buy and drink more soda than those in any other country,” said Mario Mittler, registered dietician from Cohen Children’s Medical Center of New York, and not affiliated with the study. “In an effort to reduce the effects on a child’s possible negative behavior, it is suggested to eliminate or avoid any soda consumption.” The American Academy of Pediatrics currently recommends parents and caregivers limit giving children caffeinated or sugar-sweetened beverages, and should instead offer them calorie-free beverages and milk.
Grading:

6 short lab write-ups 15% (best 5)
(all 6 must be completed to drop one)
Introduction and method 10%
Results and discussion 10%
Full paper (rewrite) 10%
Independent Project paper and presentation 25%
Exam 1 15%
Exam 2 15%

The score for late assignments will be reduced by 5% of the total for the assignment per day late.

The exams will cover material from the lectures, the text book, and the labs. Much of the
material covered in the labs is not available in the book or lab manual, so attendance is

Note:
As in all courses, standards of academic integrity are expected to be observed in this course. Be
sure that all of the work that you submit is your own. Be especially careful on the final papers.
Please see the course listings for a statement of academic integrity guidelines. If you do not
understand the definition of plagiarism-ask!

Course Outline: The following outline indicates the schedule of topics to be covered during
the lectures and labs, and the reading or other assignment associated with each topic.

<table>
<thead>
<tr>
<th>Topics</th>
<th>Tuesday</th>
<th>Assignment Due</th>
<th>Topics</th>
<th>Thursday</th>
<th>Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/25</td>
<td>Intro to course. Mental Rotation.</td>
<td>Mental rotation. Chp. 1</td>
<td>8/27</td>
<td>Data reduction and analysis, one-way ANOVA Analyze mental rotation</td>
<td>Find a “science” report in the popular press</td>
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<tr>
<td>9/1</td>
<td>Science and scientific method</td>
<td>Memory scanning Memory scanning logic, writing intro and methods.</td>
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<td>9/8</td>
<td>Theories; Variables in experiments Chp. 4, Chp. 9</td>
<td>Stroop</td>
<td>9/10</td>
<td>Stroop</td>
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<td>9/15</td>
<td>Between and within subject design Chp. 8, Intro and methods</td>
<td>9/17</td>
<td>Lexical Decision How to get an idea for independent project</td>
<td>Stroop</td>
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<td>9/22</td>
<td>Statistics old and new Chp. 13, Email project ideas</td>
<td>9/24</td>
<td>PsychoPy training Simon effect</td>
<td>Lexical decision</td>
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<td>9/29</td>
<td>Exam 1</td>
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<td>ANOVA, main effects &amp; Simon effect</td>
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<td>9/29</td>
<td>Exam 1</td>
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<td>10/6</td>
<td>Writing results &amp; discussion sections. Presenting data.</td>
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<td>10/13</td>
<td>Discuss ideas for independent projects.</td>
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<td>10/20</td>
<td>Donders experiment</td>
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<td>Scales of measurement</td>
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<td>Observation and correlation</td>
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<td>Exam 2</td>
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<td>11/17</td>
<td>Data collection session</td>
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<td>11/24</td>
<td>Data analysis</td>
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<td>Data analysis</td>
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<td>(Monday Dec. 14th, 2015) Final project papers due at 4:00 p.m.</td>
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Username: 330  
Password: washington  
rabrams.net
Independent Project Expectations

- It must be a **real experiment**: The experimenter adjusts or controls the level of something (the independent variable).
- **Surveys** are not experiments.
- **Correlational** studies are not experiments.
- **Subject variables** (gender, height, religion, etc.) are not manipulated by the experimenter, hence not sufficient for a true experiment. (But okay to include.)
- Expect to collect data from 10 – 15 participants (but this may vary).

What is an idea?
How can I get an idea?