# Action Research Project

# Derek Schorsch (Psychology)

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## Faculty Learning Outcome #1

Construct a series of lectures which include learning centered activities to improve students' ability to evaluate psychological claims.

## Essential Competencies and Indicators Addressed:

Assessment

- employ a variety of assessment measures and techniques (both formative and summative) to form a more complete picture of learning
- give timely feedback on class activities, exams and papers
- design activities to help students refine their abilities to self-assess their learning
- employ formative feedback to assess the effectiveness of teaching, counseling, and librarianship practices
- make assessment criteria public to students and colleagues

Inclusion and Diversity

- develop reciprocity and cooperation among students (interdependence and teamwork)
- foster connections among students in and out of the classroom, counseling and library environments
- create learning atmospheres that encourage all students to share viewpoints
- use diverse perspectives to engage and deepen critical thinking (diversity as learning resource)

Learning Centered Teaching Strategies

- use cooperative/collaborative learning strategies
- encourage students to challenge ideas and sources
- integrate concrete, real-life situations into learning strategies
- employ strategies that guide students to become more active learners (e.g., reference interview, counseling inquiry, engaging lectures, discussion, experiential learning, scenarios, role-play, case study, problem-based learning, inquiry-based learning, manipulatives, etc.)

Scholarship of Teaching and Learning

- produce professional work (action research or traditional research) that meets the Valencia Standards of Scholarship
- build upon the work of others (consult experts, peers, self, students)
- be open to constructive critique (by both peers and students)
- make work public to college and broader audiences
- demonstrate relationship of SoTL to improved teaching and learning processes
- demonstrate current teaching and learning theory & practice

# Clear Goals

## A. Abstract

Critical thinking skills are highly valued in the educational environment, yet helping students develop those skills is a challenge to instructors in many disciplines. The purpose of this action research project is to examine if students can improve their ability to evaluate psychological claims by introducing a series of learning centered small group discussions into the classroom environment. A summative assessment of thirty true or false psychological claims is given at the beginning and end of the semester. Support for the efficacy of these learning centered activities will be evident if improvement on the summative assessment in the experimental group is statistically greater compared to a control group.

## B. Research Question

Will lectures including learning centered activities improve students' ability to evaluate psychological claims?

# Adequate Preparation

## Background from Multiple Perspectives

### 1. Student Perspective

Formative assessments and class discussions show that many students come into my General Psychology class harboring many false beliefs about human behavior and the mental processes. When presented with psychological claims (for example*, True or False: Women have a higher pain tolerance than men*), frequently classrooms are evenly divided, with supporters of both sides equally convinced of the truth of their respective positions. When questioned, students frequently indicate that they base their stance on the various claims on the basis of "common sense" or their limited personal experience. For example, when asked to assess the truth or falsity of the claim "Adopted children fare better when their adoptive parents are of the same race," a student reported that this must be false, because her aunt and uncle had adopted children from China, and that they had "turned out just fine." Other times, students report that one belief is just as true as the next, and have a lack of understanding of how we might use science to evaluate psychological claims. This suggests that students lack knowledge about how we might judge claims objectively using the scientific method.

## 2. Colleague Perspective

Many fellow Psychology professors agree that a problem we experience is the pervasive nature of pop-psychology information, a substantial proportion of which is pseudoscientific. Due to this, students arrive in class with many erroneous beliefs about human behavior and mental processes. I have discussed this topic with a number of Psychology professors, and found that they use different techniques to make this clear to students during the first days of class. At least two fellow Valencia Psychology professors use an exercise similar to my Small Group Activity on the first day of class. They report that they use these activities to "create discussion in the classroom", to "show that things students think are "common sense" are frequently wrong" and "introduce the concept that we can use science to answer questions about behavior". A number of people in the Psychology field agree that students arrive in class with erroneous beliefs. After discussing this issue with professors in other divisions, including TLA members in nursing and physics, there does appear to be significant agreement across disciplines as well. I have approached a number of Psychology professors with this project, and it has been met with interest and support in all cases. Interactions with tenure track professors at TLA courses have also been met with marked interest, indicating that this project is worthwhile.

## 3. Expert Perspective

"*Science must begin with myths and with the criticism of myths*." - Karl Popper

"*Critical thinking: making reasoned judgments about claims*." - Saundra Ciccarelli

A wealth of literature shows that students enter our classrooms with a wide variety of erroneous beliefs about psychology (Lilienfeld, *et al*, 2010). This phenomenon is seen in the larger culture as well (Shermer, 1997; Sagan, 1995; Specter, 2009). Not coincidentally, there has been renewed interest within the psychological field to differentiate evidence based psychological findings from pseudoscientific "pop" psychology. A number of hypotheses have been suggested to explain why this issue appears to be more pervasive in psychology than in other fields, and how best to combat them. These hypotheses range from the field's failure to hold to strict scientific standards, to issues with media portrayal of psychological findings, to psychological concepts such as hindsight bias, the availability heuristic, and the fundamental attribution error (Lilienfeld, 2012). General psychology courses would seem an excellent arena to correct students' misconceptions and increase their ability to think critically about psychological claims, but unfortunately the research suggests that the average general psychology course does poorly on both accounts (Stanovich, 2004).

The research suggests that part of the problem is the way educators traditionally present classroom material to students, through the relatively passive, non-

interactive means of lecture. Increasingly active learning strategies are being implemented into classroom settings in order to use our understanding of the psychology of attention and memory to increase student learning (Silberman, 1996). Using active learning strategies not only breaks up the passive listening done in lecture, but helps students to communicate with each other, and provides a more stimulating and cohesive environment (Leamnson, 1999). Active learning strategies may also improve classroom mood and change the relationship between class and professor from generally adversarial, in that students may see the professor as the person standing in the way of their goal, whether it be getting an A or earning a degree, to an alliance-based relationship, where the students see the professor as helping the students attain those goals (Leamnson, 1999).

During the course of my professional development, I attended several workshops and seminars offered by the TLA. These experiences helped me to grasp the importance of active learning, as well as suggesting strategies for implementation of these activities in my classes. For example, a course in Lifemap underscored the importance of connecting the material presented in class to real world situations the students may encounter. In Assessment as a Tool for Learning, it was made very clear that if an educator wants a student to do *x*, then you must build an assessment that measures *x*. I want my students to effectively evaluate psychological claims, and I therefore needed to build such an assessment. In doing so, I sampled from a variety of recent books on science, psychology and critical thinking to construct the assessment, which contained the claims that students will evaluate (Eagleman, 2011; Pinker, 2011; Specter, 2009). In the class Learning Centered Teaching strategies, I was introduced to a number of Classroom Assessment Techniques (Angelo & Cross, 1993; Bean, 2001), several of which I combined and adapted to create the central unit of this action research project, which I called a small group activity. Nosich (2012) contends that if students actively engage in evaluation of the material presented in a class, they can embed that understanding into their way of thinking about the subject, which leads to greater critical thinking. Thus, by engaging in learning centered activities, the students should improve their evaluation of psychological claims.

Angelo, T. A., & Cross, K. P. (1993). *Classroom Assessment Techniques.* (2nd ed.). San Fransisco: Jossey-Bass.

Bean, J. (2001). *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*. San Fransisco: Wiley.

Ciccarelli, S. K., & White, J. N. (2009). *Psychology*. (2nd ed.). Upper Saddle River, NJ: Pearson.

Eagleman, D. (2011). *Incognito: The Secret Lives of the Brain*. New York: Pantheon Books.

Leamson, R., (1999). *Thinking About Teaching and Learning: Developing Habits of Learning with First Year College and University Students*. Sterling, Virginina: Stylus Publishing.

Lilienfeld, S., (2012). Further Sources of Our Field's Embattled Public Reputation. *American Psychologist*. *67*(9), 808-809.

Lilienfeld, S., Lynn, S. J., Ruscio, J., & Beyerstein, B. (2010). *50 Great Myths of Popular Psychology.* (1st ed.). Malden, MA: Wiley-Blackwell.

Nosich, G. M. (2012). *Learning to Think Things Through: A Guide to Critical Thinking Across the Curriculum*. Boston: Pearson.

Pinker, S. (2011). *The Better Angels of Our Nature: Why Violence Has Declined*. New York: The Penguin Press.

Sagan, C. (1995). *The Demon Haunted Word: Science as a Candle in the Dark*. New York: Random House.

Silberman, M. (1996). *Active Learning: 101 Strategies to Teach Any Subject*. Needham Heights, MA: Allyn and Bacon.

Shermer, M. (1997). *Why People Believe Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time*. New York: Freeman.

Specter, M. (2009.) *Denialism: How Irrational Thinking Hinders Scientific Progress, Harms the Planet, and Threatens Our Lives.* New York: The Penguin Press.

Stanovich, K. (2004). *How To Think Straight About Psychology. (7th ed.).* Boston: Pearson.

## 4. Self Perspective

Many students come into my classroom thinking that Freud is Psychology, that Dr. Phil and Wayne Dyer are well respected within the field, that books like "The Secret" and "Men Are From Mars, Women Are From Venus" are evidence based, that we use only 10% of our brains, that our handwriting can reveal our personality traits, that mentally ill people are especially prone to violence, that vaccination causes autism, along with a bevy of other falsities. This body of beliefs can be called "psychomythology." We have to "clear the rubble", so to speak, before we can effectively teach them what psychology actually is, who we actually respect, and what process we use to separate truth from non-truth.

The simplest definition of critical thinking I have found is "making reasoned judgments about claims." This is exactly the skill I want students to improve in my General Psychology courses.

## Appropriate Methods – Methods & Assessment Plan

### A. Methods

#### 1. Student Learning Outcome

Students will improve their ability to evaluate psychological claims through involvement in learning centered activities.

#### 2. Performance Indictors of Student Learning Outcome

- Students will discuss psychological claims
- Students will evaluate psychological claims
- Students will explain their evaluation of psychological claims
- Students will improve their scores from the psychological claims pre-test to post-test

#### 3. Teaching Strategies of Student Learning Outcomes

1. I developed a list of 30 psychological claims (**Artifact LO1-a**), and had students answer these as true or false on the first day of the semester. I call this the pre/post test.

2. I constructed a learning centered activity for the first day of class designed to introduce them to the type of group interaction which they will engage in for the rest of the term. I called this an SGA, for small group activity. I include the PowerPoint slide for this activity as **Artifact LO1 -b**.

3. During the lecture on the introductory chapter, I defined and discussed critical thinking, including offering many psychological claims, as well as claims in nutrition, exercise, and medicine, which could be opportunities for critical thinking. These slides were intended to spark discussion and to introduce the idea that psychological claims can be tested using the scientific method. I include these slides as **Artifact LO1-l** and **Artifact LO1-m** .

4. I constructed nine Small Group Activities throughout the course. The Small Group Activities are conducted as follows(**Artifact LO1-c** through **Artifact LO1-k**).

- Working in groups of two or three, students were challenged to discuss the truth or falsity of a number of psychological claims, and to come to a group decision. There were usually between 4 and 7 claims, and 2 or 3 of these claims are from the pre/post test.
- Once the groups arrived at their answers, I asked which groups arrived at a "true" answer (by show of hands), as well as a "false" answer for the first claim.
- I asked for volunteers from each side, to explain to the rest of the class how their group arrived at that answer.
- I allowed for discussion between students or groups, as almost always there is disagreement about the claim.
- I gave the actual answer, and we discussed how critical thinking applies, how the claim is testable by psychological science, and how the best available evidence supports that conclusion.

5. During the lecture on cognitive psychology, we again define and discuss critical thinking, including differentiating it from creative thinking. I include this PowerPoint slide as **Artifact LO1-n** .

6. Administer the pre/post test at the end of the semester. An improved score indicates learning.

7. Students complete a survey at the end of the semester to gather their feelings about the project, as well as to offer constructive criticism regarding improvement upon the activity. I include this survey and several of the student responses as **Artifact LO1-o**.

## B. Assessment Strategies

1. Formative assessment: "pre test" given on first day of class. (**Artifact LO1-a**)

2. Formative assessment: Initial Small Group Activity (SGA) (**Artifact LO1 -b**)

3. Formative assessment: Ch 3 - Biological Perspective SGA (**Artifact LO1-c** )

4. Formative assessment: Ch 4 - Sensation and Perception SGA (**Artifact LO1-d**)

5. Formative assessment: Ch 5 - Consciousness SGA (**Artifact LO1-e**)

6. Formative assessment: Ch 7 - Memory SGA (**Artifact LO1-f**)

7. Formative assessment: Ch 8 - Cognition SGA (**Artifact LO1-g**)

8. Formative assessment: Ch 9 - Development SGA (**Artifact LO1-h**)

9. Formative assessment: Ch 11- Gender and Sexuality SGA (**Artifact LO1-i**)

10. Formative assessment: Ch 13- Social Psychology SGA (**Artifact LO1-j**)

11. Formative assessment: Ch 15 - Abnormal Psychology SGA (**Artifact LO1-k**)

12. Summative assessment: "post test" given on final day of class. (**Artifact LO1-a**)

13. Formative assessment: Post Class Survey (**Artifact LO1-n**)

### C. Action Research Methodological Design

This study used quasi-experimental design to investigate the effect of a series of learning centered activities on students' abilities to judge psychological claims. It consisted of eleven sections of General Psychology classes covering the Spring '12, Summer '12 and Fall '12 semesters. Five sections of classes were included in the control group (n= 111). The control group had access to all the same information, additional readings posted in Blackboard, and lectures as the experimental group, but lacked the learning centered small group activities. Six sections served as the experimental group (n=153). Students who failed to take both tests were excluded. Statistical analysis was used to determine the difference in improvement on the post test between the two groups. Statistical significance would support the efficacy of the learning centered activities.

## Significant Results

### My Hypothesis

Students involved in learning centered activities will improve their ability to evaluate psychological claims more than those without such activities.

### Project Results

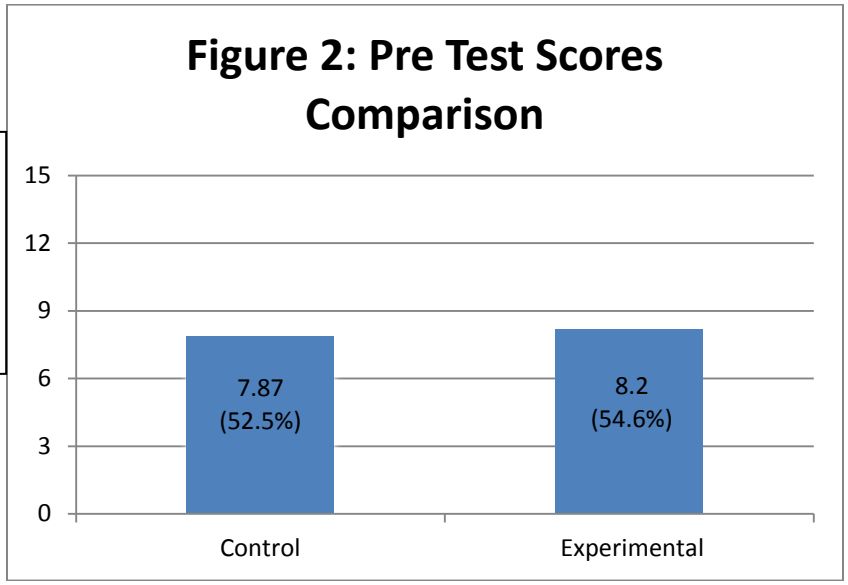
***Pre test results:***

Quasi experimental design differs from a more traditional experiment in that it lacks a mechanism to randomize participants into the control or experimental groups. This design is subject to issues with internal validity, in that the two groups may systematically differ from each other. To assess this possibility, a t-test was used to compare differences in the pre-test scores of the two groups (Figure 1). Each question answered was given .5 pts, the

highest possible score on the 30 question test is 15. The mean score on the pre test for the control group (Group A) was x = 7.87 and x = 8.21 for the experimental group (Group B). A simple column graph also provides pictorial representation of the mean differences (Figure 2).

