In a fictional study, the influence of a television program on children's aggressiveness was examined. The number of aggressive responses was measured during an observation period after viewing the television program. Imagine that the known national average for number of aggressive responses typically performed by children who do not watch television is 6.647.   
(a) Perform the six steps of hypothesis testing using the following data and a one-tailed test to determine if there is an increase in the number of aggressive behaviors in children after having viewed the television program using p <.05.  
(b) Compute the effect size and interpret its meaning.   
  
Table: TV and Aggressiveness

|  |  |
| --- | --- |
| Participant | Aggression after viewing the TV show |
| 1 | 9 |
| 2 | 3 |
| 3 | 11 |
| 4 | 12 |
| 5 | 14 |
| 6 | 6 |
| 7 | 12 |

Television has been known to have an effect on the popularity of things. For example, popular shows about lawyers have preceded increased applications to law school, and the latest boom in shows about criminal profiling has increased students' interest in forensic psychology. A student double-majoring in psychology and marketing was interested in whether the popularity of a song could be affected by its appearance on a popular television show about a high school singing group. He tracks the sales of music before and after the music is performed on the show. Hypothetical data (in millions) follow:  
  
Table: Sales: Before and After

|  |  |
| --- | --- |
| Sales before TV appearance | Sales after the song was covered on TV |
| 1.3 | 1.7 |
| 0.9 | 1.4 |
| 3.1 | 1.2 |
| 1.6 | 1.8 |

(a) Compute the paired-samples *t* test and make a decision about a two-tailed hypothesis with a *p* level of 0.05 (list all six steps).   
(b) Compute a 95% confidence interval for the mean difference.   
(c) Compute Cohen's *d* as a measure of effect size and interpret its meaning.

Mehl (2007) reported in the journal *Science* the results of an extensive study of 396 men and women, comparing the number of words uttered per day by each sex. Volunteer participants wore inconspicuous recording devices that recorded the subjects' daily word usage. Is there any validity to the notion that women talk more than men do? The following fictional data produce results similar to those obtained by Mehl (2007).

(a) Perform all six steps of hypothesis testing on the data to answer this question using p < .01.  
  
Table: Word Usage and Gender

|  |  |
| --- | --- |
| Women | Men |
| 17,214 | 16,322 |
| 15,325 | 14,636 |
| 14,022 | 17,045 |
| 18,643 | 18,873 |
| 15,800 | 13,071 |

A researcher is interested in whether herbal remedies are effective in relieving allergies, and if so, which ones are most effective. The researcher takes a group of 20 allergy sufferers and randomly assigns each one to receive herbal tea, a homeopathic administration of allergens, a traditional antihistamine, or a placebo pill. The dependent measure is the number of allergy complaints by patients during weeks 2 and 3 of the treatments.   
(a) Perform the six steps of hypothesis testing on the following set of fictional data using p < .05.   
(b) List the effect size for the study.   
(c) Figure a post hoc test to determine where group differences lie.   
  
Table: Herbal Remedies

|  |  |  |  |
| --- | --- | --- | --- |
| Herbal Tea | Homeopathy | Antihistamine | Placebo |
| 2 | 3 | 2 | 5 |
| 4 | 2 | 1 | 3 |
| 0 | 2 | 0 | 7 |
| 2 | 1 | 3 | 4 |
| 3 | 1 | 4 | 8 |