Practice Items: Interpreting Complex Designs

Scenario: Dr. Levy examines whether humorous TV commercials are more effective in getting people to like a product than factual (non-humorous) TV commercials. He also wants to know whether these types of commercials influence adults and teenagers in the same way. In this experiment 40 adults and 40 teenagers are randomly assigned to watch either a humorous or factual TV commercial about the same product (this yields 20 participants in each of the 4 conditions). The dependent variable is the participants' rating of how much they like the product, using a 100 point scale (0 = It Totally Awful; 100 = It's Totally Fantastic). **Assume that any difference of 5 or more rating points is statistically significant.**

1. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	45	15
Teenagers	15	45

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

2. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	20	40
Teenagers	20	40

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

3. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	30	40
Teenagers	10	20

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

4. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	20	40
Teenagers	80	60

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

5. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	65	65
Teenagers	35	35

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

6. Based on the data below, what are the results?

Type of Commercial

Age Group	Humorous	Factual
Adults	75	45
Teenagers	65	55

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

7. Based on the data below, what are the results?

Type of Commercial

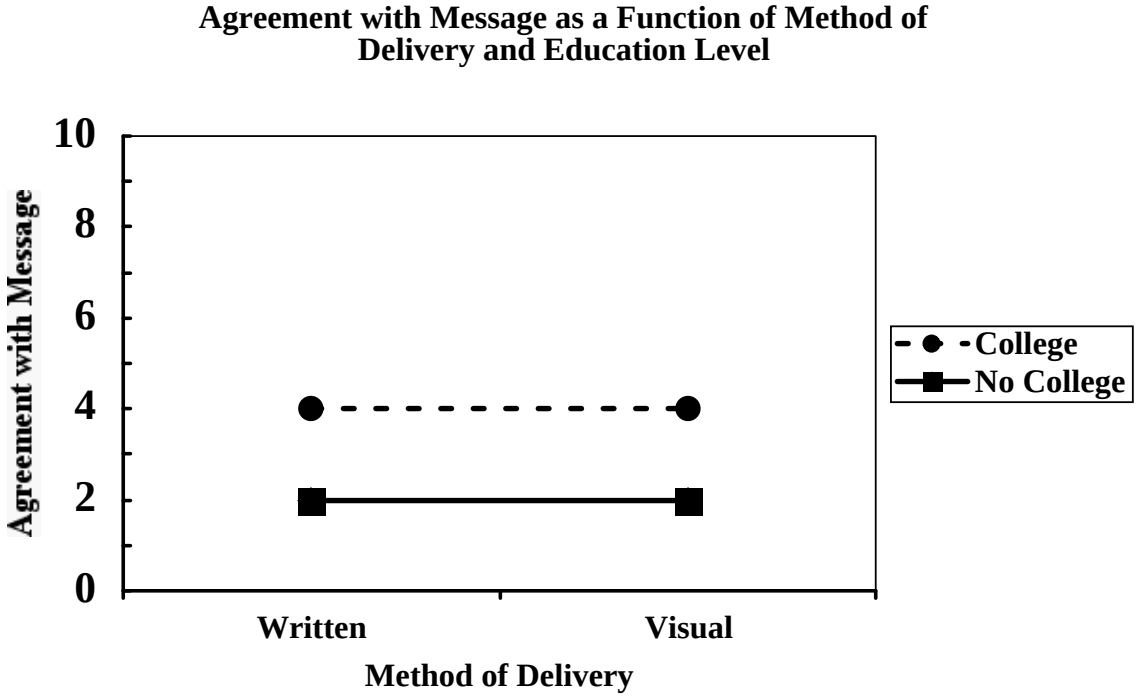
Age Group	Humorous	Factual
Adults	85	45
Teenagers	45	45

a. main effect Type of Commercial
b. main effect Age Group
c. both main effects
d. interaction
e. interaction & main effect Type of Commercial
f. interaction & main effect Age Group
g. interaction & both main effects
h. no main effects, no interaction