**Figure 1**

| | *Control (Group A)* | *Exp. (Group B)* |
|---|---|---|
| Mean | 7.869369 | 8.205882 |
| Variance | 2.171417 | 2.528057 |
| Observations | 111 | 153 |
| *p*= | 0.077715 | |




Each of the 30 claims are worth .5 pts, therefore a perfect score on the test would be 15/15.

*Conclusion*: An alpha level of .05 was used, and p = .078 suggests that I do not reject the null hypothesis. While the mean of the experimental group is higher than that of the control group, the difference was not statistically significant.

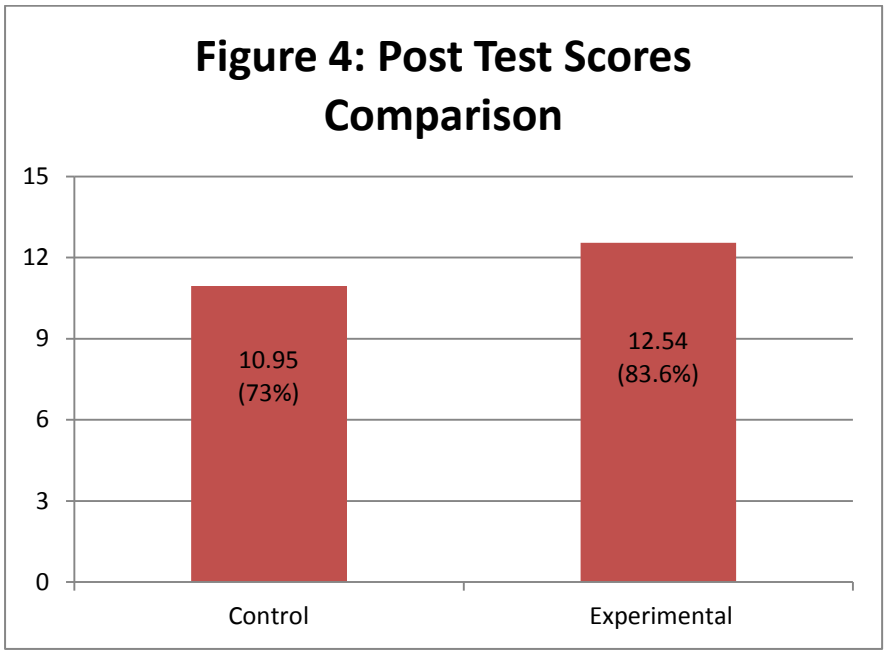
***Post test results*:**

Post test results in Group A were based solely on access to lectures and additional readings. Post test results in Group B, however, included the intervention, the small group activities. The post test scores were compared via a t-test, which evaluates the difference between two independent groups of students (Figure 3). The mean score on the pre test for the

control group (Group A) was x = 10.95 and x = 12.54 for the experimental group (Group B). A simple column graph also provides pictorial representation of the mean differences (Figure 4).

**Figure 3**

| | *Control (Group A)* | *Experimental (Group B)* |
|---|---|---|
| Mean | 10.95495495 | 12.5424837 |
| Variance | 3.334316134 | 2.61824905 |
| Observations | 111 | 153 |
| P(T<=t) two-tail | 4.91961E-12 | |

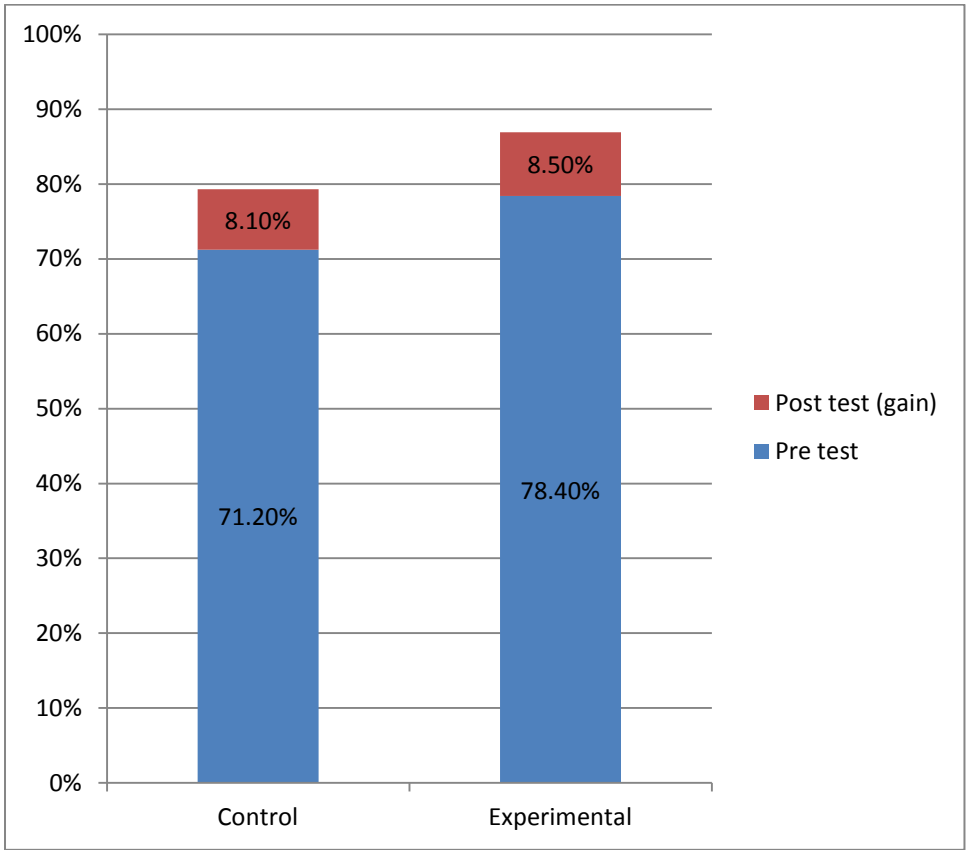



Each of the 30 claims are worth .5 pts, therefore a perfect score on the post test would be 15/15.

*Conclusion*: An alpha level of .05 was used, and p < .001 suggests that I reject the null hypothesis. There is a significant difference between the two groups, suggesting that the intervention was responsible for this change.

I found varying levels of success on the individual items on the test. For some claims, the intervention did not appear to improve students' success in correctly answering the claim (Figure 5).

**Figure 5** - Claim #13: "It is possible for someone to “implant” a memory into one’s mind, making him believe something that never truly occurred."




For this claim, my intervention of implementing the small group activity was clearly not influential.

For other claims, the intervention appeared to create very substantial improvement (Figures 6, 7, 8). These numbers are represented as the percentage of the students answering the individual claim correctly, post in the pre test condition and the gains shown in the post test condition, shown as blue and red, respectively.

**Figure 6** - Claim #6: "Mentally ill people are prone to violence."

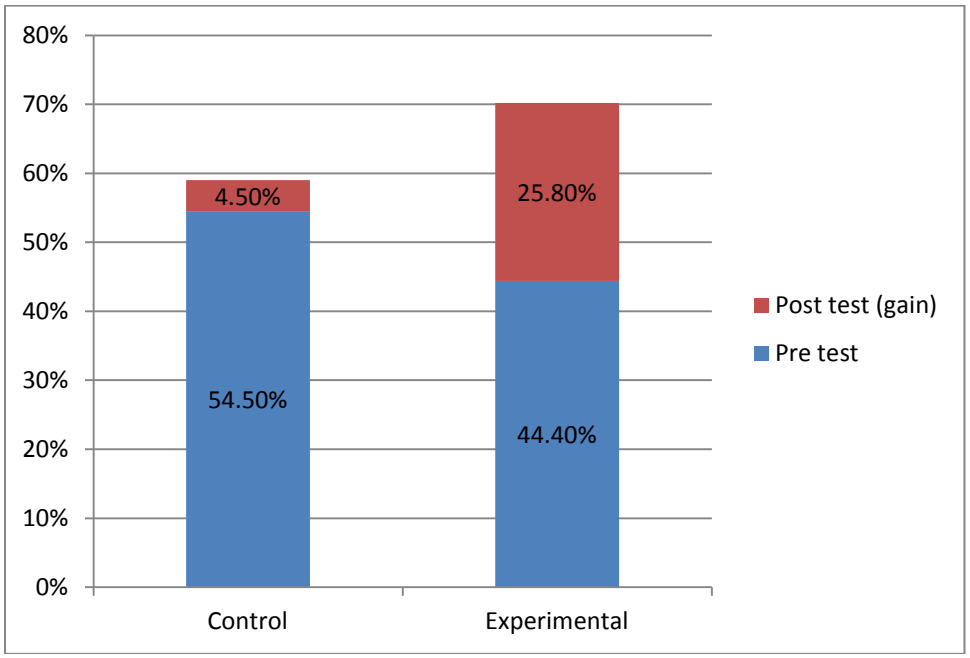



**Figure 7** - Claim #25: "A large proportion of criminals successfully use the insanity defense."

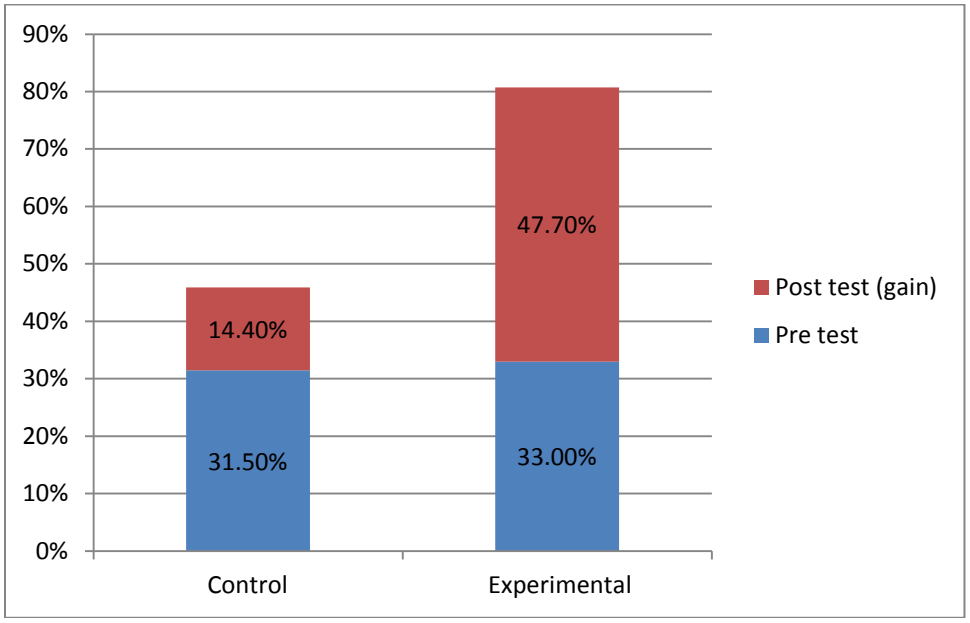
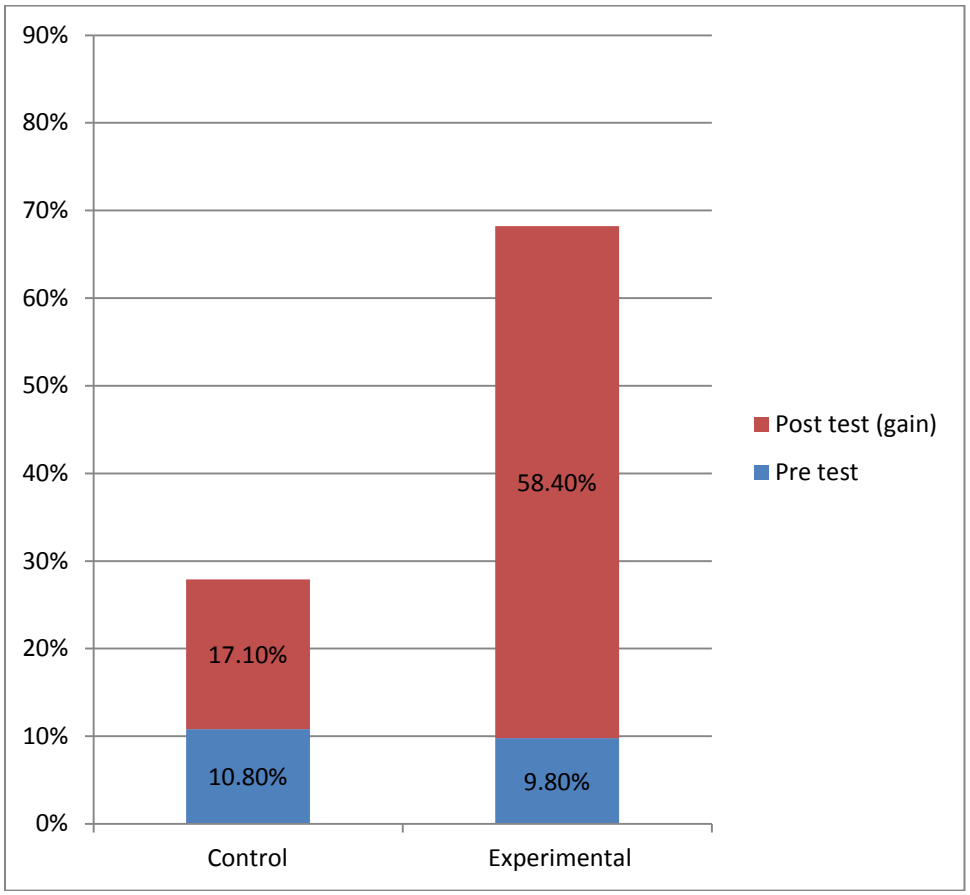


**Figure 8** - Claim #3: "Children who are spanked have lower IQs than those who are not spanked."




I selected these three claims because they showed some of the most dramatic improvements. Pictorial representation of the post test outcomes of all 30 claims is included in Figures 9-14.

Figure 9 shows the comparison in post test scores between the two groups.

- For 28 of the 30 questions, the experimental group performed as well or better than the control group on the post test.
- For 14 of the 30 questions, the experimental group performed at least 10% higher than the control group on the post test.
- For 7 of the 30 questions, the experimental group performed at least 20% higher than the control group on the post test.

