

Logic and Critical Thinking  
Course Instructor: Dr. Michael Johnson  
Homework #3  
Due Monday 22 April

Your Name: \_\_\_\_\_

Student ID# \_\_\_\_\_

### Instructions

Please read the instructions for this assignment carefully.

Each of the 3 questions on this homework contains a link to a news report about an observational study. Please read each of the news reports. After you have read a news report, answer the question by:

- a. Telling me which variables (“A” and “B”) the researchers found to be correlated.
- b. Providing an explanation for the correlation (“A caused B,” or “B caused A,” or “A and B were both caused by C”). This explanation can be the one the researchers give in the news report, if one is given. Make sure to explain your explanation—tell me why it makes sense that A caused B, or that B caused A, or whatever you say.
- c. Providing an alternate explanation for the correlation. For example, if you say in (b) that the researchers thought that “A causes B,” you might say in (c) that a better explanation might be that a third factor C causes both A and B. Again, please explain your explanation—why does your alternate explanation make sense.

### Example Problem

Study: [http://articles.nydailynews.com/2012-08-17/news/33252380\\_1\\_yolks-hollandaise-spence](http://articles.nydailynews.com/2012-08-17/news/33252380_1_yolks-hollandaise-spence)

a. Which two variables, A and B, are correlated, according to the study?

A = *Eating eggs*

B = *Plaque in the arteries*

b. What is one explanation (maybe the researchers' explanation) for the correlation [circle one]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

c. Is the choice you circled in (b) the researchers' explanation? [circle one]

Yes / No

d. If you picked (iii) in (b), what is the common cause C that is responsible for A and B?

C =

e. Please explain why your choice in (b) makes sense. Explain to me why I should believe your explanation of the correlation between A and B.

*According to the article, eating eggs raises cholesterol levels. High cholesterol levels can cause plaque to build up in the arteries. So eating eggs can cause plaque to build up—maybe as much as smoking cigarettes causes plaque to build up!*

## ALTERNATE EXPLANATION for Example Problem

f. What is another explanation for the correlation [circle one, but not one you already picked in (b)]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

g. Is the choice you circled in (f) the researchers' explanation? [circle one]

Yes / No

h. If you picked (iii) in (f), what is the common cause C that is responsible for A and B? [Skip if you didn't pick (iii).]

*C = Eating greasy food like burgers and bacon.*

i. Please explain why your choice in (f) makes sense. Explain to me why I should believe your alternate explanation of the correlation between A and B.

*Eating a burger causes me to eat eggs, because burgers often have eggs on them. Eating bacon causes me to eat eggs, because bacon for Sunday brunch often comes with eggs. Eating burgers and bacon also causes plaque to build up in my arteries, because of all the grease. So it's not the eggs that cause the plaque, but the things I eat with the eggs.*

## Problem #1:

Study: <http://www.guideandgazette.co.uk/news/health/behind-the-headlines/does-chocolate-cut-heart-risk-1-9349>

1.a. Which two variables, A and B, are correlated, according to the study?

A =

B =

1.b. What is one explanation (maybe the researchers' explanation) for the correlation [circle one]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

1.c. Is the choice you circled in (1.b) the researchers' explanation? [circle one]

Yes / No

1.d. If you picked (iii) in (1.b), what is the common cause C that is responsible for A and B?

C =

1.e. Please explain why your choice in (2.b) makes sense. Explain to me why I should believe your explanation of the correlation between A and B.

## ALTERNATE EXPLANATION for Problem #1

1.f. What is another explanation for the correlation [circle one, but not one you already picked in (1.b)]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

1.g. Is the choice you circled in (1.f) the researchers' explanation? [circle one]

Yes / No

1.h. If you picked (iii) in (1.f), what is the common cause C that is responsible for A and B? [Skip if you didn't pick (iii).]

C =

1.i. Please explain why your choice in (1.f) makes sense. Explain to me why I should believe your alternate explanation of the correlation between A and B.

## Problem #2:

Study: <http://medicalxpress.com/news/2013-03-experts-urge-caution-pregnancy-vitamin.html>

2.a. Which two variables, A and B, are correlated, according to the study?

A =

B =

2.b. What is one explanation (maybe the researchers' explanation) for the correlation [circle one]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

2.c. Is the choice you circled in (2.b) the researchers' explanation? [circle one]

Yes / No

2.d. If you picked (iii) in (2.b), what is the common cause C that is responsible for A and B?

C =

2.e. Please explain why your choice in (2.b) makes sense. Explain to me why I should believe your explanation of the correlation between A and B.

## ALTERNATE EXPLANATION for Problem #2

2.f. What is another explanation for the correlation [circle one, but not one you already picked in (2.b)]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

2.g. Is the choice you circled in (2.f) the researchers' explanation? [circle one]

Yes / No

2.h. If you picked (iii) in (2.f), what is the common cause C that is responsible for A and B?  
[Skip if you didn't pick (iii).]

C =

2.i. Please explain why your choice in (2.f) makes sense. Explain to me why I should believe your alternate explanation of the correlation between A and B.

## Problem #3

Study: <http://www.natureworldnews.com/articles/1431/20130417/script-type-text-javascript-location-replace-adm-account-login-url-2fadm-2fpublish-2fpublish-2fget-keywords-ajax-php-script.htm>

3.a. Which two variables, A and B, are correlated, according to the study?

A =

B =

3.b. What is one explanation (maybe the researchers' explanation) for the correlation [circle one]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

3.c. Is the choice you circled in (3.b) the researchers' explanation? [circle one]

Yes / No

3.d. If you picked (iii) in (3.b), what is the common cause C that is responsible for A and B?

C =

3.e. Please explain why your choice in (3.b) makes sense. Explain to me why I should believe your explanation of the correlation between A and B.



## ALTERNATE EXPLANATION for Problem #3

3.f. What is another explanation for the correlation [circle one, but not one you already picked in (3.b)]:

i. A causes B

ii. B causes A

iii. A common cause C is responsible for both A and B

3.g. Is the choice you circled in (3.f) the researchers' explanation? [circle one]

Yes / No

3.h. If you picked (iii) in (3.f), what is the common cause C that is responsible for A and B? [Skip if you didn't pick (iii).]

C =

3.i. Please explain why your choice in (3.f) makes sense. Explain to me why I should believe your alternate explanation of the correlation between A and B.