Reading:
Supplemental Materials on Excel (Review AVP online)
McBurney: SEC 7 - 21

Module 3 Study Guide Objectives:
Supplemental Materials on Excel
You will learn:
• What Excel is and what it is used for.
• What an Excel spreadsheet is and what it is made of.
• How to name columns, rows, and cells in Excel.
• About the three basic types of data that can be entered in Excel.
• How to create and edit basic math functions and commonly used statistical functions provided by Excel (e.g. Sum, Average, and SD).
• How to create a Chart (Graph) in Excel.
• How to use Excel to analyze data.

Critical Thinking: McBurney: Sections 7 - 15
You will learn:
• That we have a confirmation bias - that makes it difficult for us to accept disconfirming information
• Importance of learning research methods and statistics even if you never want to do research after college.
• What a secondary and primary source of information is.
• That textbooks are mostly secondary sources.
• Importance of using scientific and primary sources as main sources of psychology information instead of non-scientific, secondary, or word of mouth or “everyone knows that” sources.

Critical Thinking: McBurney: Sections 16 - 21
You will learn:
• Three advantages of considering Psychology as a biological science.
• That although there are advantages to understanding the biological basis of behavior, we CANNOT assume that we can completely understand a behavior by simply studying its biological basis!
• That the mind is what the brain does! (it is NOT some spiritual entity)
• What an emergent property is.
• That the goal of psychology is to determine how the mind works, not to answer the philosophical question about what the mind really is.
• That we use more than 10% of our brains.
• That critical thinking involves questioning our beliefs even when it makes us uncomfortable!
Section 7: But that contradicts something that I believe!

- **Principle:** Science contradicts everyone’s beliefs and that can be threatening for anyone.
- Students get upset when something in psychology contradicts some strongly held belief
  - We have a Confirmation Bias: tend to seek out evidence that confirms our beliefs while ignoring disconfirming evidence.
- But science challenges everyone’s beliefs at one point or another

Section 8: How can Psychology be a science if we have free will?

- **Principle:** Science assumes that behavior is predictable.
- Some students believe that if humans have free will, then we can never predict their behavior (determinism)
- Many experiments have shown that we do not have as much free will as we think...human behavior is actually quite predictable!

Section 9: Why do I need to learn all these methods? I just want to help people!

- **Principle:** Professional practice of psychology benefits from an understanding of the scientific basis of practice.
- Most psychology majors must take a Research Methods course because in order to develop, evaluate, or implement humanistic therapies, you must be well-versed in research methodology
  - Example: Facilitated communication was a well-accepted method for helping autistic children communicate until rigorous research showed that what was communicated reflected the facilitators thoughts and not the autistic child’s thoughts.

Section 10: Why do I need to study statistics?

- **Principle:** Statistics help evaluate evidence and make decisions.
- Knowledge of statistics helps us make better decisions...
  - For example, when deciding to implement a newly introduced therapy...
    - Is it really better than the old therapy?
    - Did the researcher use enough participants to rule out the possibility that the results were a fluke?

Section 11: But the textbook says...

- **Principle:** Be aware of secondary sources.
- Secondary source
  - Review of experiments published by original or primary sources.
  - Can sometimes be out of date or misinterpret the results.
- Primary source
  - Journal article of the original description of the research.
Most reliable source of research results of because generally they go through a rigorous, extensive, peer-review process.

Just because a textbooks says so, doesn’t mean it is correct because textbooks are a secondary sources.

• Sometimes your professor will contradict the textbook
  – They may be aware of more up-to-date info from primary sources (journal articles that provide the original description of the research.)

Section 12: But I read it in a book!

• Principle: Most sources of info available to the general public are produced by people motivated by profit and therefore should be considered entertainment (Let the buyer beware!).
  • It is NOT against the law to publish things in a book that are false.
    – Example: many books claim that ESP exists, but that doesn’t mean that it really does.

Section 13: But it was a Psychology book!

• Principle: Scientific books and journals document the claims that they make.
• Good scientific books
  – list references of primary sources (original research).
• Non-scientific books
  – do NOT include references at all or include references to other non-scientific sources (pop-psy books).

Section 14: But everyone knows...

• Principle: Many things that “everyone knows” simply aren’t true. Ask for documentation.
• Most well-known experiment reporting that subliminal messages such as “eat popcorn” and “drink coke” flashed on movie screens increased sales was NEVER DONE!
  – Man who claimed to have done it used this “fake experiment” to make millions of dollars for his marketing consulting business -- today his whereabouts are unknown

Section 15: I thought Psychology was about people not numbers!

• Principle: Science requires publicly observable, reliable data.
• The field of psychology is different from the popular notion of it!
• The practice of psychology on humans is based on research and the measurement of behaviors which means talking about numbers.

Section 16: Why do we have to learn about the brain?

• Principle: Knowledge of the biology of the human organism can provide many insights into its behavior.
• Advantages of considering Psychology a Biological Science:
  1. Permits us to see that human behavior has a great deal in common with animals (why animal research is important for understanding our behavior).
2. Suggests that we should see how evolutionary processes have shaped our behavior (e.g. dating preference, gender differences in perception).
3. Been able to witness the effects of interfering with biology (e.g. brain damage, strokes) on psychological processes.
   - Example - we learned a lot about personality and the localized functions of the brain from studying Phineas Gage, who suffered dramatic personality changes following severe brain injury to frontal lobe.

Section 17: But can we really understand behavior until we know its biological basis?

- **Principle:** Many psychological processes are emergent properties of organisms and cannot be reduced to a more basis level of analysis.
- Some psychological properties are emergent - can’t be reduced to a lower level because they do not exist at a lower level.
  - Example: behavior of a computer
    - Can’t be explained in terms of the electronics that make up the computer because behavior is based on programming which has nothing to do with its electronics
    - Even though it is important to understand the biological basis of behavior, we CANNOT assume that we can completely understand a behavior by simply studying it biological basis!

Section 18: How does the mind control the body?

- **Principle:** Most psychologists are monists. That is, they believe that mind is another word for the workings of the brain.
- The mind is NOT different stuff from the brain!
- The mind is NOT some spiritual, non-material thing.
- The mind is what the brain does!

Section 19: But why don’t we talk about what the mind really is?

- **Principle:** To try to study what something really is to commit the philosophical error of essentialism.
- Psychologists don’t care about what the mind really is, we are only interested in how it works (for example, how we learn, how we remember)!
  - Why? Because what the mind is, is a philosophical question
  - We study the properties of things not what it is (essentialism)

Section 20: But people aren’t machines!

- **Principle:** Science looks for mechanisms to explain behavior.
- Yes, we are machines!
  - Heart is like a pump
  - Eyes are like cameras
  - There is no homunculus (a “little man” in the brain that directs behavior)!
  - Instead we determine the biological mechanisms in the brain that interpret information and direct behavior.
  - Knowledge of the biological mechanism gives us clues about how things work.
Section 21: Is it true that we only use 10% of our brains?

• **Principle**: Sometimes we hold beliefs because they have useful implications, not because of any evidence.

• It is **NOT** true that we only use 10% of our brains!!
  – Rumor started by positive thinkers (Dale Carnegie) to encourage people to try harder, be better.
  – We hold onto this belief because it is useful, NOT because it is true.
  – Makes us believe that we can be smarter, more talented - if we just tried to use more of our brains.

• We all have tendencies to believe things that we like to believe, but we should be careful!
  – **Critical thinking involves questioning our beliefs even when it makes us uncomfortable!**