**Figure 9: Comparison of the post test results for all 30 claims**

Blue= Control Group % correct  Red= Experimental Group % correct

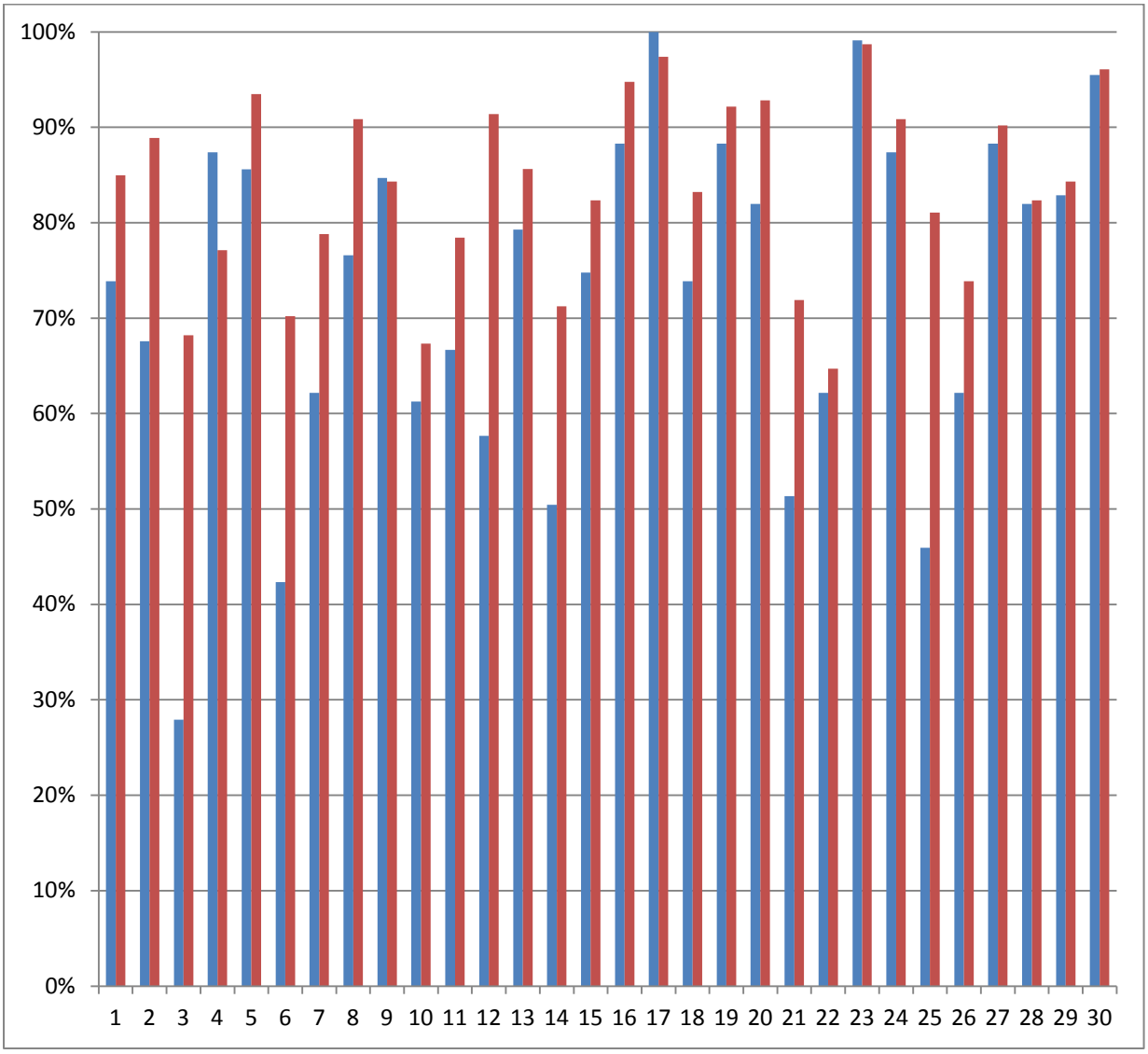
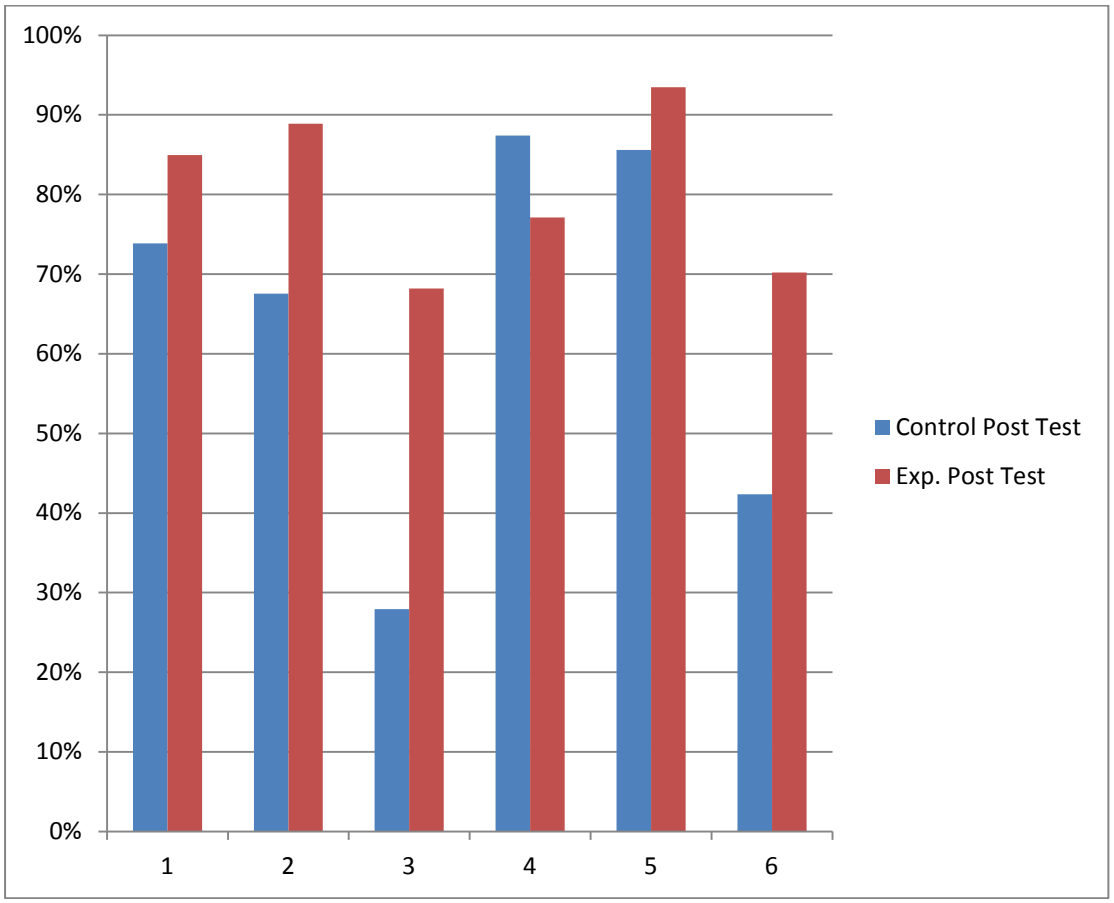


**Figure 10: Comparison of the post test results for claims 1-6**
Blue= Control Group % correct  Red= Experimental Group % correct




1. Human memory works like a tape recorder or video camera, and accurately records the events we've experienced.

2. We live in a more violent society than in decades past.

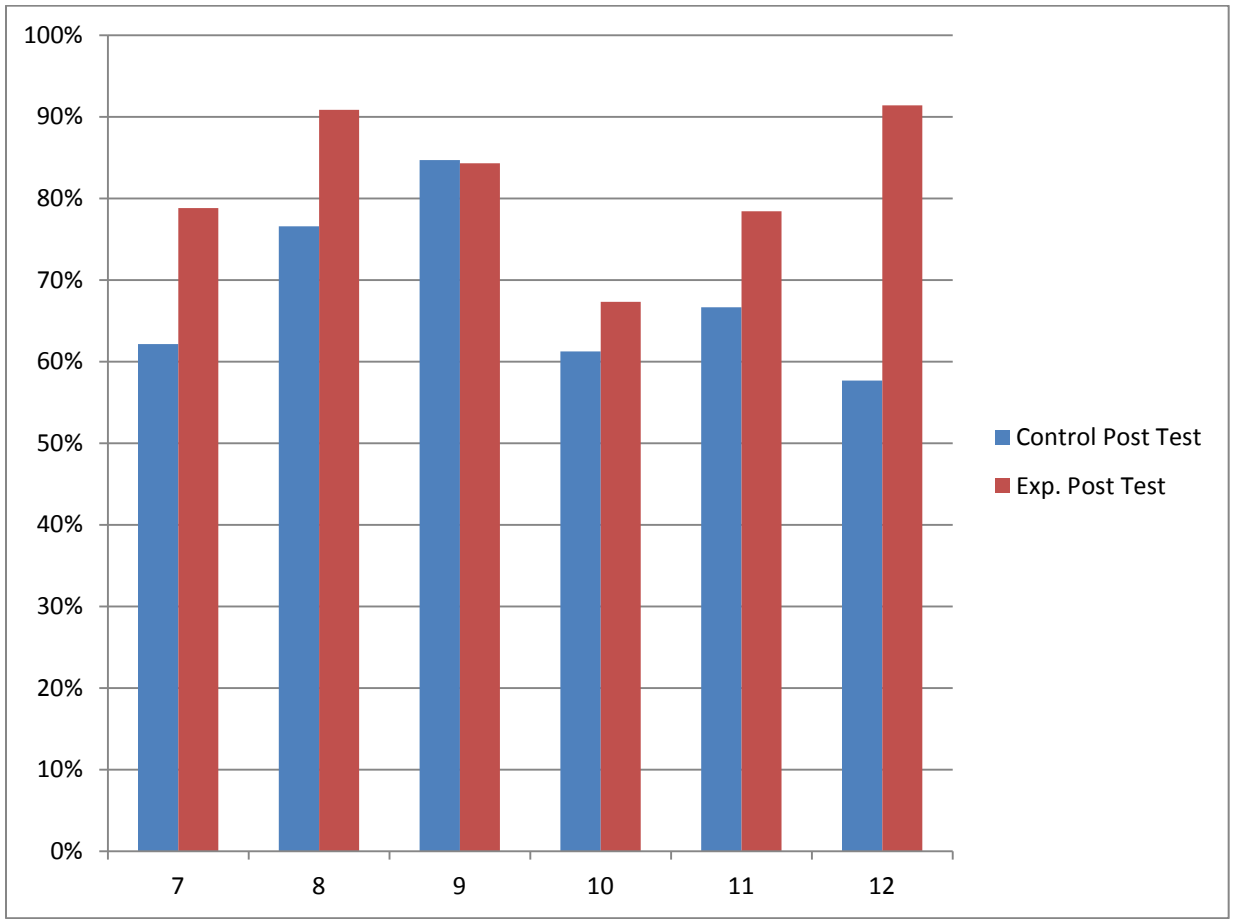
3. Children who are spanked have lower IQs than those who are not spanked.

4. Homosexuality is natural.

5. Psychiatric hospital admissions and crimes increase during a full moon.

6. Mentally ill people are prone to violence.

**Figure 11: Comparison of the post test results for claims 7-12**
Blue= Control Group % correct  Red= Experimental Group % correct




7. Some people are left brained, others are right brained.

8. The polygraph (lie detector) test is an accurate means of detecting dishonesty.

9. Only deeply depressed people commit suicide.

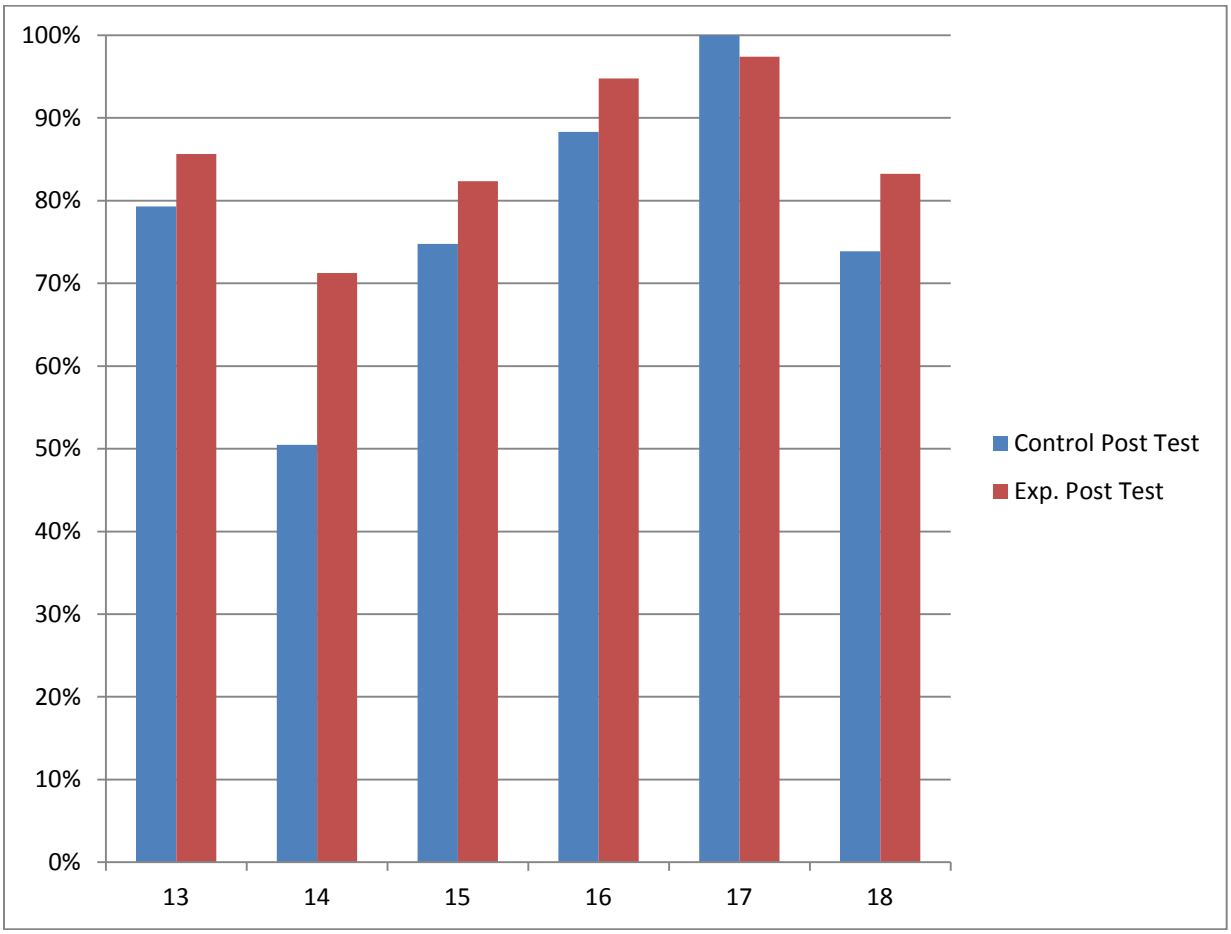
10. Children can learn things before they are even born.

11. People with schizophrenia have multiple personalities.

12. Early interventions, such as "Your Baby Can Read" or playing Mozart's music to infants can boost their intelligence.

**Figure 12: Comparison of the post test results for claims 13-18**

Blue= Control Group % correct  Red= Experimental Group % correct




13. It is possible for someone to "implant" a memory into one's mind, making him believe something that never truly occurred.

14. It is not harmful to wake a sleepwalker.

15. ESP (Extra Sensory Perception) is a well-established phenomenon.

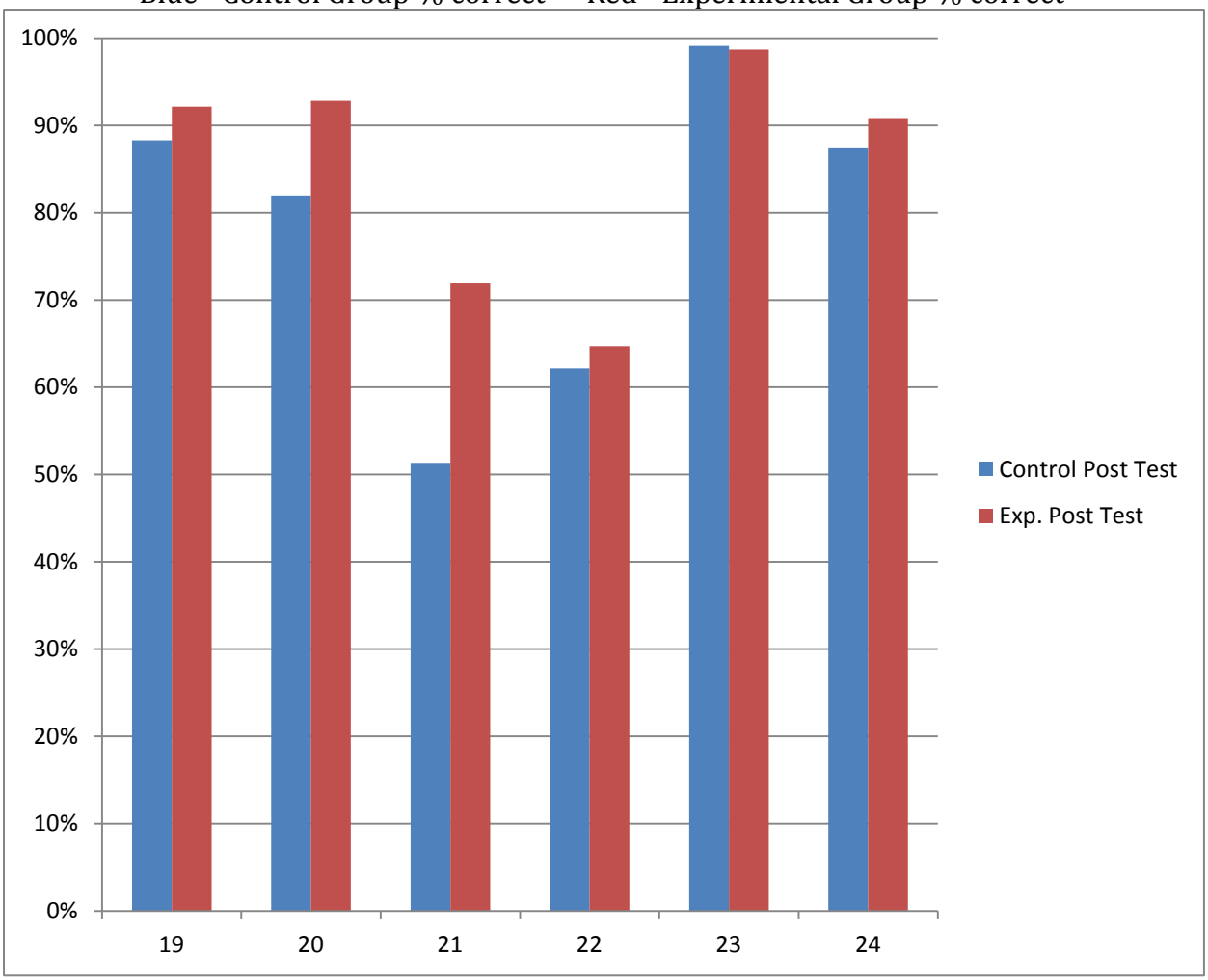
16. Gay men and women really want to be members of the opposite sex.

17. In the past, the mentally ill were believed to be possessed, and were killed as a result.

18. Hypnosis is useful for retrieving memories of forgotten events.

**Figure 13: Comparison of the post test results for claims 19-24**

Blue= Control Group % correct  Red= Experimental Group % correct




19. Your brain can be tricked into hearing language that is not there.

20. There is no connection between vaccination and autism.

21. Most people only use 10% of their brain's power.

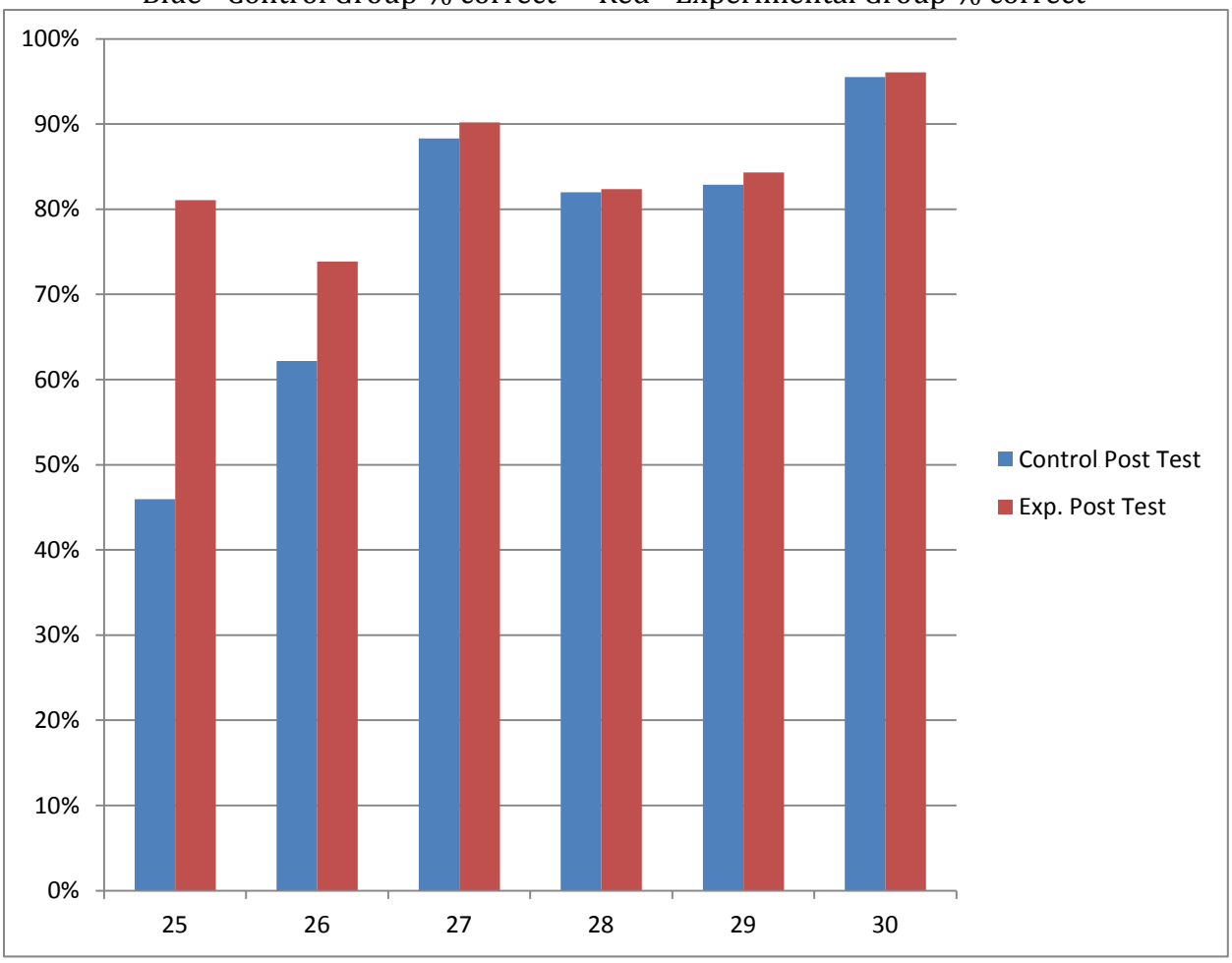
22. During "out-of-body" experiences, people's consciousness leaves their bodies.

23. Our perceptions do not always accurately reflect reality.

24. Our unconscious minds strongly affect who we are prejudiced against.

**Figure 14: Comparison of the post test results for claims 25-30**

Blue= Control Group % correct  Red= Experimental Group % correct




25. A large proportion of criminals successfully use the insanity defense.

26. Intelligence is strongly determined by genes.

27. A head injury cannot produce brain damage unless the person is knocked unconscious.

28. There is no pattern of parenting that leads a child to be homosexual.

29. Our handwriting reveals our personality traits.

30. Frequently our brains come to predictable, but false or biased conclusions.

***Post Class Survey Results:***

I developed a post class survey for the classes to take following the post test. I administered it to two sections of my General Psychology classes following the Spring 2013 semester, totaling 53 students. This survey and several student responses are included as **Artifact LO1-o**.

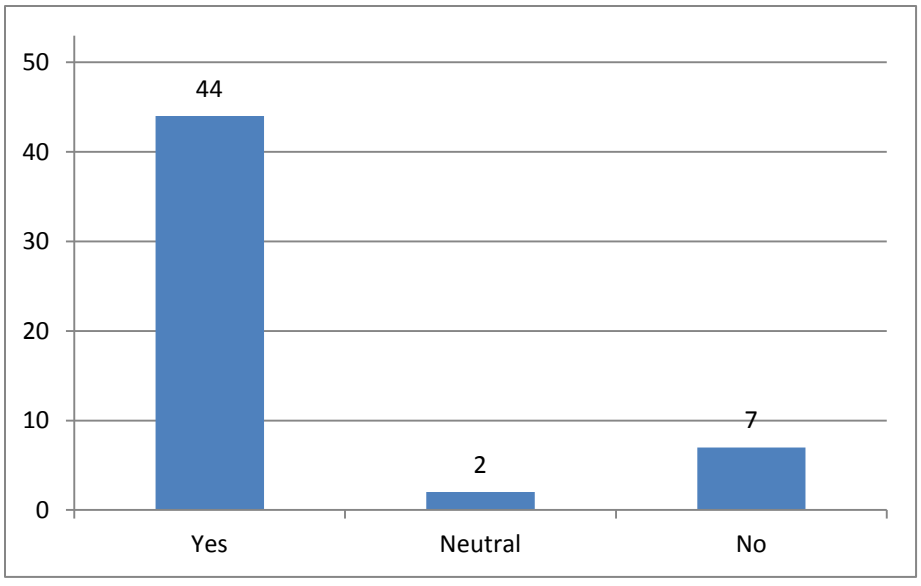
The purpose of this survey was largely to gather qualitative data for use in refining and improving the small group activities. As such, I will make use of this data in the reflective critique of the ARP below. It is possible, however, to make use of this data in a quantitative way. Below I included some responses; all spelling, punctuation and grammar appears as in the original.

The first question in the post class survey read:

1. Do you feel that the Small Group Activities added to your learning experience? Why or why not?

   I judged that 44 of the 53 students (83%) answered "Yes" to this, while 7 (13%) answered "No", and the final 2 students (4%) were neutral in their response.

**Figure 15: Post Class Survey responses to question 1**




An example of a "Yes" answer was:

> "*Yes, because it gave me a chance to critically think about questions and discuss them with others.*"

Two examples of "No" answers were:

"*No, I'm more of an independent learner so I'd rather you just give out the answers*."

"*Not all the time because sometimes my "group" would stray and talk about other unrelated things and waste time without answering the questions that were asked and it annoyed me*."

An example of a neutral response was:

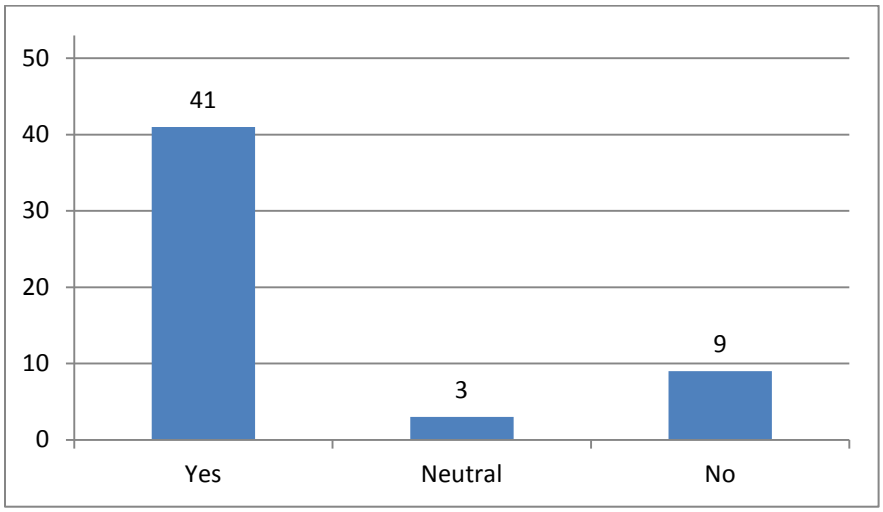
"*I'm in the middle about it. Usually I don't like group anything but in this kind of environment or rather a class of this subject its best to get other people's perspectives & knowledge*."

The second question in the post class survey read:

2. Do you feel that the Small Group Activities increased the connections between you and your fellow classmates? Why or why not?

I judged that 41 of the 53 students (77%) answered "Yes" to this, while 9 (17%) answered "No", and the final 3 students (6%) were neutral in their response.

**Figure 16: Post Class Survey responses to question 2**




An example of a "Yes" answer was:

"*Yes, it also made me more comfortable voicing my thoughts and opinions in class because I knew my fellow classmates better*."

An example of a "No" answer was:

"*No. I forgot their names. And I didn't talk to them outside of class.*"

An example of a neutral response was:

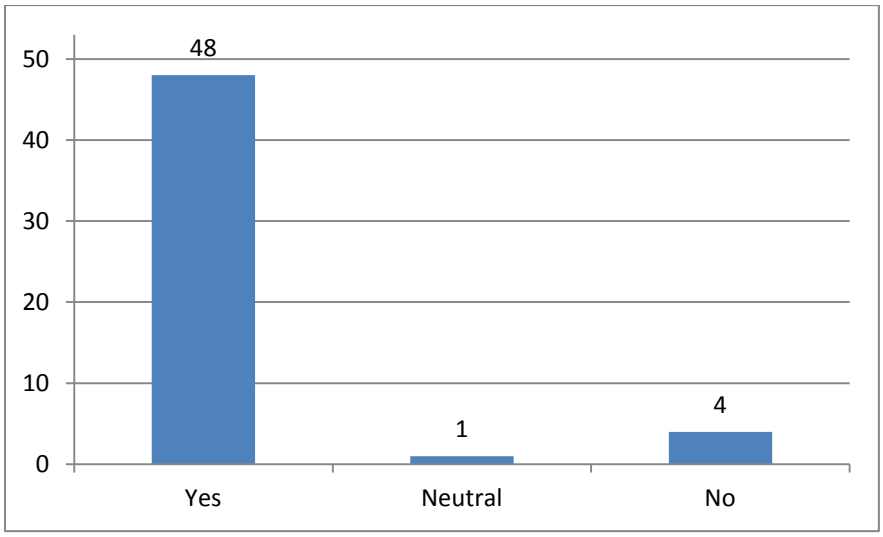
"*Eh not so much for me, but I would assume so for others.*"

The third question in the post class survey read:

3. Do you feel that the Small Group Activities encouraged active discussion in the class? Why or why not?

I judged that 48 of the 53 students (90%) answered "Yes" to this, while 4 (8%) answered "No", and the final student (2%) was neutral in response.

**Figure 17: Post Class Survey responses to question 3**




An example of a "Yes" answer was:

"*Yes, everyone has their own opinion and during such activity it is acceptable to share, converse and debate.*"

An example of a "No" answer was:

"*No because some stutents just dont like sharing at all no matter what the case is.*"

The neutral response was:

"*Somewhat, I feel that no matter what, discussion will be brought up.*"

The fourth question in the post class survey read:

4. Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include?

   I judged that only 9 of the 53 students (17%) made substantive responses to this question.

   Many students used this question to say things like "*No changes*" or "*Awesome class!*".

   A few students used this space to make other comments or criticisms about the course, such as "*No; don't let people in class talk about their personal life*" and "*Learn Smart is not useful at all. Easily "BS"able and does not help learn but to get grades up.*"

   Two students made useful comments about the small group activities as a whole in this space, writing "*Let people work alone if they prefer it*" and "S*ometimes we take to long explaining and lose time on other parts*."

   Just three of the responses included suggestions for other topics to cover. They wrote:

   "*Maybe more of the last sections should be added : )*"

   "*I felt most was fine. What types of personalities are attracted to which types of pets they choose to have*."

   "*No you shouldn't eliminate any. However, I think you should add the Stanford Prison Experiment b/c I've always found that to be interesting*."

# Reflective Critique

## A. General Reflection

Following my experiences in including these small group activities in my General Psychology classes, I found a number of very positive outcomes in the classroom, as well as some mixed experiences. There are also some changes that I will make in the future.

I found that this activity (specifically, **Artifact LO1 -b**) worked very well on the first day of class to introduce a variety of areas that psychologists study, areas that they were delighted to learn they would be exposed to later in class. I set this first activity up so that students think all the claims are true, but in reality they are all false. I concluded the initial class meeting by asking "So, what do you know about Psychology?" The situation is such that the students generally report "nothing!" happily, before leaving class. I feel this exercise does a very good job of making students realize that their naive understanding of the subject is frequently far from the truth, and it does it in such a way that they do not feel defensive or angry that they did so poorly on the activity.

Based on my experiences, these activities work very well as a way to introduce the various concepts we will be discussing later in the chapter, and seem to prime students for higher level discussion once we get to the corresponding section of the lecture.

Some students jumped right in and had very productive discussions with each claim. Other groups failed to have meaningful discussion, and needed significant prompting to discuss the claims. This was especially true when one student had a partner who was absent that day, I would frequently have the singleton attempt to avoid contact with another group. Other individuals tried (unsuccessfully) to answer the claims as quickly as possible, and use the remaining time to stare at their phones. This was evident in some of the responses I gathered via the post class survey, where one student wrote "... *sometimes my "group" would stray and talk about other unrelated things and waste time without answering the questions that were asked and it annoyed me*." Other groups "agreed to disagree" on some claims, perhaps as a way of avoiding discussion. Largely, I dealt with these situations by prompting, but I think there may be some ways to tweak the exercise to avoid some of these problems altogether.

These exercises also provided me direct feedback on my pedagogy in several ways. For some claims, I was surprised that the vast majority of the students already had a good understanding of the concepts and therefore were unlikely to benefit from specific discussion and analysis of the claim. An example of this was for the claim

"In the past, the mentally ill were believed to be possessed, and were killed as a result." Approximately 94% of the students correctly answered true to this question, leaving little opportunity for meaningful discussion. Figure 14 above shows good examples of this, as students answered claims 27-30 correctly on the pre-test more than 80% of the time.

On the other hand, I was surprised at how pervasive the incorrect answers were for some claims, particularly "Our handwriting reveals our personality traits." Nearly 76% of students got this wrong, answering true, which was significantly higher than I suspected going into the exercise. I have taught a critical thinking section on personality testing for several years without having any idea that so many students believed in the legitimacy of so called "graphology", the purported ability to glean information about personality from a sample of handwriting. Having this information helps me to know what concepts to devote class time toward, and I can now introduce in my lecture a section on how we might scientifically test this claim.

An additional benefit was discovering that the activity worked very well in increasing students' ability to correctly answer the claim. For example, for the claim "Early interventions, such as “Your Baby Can Read” or playing Mozart’s music to infants can boost their intelligence", students in both groups initially got this question correct just 24% of the time. In the control group, this increased 34%, with 58% of the students getting it correct on the post test. In the experimental group, they increased by approximately 66%, all the way up to 91% of the students answering correctly on the post test. This result was very gratifying.

Perhaps even more instructive as a professor, though, were the surprising failures. One such failure was the way that I address the claim "Children can learn things before they are even born." In the control group, students correctly answered true to this question 77% of the time on the pre-test. Despite my best efforts, they actually performed worse on the post-test, answering correctly just 61% of the time, for a drop of 16%. I thought I would do much better with the intervention in the experimental group, but failed to do so. In the experimental group, 79% of students answered correctly on the pre-test, while 67% answered correctly on the post test, for a drop of 12%. When I teach about this, I reference a study finding that women who consume large amounts of garlic or anise over the last six weeks of their pregnancy give birth to babies who show a taste preference for garlic or anise, respectively. The babies of women who do not consume these spices show an aversive reaction. My lecture comes complete with pictures of babies making disgusted faces when anise is held under their nose. I also pass around a jar of anise seeds, which has a very strong licorice scent, similar to the drink Jagermeister. I suggest to students that the next time they smell Jagermeister, that it serve as a retrieval cue that babies can learn before they are even born. I would think that such a demonstration would work well to cement this idea in students' minds, but this data clearly shows that this is not the case. This exercise has proven to be an invaluable form of getting feedback on individual aspects of pedagogy.

I intend to use the results of this project in a number of ways. I will use the results on the individual claims to change that specific pedagogy, in an attempt to improve student learning. In the post class survey a student mentioned having an interest in the Stanford Prison Experiment. I could implement some of that information into my social psychology chapter. I intend to drop some claims, as students either have a good understanding already, or they failed to spark significant discussion. I also intend to give students some additional incentive to put forth effort in these groups. Perhaps offering very small amounts of extra credit for participation and being correct, or perhaps requiring each group to declare their answer and reasoning, rather than calling for volunteers, would reduce some of the apathy I witnessed in some groups.

Lastly, I will keep in mind that this data is far from perfect, because of the methodological limitations of the study. Several other factors could have accounted for the increased scores on the post test by the experimental group. The two groups could have varied in significant ways. I could have unknowingly interacted differently with the two groups, as the inability to double blind the study could have produced an expectancy effect. It is possible that the test results were affected by the students experiencing cognitive biases such as the serial position effect or the recency effect. While these limitations prevent me from making a causal claim, I feel that these learning centered activities were a beneficial addition to my class in a variety of ways, and that the overall data gathered by the test scores and the post class survey supports this conclusion.

## B. Critical Evaluation of Each Essential Competency in this FLO

### 1. Assessment

- employ a variety of assessment measures and techniques (both formative and summative) to form a more complete picture of learning
- give timely feedback on class activities, exams and papers
- design activities to help students refine their abilities to self-assess their learning
- employ formative feedback to assess the effectiveness of teaching, counseling, and librarianship practices
- make assessment criteria public to students and colleagues

**Reflection:**
To give students an opportunity to demonstrate their understanding of critical thinking and the concepts covered in class, multiple forms of assessment (both formative and summative) were employed. Formative assessments included the pre-test, as well as the multiple small group activities, where the students received nearly immediate feedback. The summative assessment was the post test, which students almost always improved upon, as the criteria for assessing it

had been made public to them following the administration of the pre test and first small group activity.

These formative assessments were designed to be a reflective exercise for the students, as the small group activities provided them with many opportunities to discuss their reasoning with their fellow students, and many opportunities to discover if their collective answer had led them to the correct true or false conclusion. For example, several times I had students report to me that these helped them realize that in order to correctly evaluate a claim, first one must closely read and understand the claim. Specifically, one student reported that when her group was discussing the claim "Intelligence is strongly determined by genes", they initially thought that "strongly determined" must mean "completely". Only after more carefully evaluating the claim did they realize this was false, that "strongly determined" could be significantly less than 100%. These realizations lead them to the correct answer. Through the use of these small group activities, the students developed a more clear understanding of what they did and did not understand, and what lines of reasoning generally lead to more correct answers, helping them refine their abilities to self-assess their learning. Results from the post class survey help to support this inference, for example when a student commented that "*they helped me to specifically remember the topics discussed*". Overall, 83% of the students answered "Yes" to the first question on the post class survey, which was "Do you feel that the Small Group Activities added to our learning experience?" This indicates to me that these are effective formative assessments.

Both the formative and summative assessments helped me to assess the effectiveness of my teaching. Through observing their discussions, I was able to gauge how interested the classes were in the various claims. For example, the claim "Frequently our brains come to predictable, but false or biased conclusions" received very little discussion, and when asked why, students reported that I had demonstrated this to them many times throughout the course of the semester. Another claim that appeared uninteresting was "In the past, the mentally ill were believed to be possessed, and were killed as a result". As nearly 95% of the students correctly answered this claim on the pre-test, there was very little discussion to be had in the groups. This provides me excellent feedback, and I intend to eliminate these claims in my future classes. On the other hand, some claims produced lots of discussion, for example "We live in a more violent society than in decades past." As a result of this feedback, I intend to increase the class time devoted to this subject, and find some additional readings or videos that I can make available to the students via Blackboard. Several changes will be implemented into my class in light of the project results, which I hope will further increase student learning.

## 2. Inclusion and Diversity

- develop reciprocity and cooperation among students (interdependence and teamwork)
- foster connections among students in and out of the classroom, counseling and library environments
- create learning atmospheres that encourage all students to share viewpoints
- use diverse perspectives to engage and deepen critical thinking (diversity as learning resource)

**Reflection:**

The small group activities were designed to bring more interaction between students into the class, and to create a class environment where all students could make their voices heard.

The students were challenged to come to a group decision regarding the various claims, developing reciprocity and cooperation among students, and were encouraged to share and defend their reasoning once it came time to discuss and reveal the correct answers. Upon the reveal of the correct answer, sometimes students in groups who had disagreed would whisper something like "I told you so!" to a group mate, but the vast majority of these interactions were positive. Thus, such interactions fostered connections among students. The results of the post class survey support these conclusions, as 77% of the students answered "Yes" to the question "Do you feel that the Small Group Activities increased the connections between you and your fellow classmates?"

Having groups of two or three allowed students to each present their point view within their own group, encouraging all students to share their viewpoints. With Valencia's diverse student body, this meant that individuals were exposed to a variety of perspectives, effectively using diversity as a resource for learning.

After students had arrived at their group conclusions, I asked students to indicate whether their group had concluded true or false for the particular claim. I generally asked for volunteers to present their reasoning, encouraging all students to share their viewpoints, and this would sometimes spark interesting class discussion. If I had overheard a good line of reasoning, I would sometimes ask a group to share their reasoning. For the vast majority of claims, groups arrived at different conclusions, some answering true and others false. For each claim, I always sought discussion from both sides, again using diverse perspectives to engage and deepen critical thinking.

### 3. Learning Centered Teaching Strategies

- use cooperative/collaborative learning strategies
- encourage students to challenge ideas and sources
- integrate concrete, real-life situations into learning strategies
- employ strategies that guide students to become more active learners (e.g., reference interview, counseling inquiry, engaging lectures, discussion, experiential learning, scenarios, role-play, case study, problem-based learning, inquiry-based learning, manipulatives, etc.)

**Reflection:**

I specifically built this activity to be learning centered. It is designed so that students must all contribute, and the individual members cooperate in coming to their group based decisions. This represents the effective use of a cooperative learning strategy. When groups have arrived at their decision, I ask for volunteers both from the groups who answered "true" and those who answered "false" for each claim. I encourage students to challenge ideas and sources in discussion of these claims, and the reasons why the groups came to opposite answers. Questioning claims is an integral part of critical thinking, and I also encourage them to question my answer when I bring it up on the screen. For some claims I had anticipated significant resistance to my answer, for example "Children who are spanked have lower IQs than those who are not spanked." Based on prior classroom experience, as well as discussions with fellow professors, I anticipated that students were unlikely to believe the answer, that this is true, simply based on my word. Such skepticism, if it is expressed in an intellectually honest way, is an essential trait for a critical thinker. I want to nurture that trait. In this case I posted a short reading on the study on which I base the claim in Blackboard, and encourage students to look at my source for themselves. Encouraging students to have honest discussion about claims and to develop their critical thinking skills by questioning evidence and challenging sources helps guide students to taking a more active role in their learning experience. The results of the post class survey support these conclusions. The third question on the survey asks "Do you feel that the Small Group Activities encouraged active discussion in the class?" Students replied things like "*Yes because we talked about why it was the correct answer*." and "*Well this class w/ the exception of some tended to be more quiet so it helped us (introverts) of getting comfortable with our peers*." Overall, 90% of students answered "Yes" to this question.

In the creation of these small group activities, I made an attempt to include claims that I thought students will find interesting, or applicable to their relationships, career or academic lives, bringing concrete, real life situations into learning strategies. For example, a claim like "We live in a more violent society than in decades past" is of interest to nearly everyone in our society, especially in the light of recent violence occurrences. A claim like "Human memory works like a tape recorder or video camera, and accurately records the events we've experienced" should be of interest to any student with an interest in retaining learned information long enough to do well on an exam. In retrospect, this is an area where I feel I could improve upon this project. As several of the claims proved to spark little conversation or disagreement, I plan to remove and

replace them with specifically geared toward making the students think about their learning experience. One such example for the memory chapter would be "Sadly, there is little we can do to improve our memory." The fourth question on the post class survey was an attempt to gather student input into this process, reading "Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include?" It yielded few substantive responses, however. In the future I plan to change the way I try to get this type of feedback from students. Perhaps I can ask them to list the three claims that were the least interesting, and ask them to vote on a short list of claim that could be included in these activities.

## 4. Scholarship of Teaching and Learning

- Produce professional work (action research or traditional research) that meets the Valencia Standards of Scholarship
- Build upon the work of others (consult experts, peers, self, students)
- Be open to constructive critique (by both peers and students)
- Make work public to college and broader audiences
- Demonstrate relationship of SoTL to improved teaching and learning processes
- Demonstrate current teaching and learning theory & practice

**Reflection:**

The introduction of the small group activities into my General Psychology classes gave me the opportunity to develop an Action Research Project that serves to improve my pedagogy as well as increase student learning. As is reflected in my personal philosophy, increasing the student's awareness of and ability to engage in critical thinking is one of my main educational interests. This project was a natural fit for me, allowing me an opportunity to produce professional work that meets the Valencia Standards of Scholarship. At the conclusion of the project, I will present the ARP and ILP to my department and upload it to the ARP builder, making the work public to the college.

Through professional development courses, interactions with fellow professionals, and a review of the current information on teaching and learning theory and practice, I have built upon the work of others. Throughout the process, I had meaningful discussions and sought the input of my peers, adjusting my project accordingly. I will continue to be open to constructive critique by my peers based upon the review of this ILP. I have also been open to constructive critique by students in regards to this project, but this process has been informal, through our discussions only. One area in which I could improve is to improve my post class survey. The major problem with this survey was in the final question, in which the open ended format did not give me meaningful feedback. If I gave students a few of the claims which fostered little debate,

asking them to vote out one of them, that would help me improve the activity. Similarly, I could ask them to select a claim from a short list for inclusion into the activity. In this way, my teaching will also be open to constructive criticism from my students, as well.

Based on this feedback, and on the results of the ARP itself, I will adjust and modify my course in a number of ways. In doing so, I will demonstrate relationship of SoTL to improved teaching and learning processes.

## C. Plan for Dissemination

Fall 2011 - Review of literature, attendance in appropriate professional development courses and discussion with colleagues.

Spring 2012 - Development of pre/post test, gather data from control group classes.

Summer 2012 - Development of small group activities.

Fall 2012 - Implementation of project

Spring 2013 - Analysis of data, completion of ARP, presentation of ARP to panel.

Fall 2013 - Adjust portfolio based upon the recommendations of the Year 2 Panel.

Spring 2014 - Submission of final portfolio, and upload portfolio to online ARP builder.

*Copies of all student tests and results are available in my office.*

## D. Supporting Artifacts for FLO#1

### Artifact LO1-a: Pre/Post Test

Introductory test: Please answer T or F for each of the following Name _____

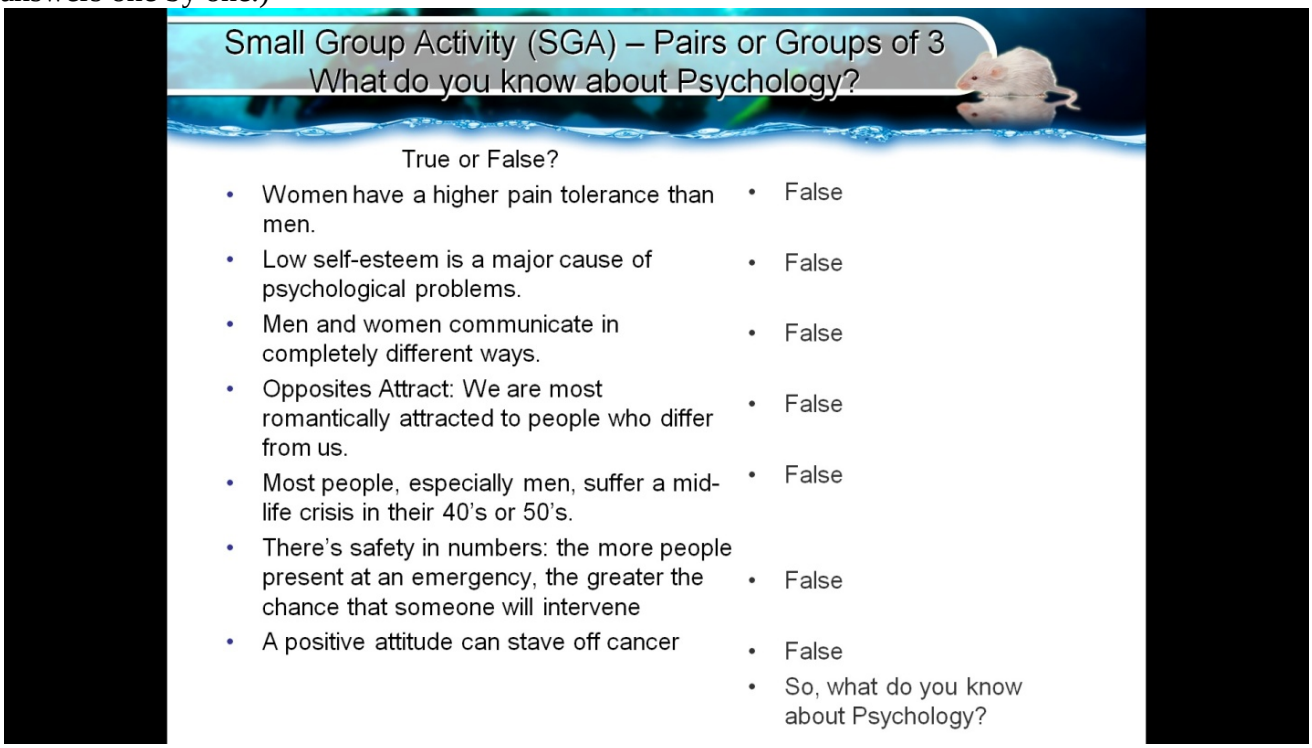
1. ___ Human memory works like a tape recorder or video camera, and accurately records the events we've experienced.
2. ___ We live in a more violent society than in decades past.
3. ___ Children who are spanked have lower IQs than those who are not spanked.
4. ___ Homosexuality is natural.
5. ___ Psychiatric hospital admissions and crimes increase during a full moon.
6. ___ Mentally ill people are prone to violence.
7. ___ Some people are left brained, others are right brained.
8. ___ The polygraph (lie detector) test is an accurate means of detecting dishonesty.
9. ___ Only deeply depressed people commit suicide.
10. ___ Children can learn things before they are even born.
11. ___ People with schizophrenia have multiple personalities.
12. ___ Early interventions, such as "Your Baby Can Read" or playing Mozart's music to infants can boost their intelligence.
13. ___ It is possible for someone to "implant" a memory into one's mind, making him believe something that never truly occurred.
14. ___ It is not harmful to wake a sleepwalker.
15. ___ ESP (Extra Sensory Perception) is a well-established phenomenon.
16. ___ Gay men and women really want to be members of the opposite sex.
17. ___ In the past, the mentally ill were believed to be possessed, and were killed as a result.
18. ___ Hypnosis is useful for retrieving memories of forgotten events.
19. ___ Your brain can be tricked into hearing language that is not there.
20. ___ There is no connection between vaccination and autism.
21. ___ Most people only use 10% of their brain's power.
22. ___ During "out-of-body" experiences, people's consciousness leaves their bodies.
23. ___ Our perceptions do not always accurately reflect reality.
24. ___ Our unconscious minds strongly affect who we are prejudiced against.
25. ___ A large proportion of criminals successfully use the insanity defense.
26. ___ Intelligence is strongly determined by genes.
27. ___ A head injury cannot produce brain damage unless the person is knocked unconscious.
28. ___ There is no pattern of parenting that leads a child to be homosexual.

29. ___ Our handwriting reveals our personality traits.

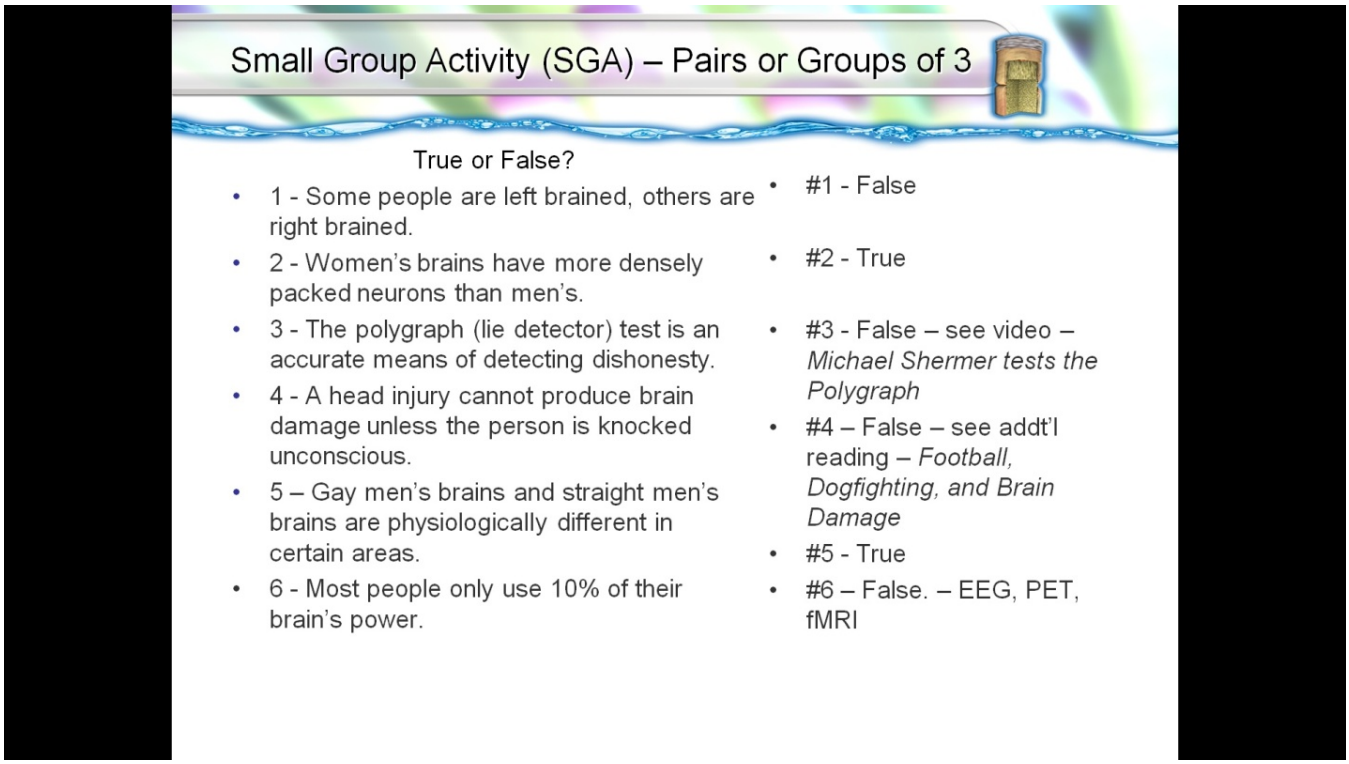
30. ___ Frequently our brains come to predictable, but false or biased conclusions.

**Artifact LO1 -b: Initial SGA**

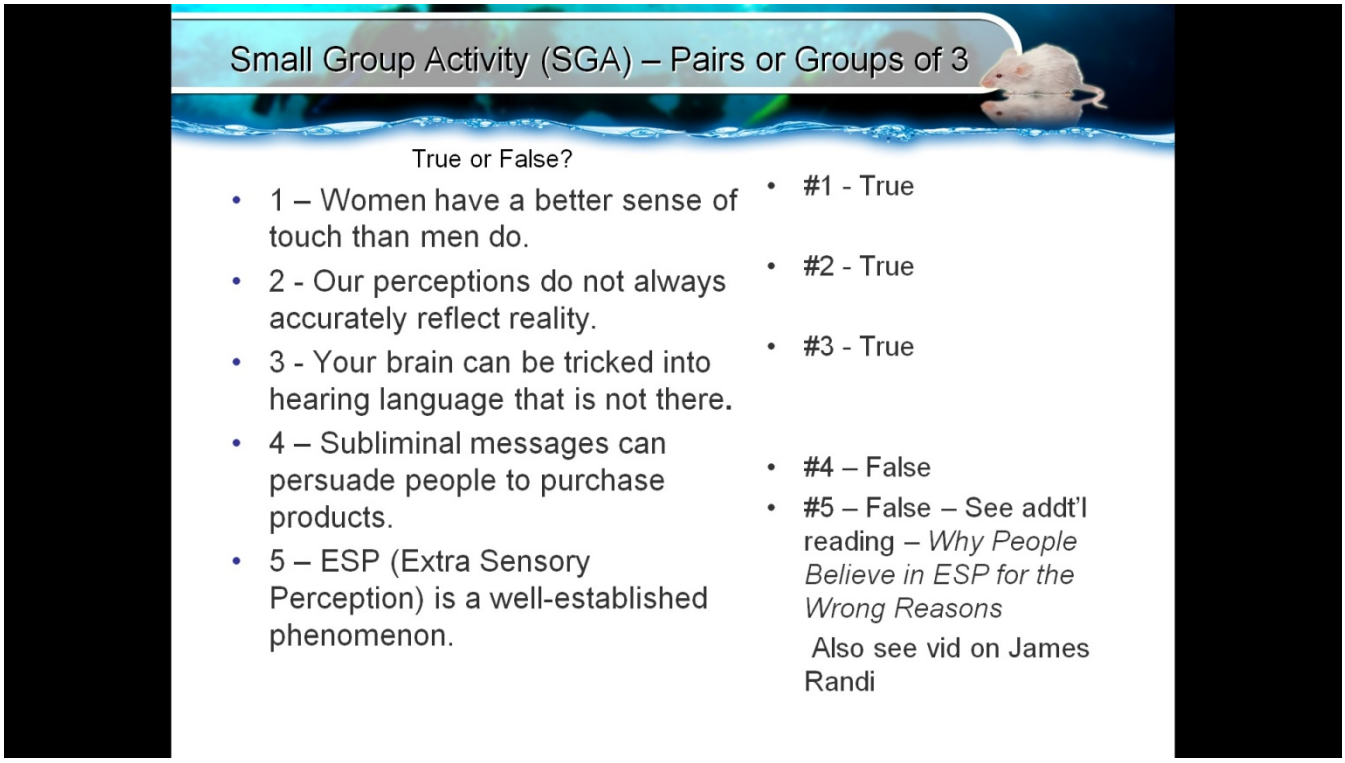
(please note, this artifact is a static image of a dynamic graphic. Students are initially presented with the claims, not the conclusions. After the group discussions are complete, we go through the answers one by one.)



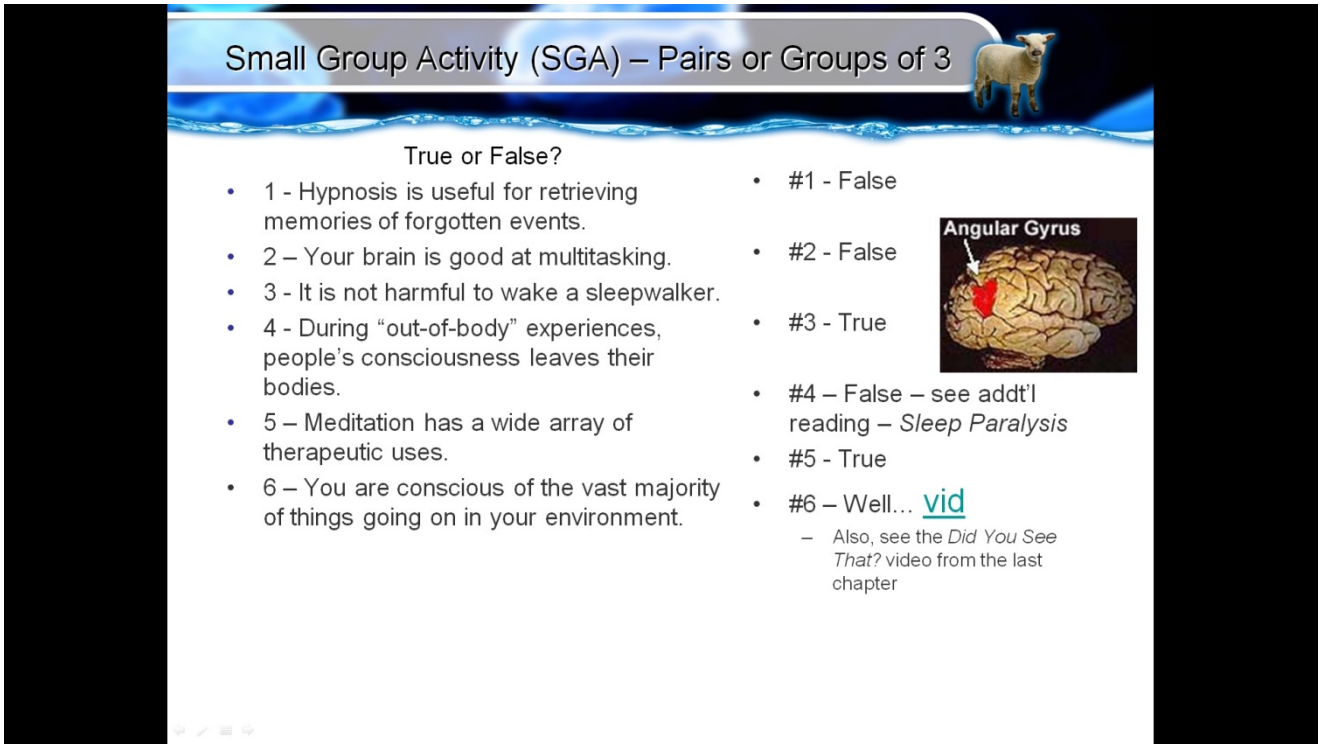
**Artifact LO1-c : SGA from Ch 3 - The Biological Perspective**



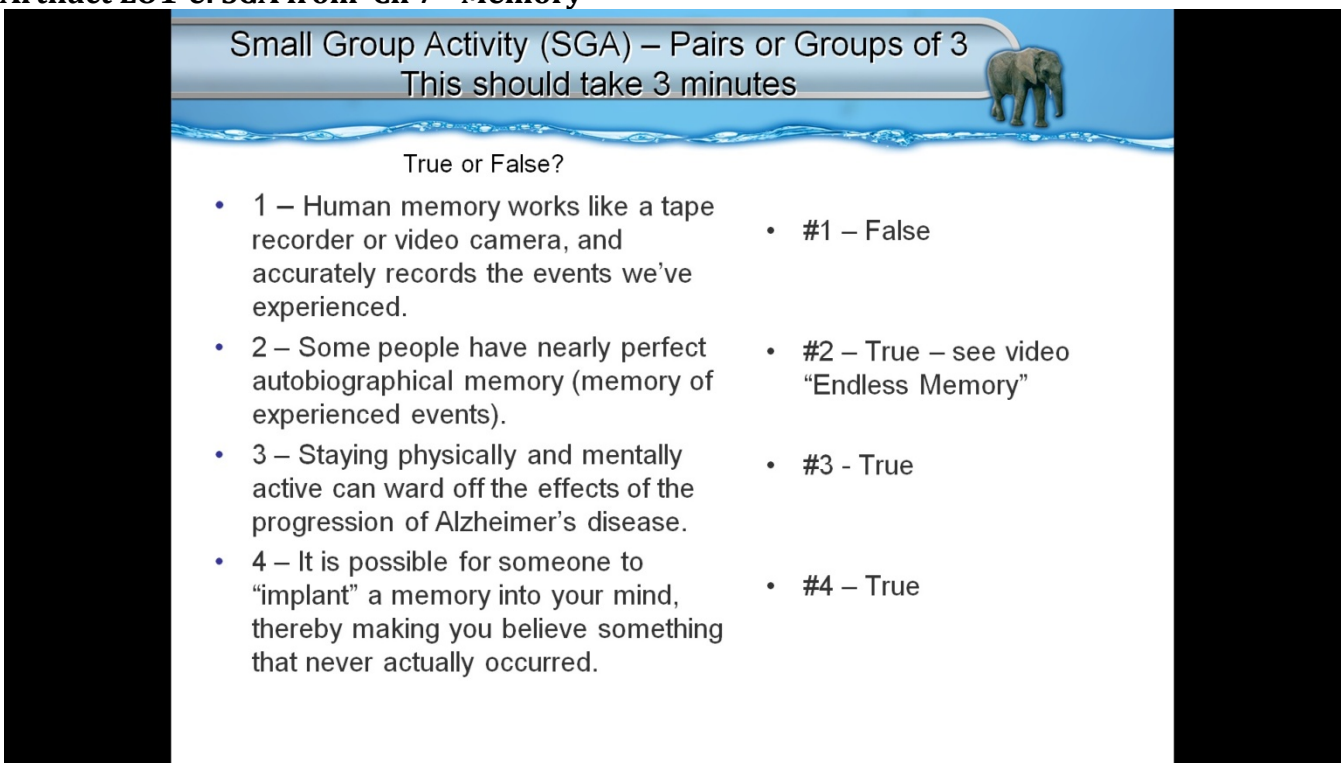

**Artifact LO1-d: SGA from Ch 4 - Sensation and Perception**



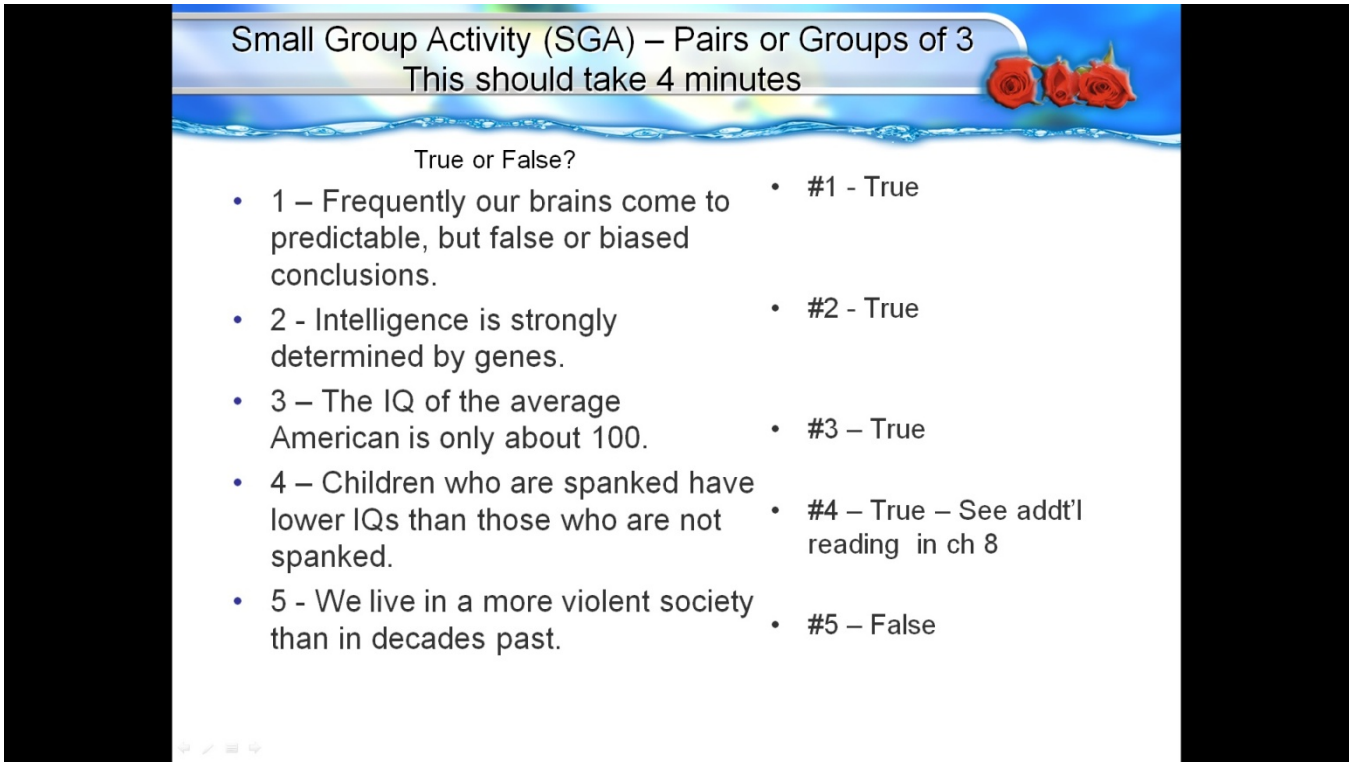
**Artifact LO1-f: SGA from Ch 5 - Consciousness**



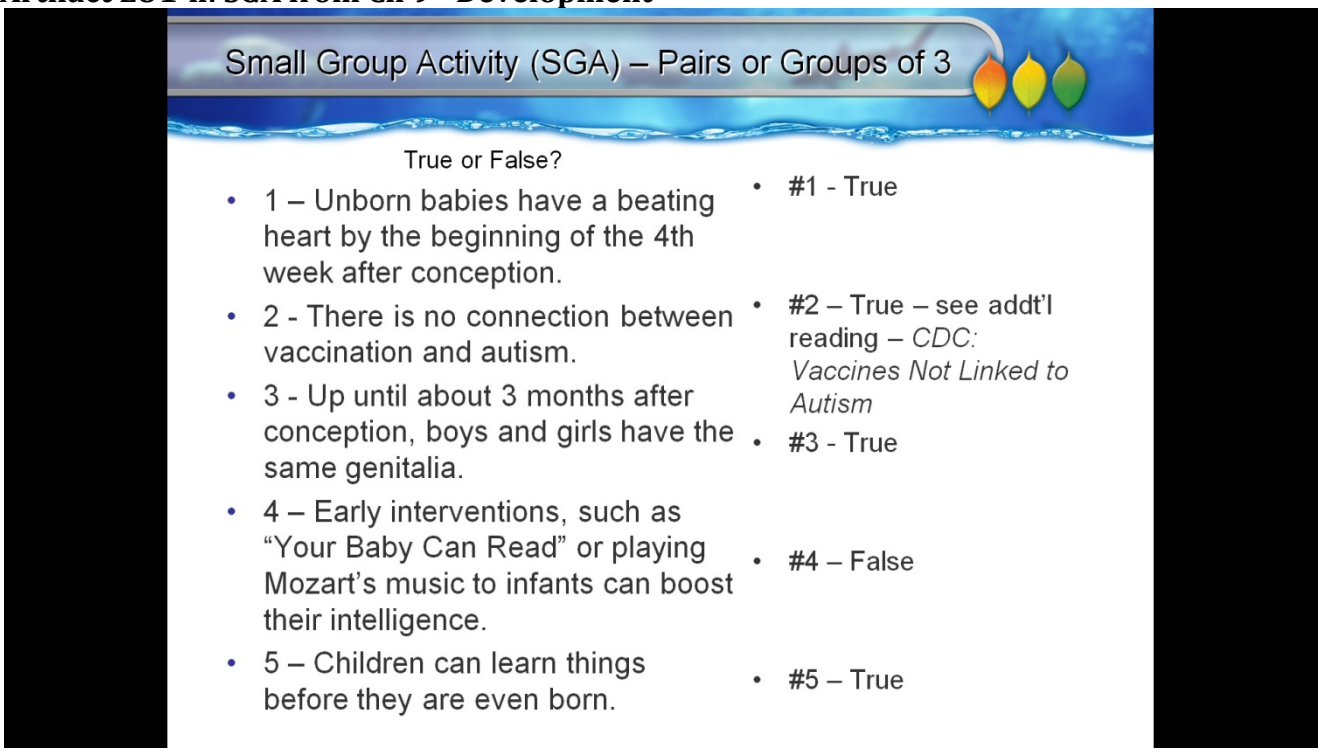

**Artifact LO1-e: SGA from Ch 7 - Memory**



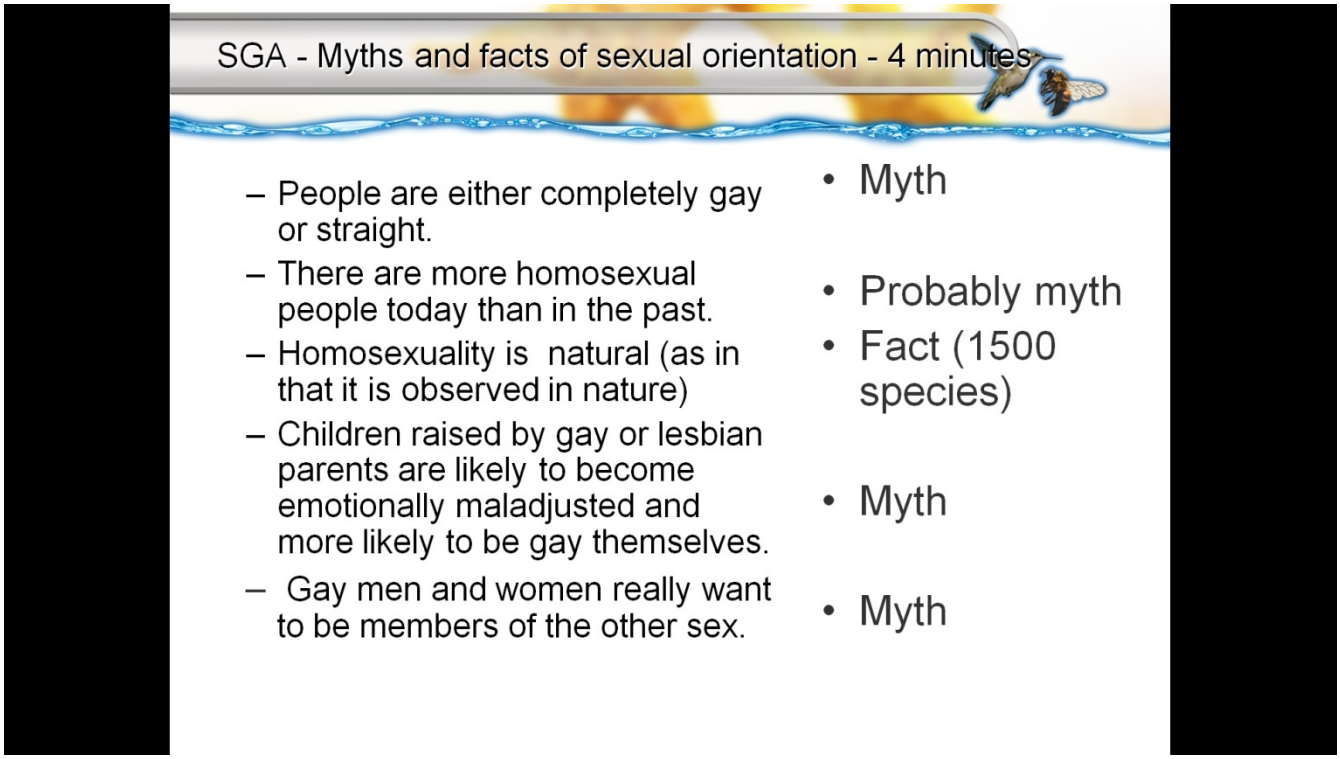
**Artifact LO1-g: SGA from Ch 8 - Cognitive Psych**



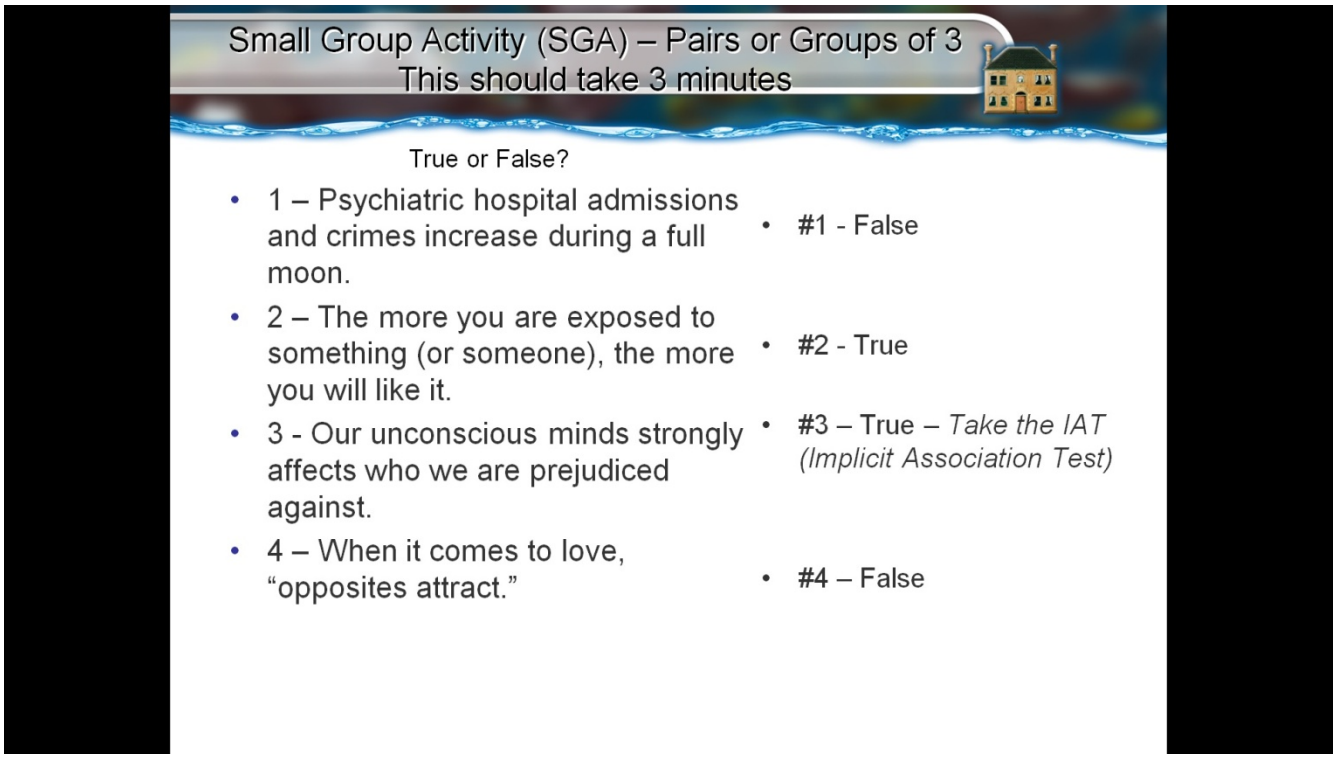

**Artifact LO1-h: SGA from Ch 9 - Development**



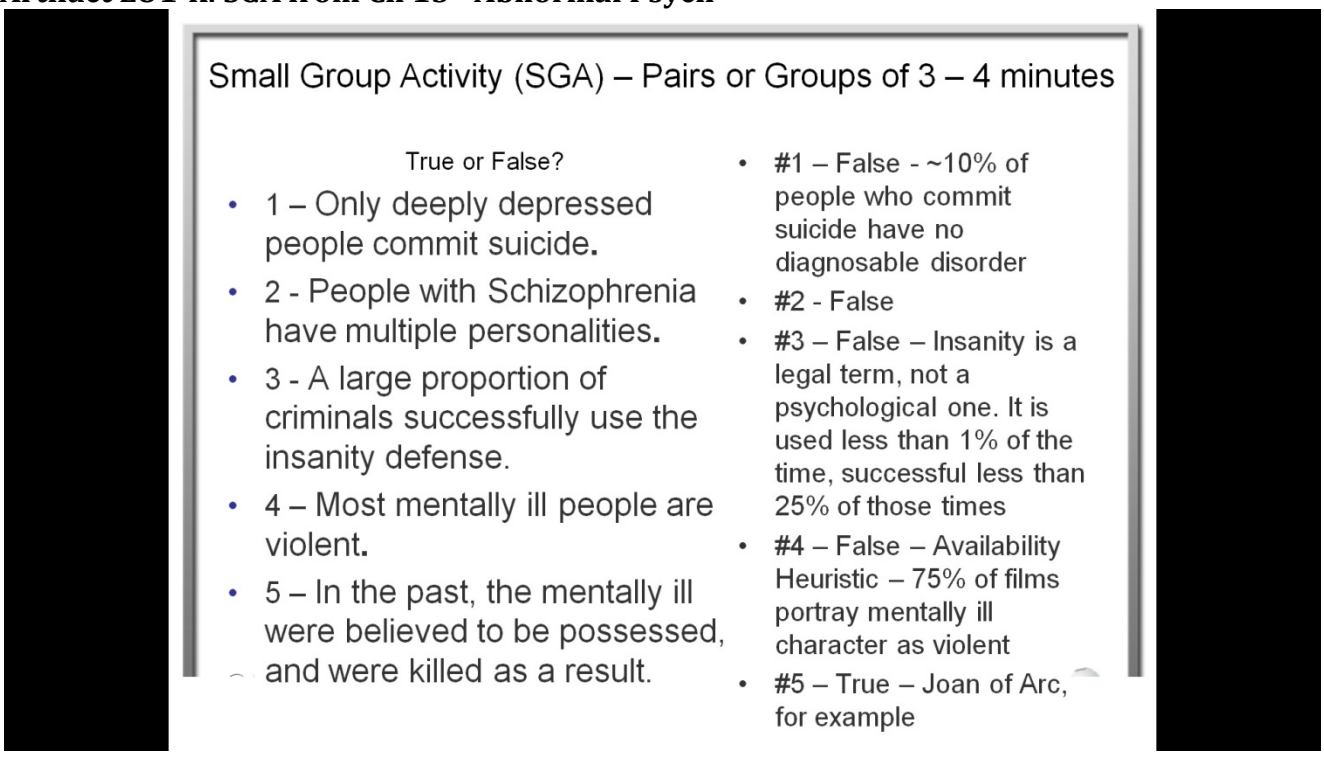
**Artifact LO1-i: SGA from Ch 11 - Gender and Sexuality**



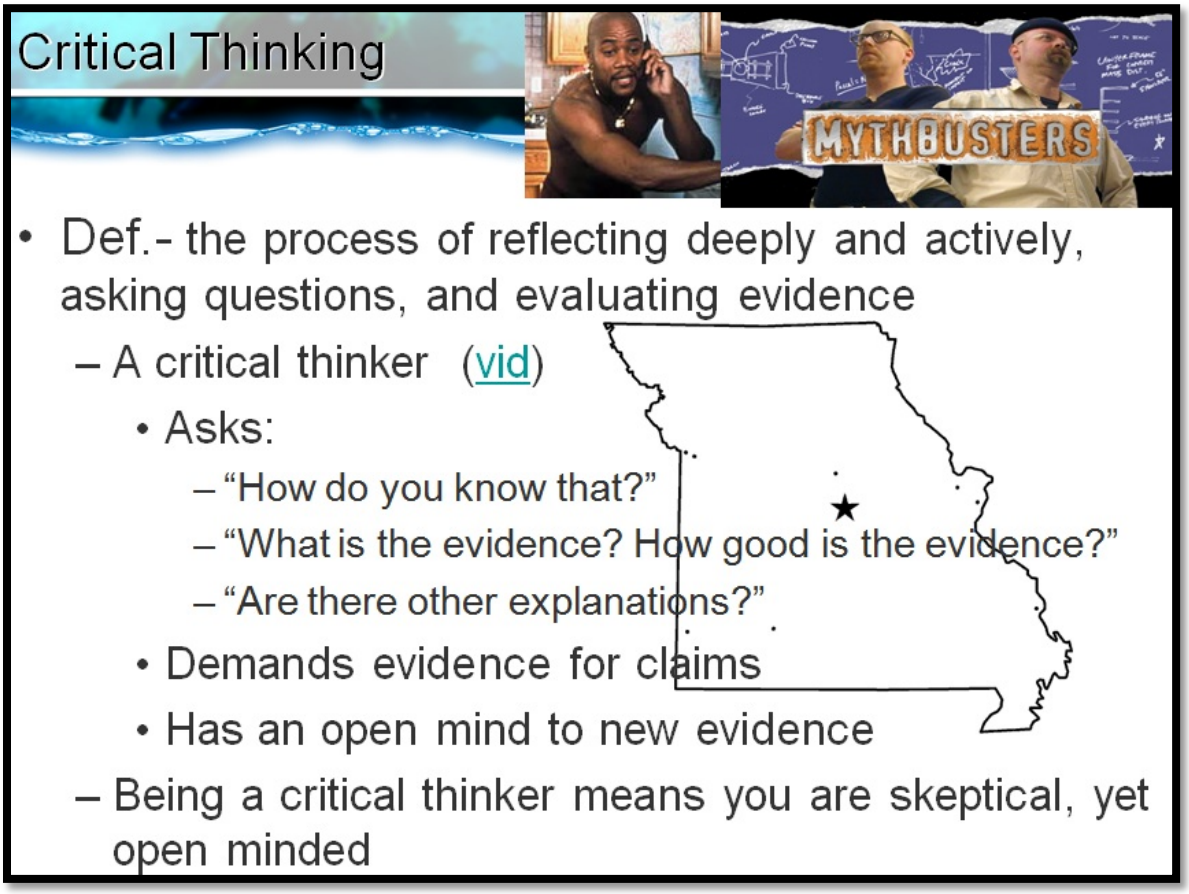
**Artifact LO1-j: SGA from Ch 13 - Social Psych**




**Artifact LO1-k: SGA from Ch 15 - Abnormal Psych**

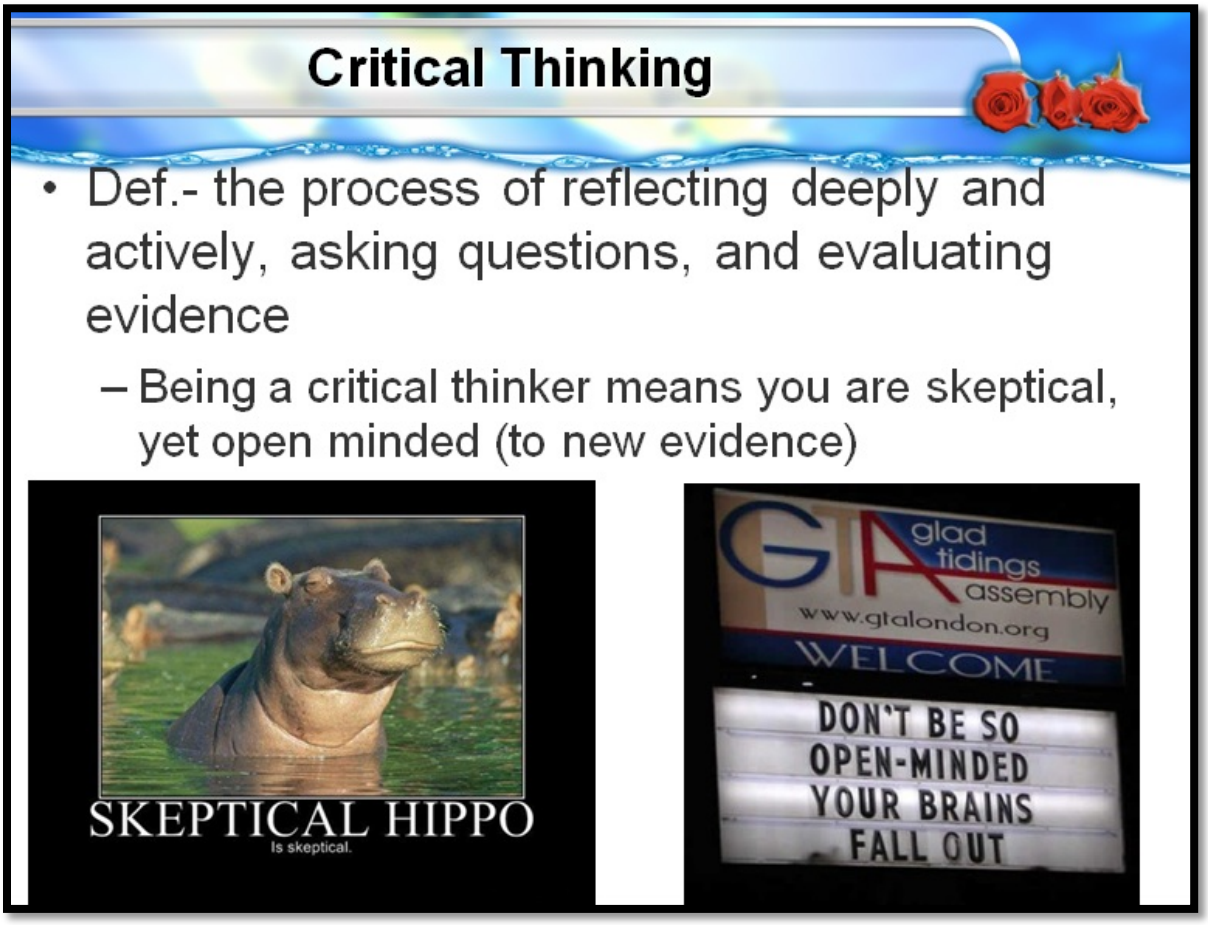


**Artifact LO1-l - Ch 1 PowerPoint slide - introducing critical thinking**



**Artifact LO1-m - Ch1 PowerPoint slides - claims or issues we could investigate using critical thinking**


**Artifact LO1-n - Ch 8 PowerPoint slide - review of critical thinking**



**Artifact LO1-o - Post Class Survey and several responses**

Post-class survey: I would like to gather your thoughts regarding the Small Group Activities for this class.
The results of this survey are to be anonymous, please don't put your name on it – this way you can be honest.

1. Do you feel that the Small Group Activities added to your learning experience? Why or why not?

2. Do you feel that the Small Group Activities increased the connections between you and your fellow classmates? Why or why not?

3. Do you feel that the Small Group Activities encouraged active discussion in the class? Why or why not?

4. Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include?

Post-class survey: I would like to gather your thoughts regarding the Small Group Activities for this class.
The results of this survey are to be anonymous, please don't put your name on it – this way you can be honest.

1. Do you feel that the Small Group Activities added to your learning experience? Why or why not?
   yes because it was helpful to see what other people thought & you could gain a better understanding of it if you didn't understand.
2. Do you feel that the Small Group Activities increased the connections between you and your fellow classmates? Why or why not? Sort of. Because it made me feel more comfortable with sharing my sometimes wrong answers.
3. Do you feel that the Small Group Activities encouraged active discussion in the class? Why or why not?
   Well this class w/the exception of some tended to be more quiet so it helped us interms of getting comfortable with our peers.
4. Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include? I really liked the ch. 15 disorders chapter explained it well. Nothing else really. Good useage of personal stories.

Post-class survey: I would like to gather your thoughts regarding the Small Group Activities for this class.
The results of this survey are to be anonymous, please don't put your name on it – this way you can be honest.

1. Do you feel that the Small Group Activities added to your learning experience? Why or why not?
   I'm in the middle about it. Usually I don't like group anything but in this kind of environment or rather a class of this subject, it's best to get other people's perspectives & knowledge
2. Do you feel that the Small Group Activities increased the connections between you and your fellow classmates? Why or why not?
   Not for me- I don't care enough about my classmates. I come to learn and my focus is the Professor. I don't need to be "comfortable" to learn just a good teacher. Hence why I no like "groups!"
3. Do you feel that the Small Group Activities encouraged active discussion in the class? Why or why not?
   I feel like the teacher encouraged discussion. The activities helped but certain people seemed to take more to it.
4. Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include?
   None. :)

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Post-class survey: I would like to gather your thoughts regarding the Small Group Activities for this class.
The results of this survey are to be anonymous, please don't put your name on it – this way you can be honest.

1. Do you feel that the Small Group Activities added to your learning experience? Why or why not?
   yes, I feel that they added to my learning experience, because I got to talk out and explain my thoughts to other students, and I also got to hear other peoples' opinions.
2. Do you feel that the Small Group Activities increased the connections between you and your fellow classmates? Why or why not? yes, before the small group activities I didn't really talk to other students in class, it helped give people a chance and a reason to connect with one another
3. Do you feel that the Small Group Activities encouraged active discussion in the class? Why or why not?
   yes, It gave people time to argue their thoughts with each other and people were able to listen to each other ideas.
4. Are there any concepts or claims that you think I should eliminate from this activity? Are there any other claims you think might be interesting to include? NO