INTERPRETING MAIN EFFECTS AND INTERACTIONS FROM LINE GRAPHS

Scenario: Dr. Sikov examines whether persuasive messages are more effective when they are written (e.g., a newspaper editorial) or delivered visually (e.g., a T.V. editorial). He also wants to know whether message effectiveness depends on a person's level of education. Sixty adults who have graduated from college and sixty adults who never attended college are randomly assigned to either a written message condition or to a visual message condition (this yields 30 participants in each of the 4 conditions). The written and visual messages, which have identical content, argue in favor of a large increase in gasoline taxes. The dependent variable is the participants' rating of how much they agree with the message, using a 10 point scale (1= Totally Disagree; 10 = Totally Agree). **Assume that any difference of 1 full point or more is statistically significant.**

EXAMPLE 1

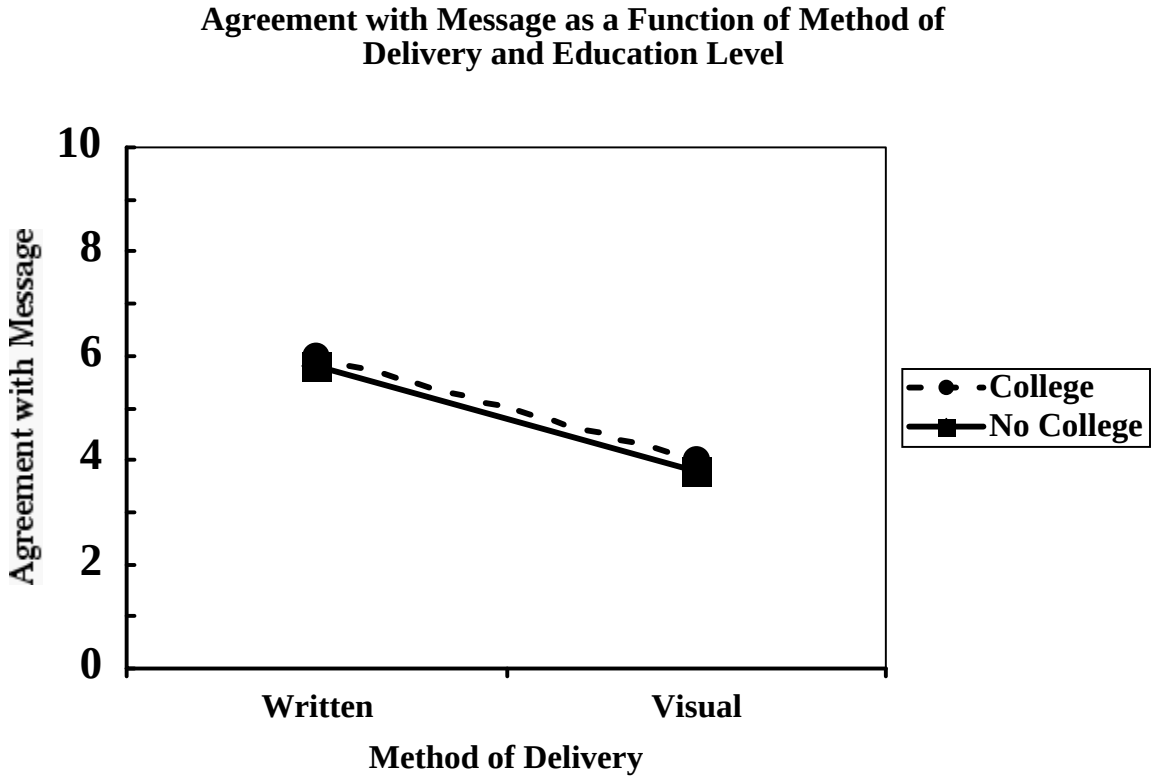


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 2

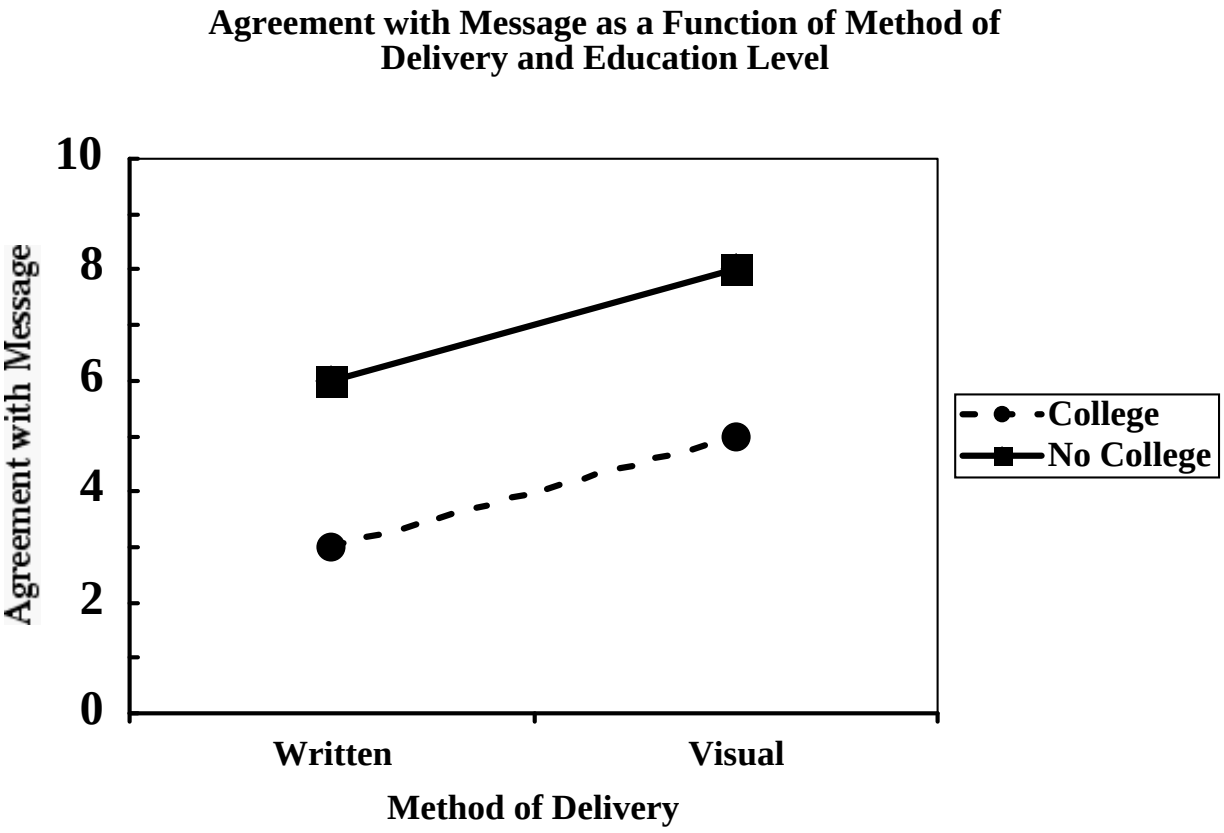


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 3

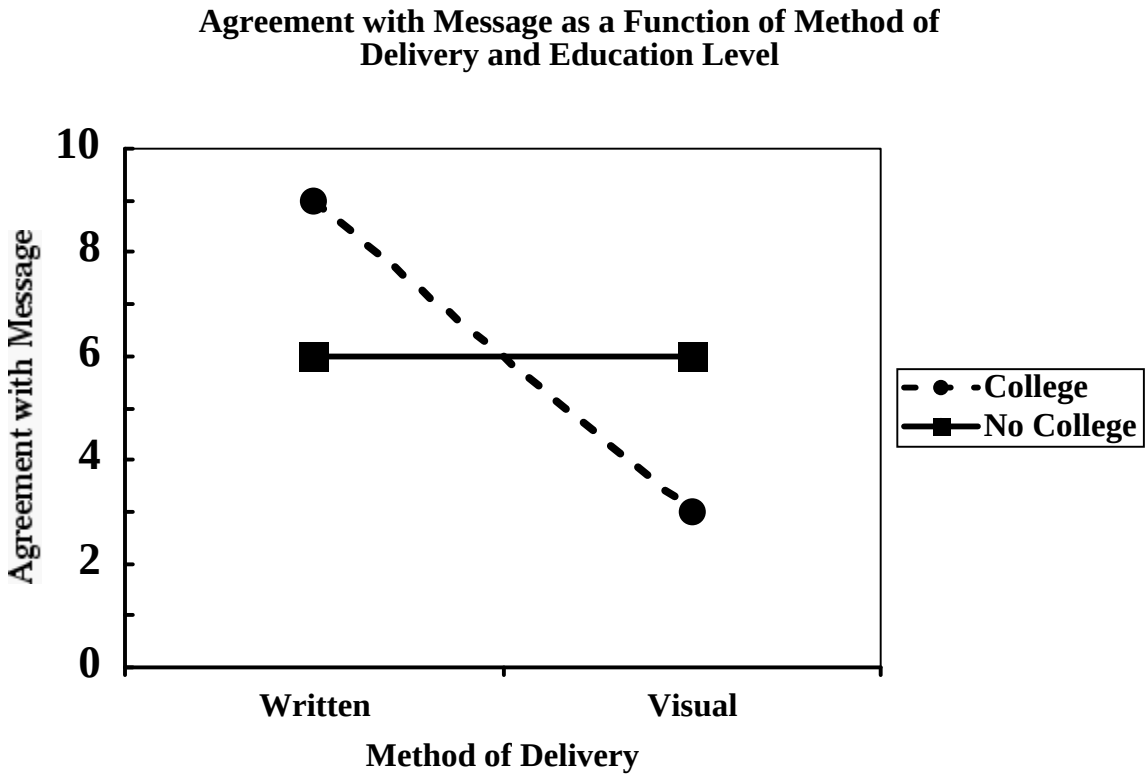


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 4

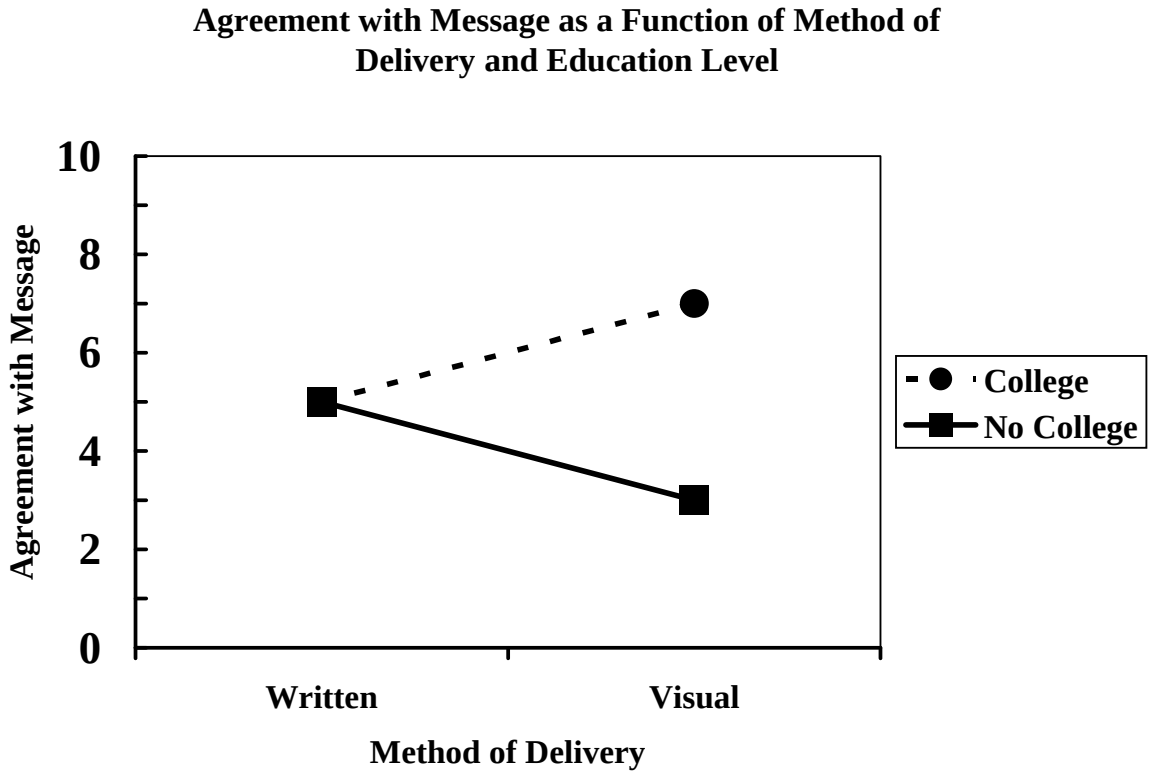


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 5

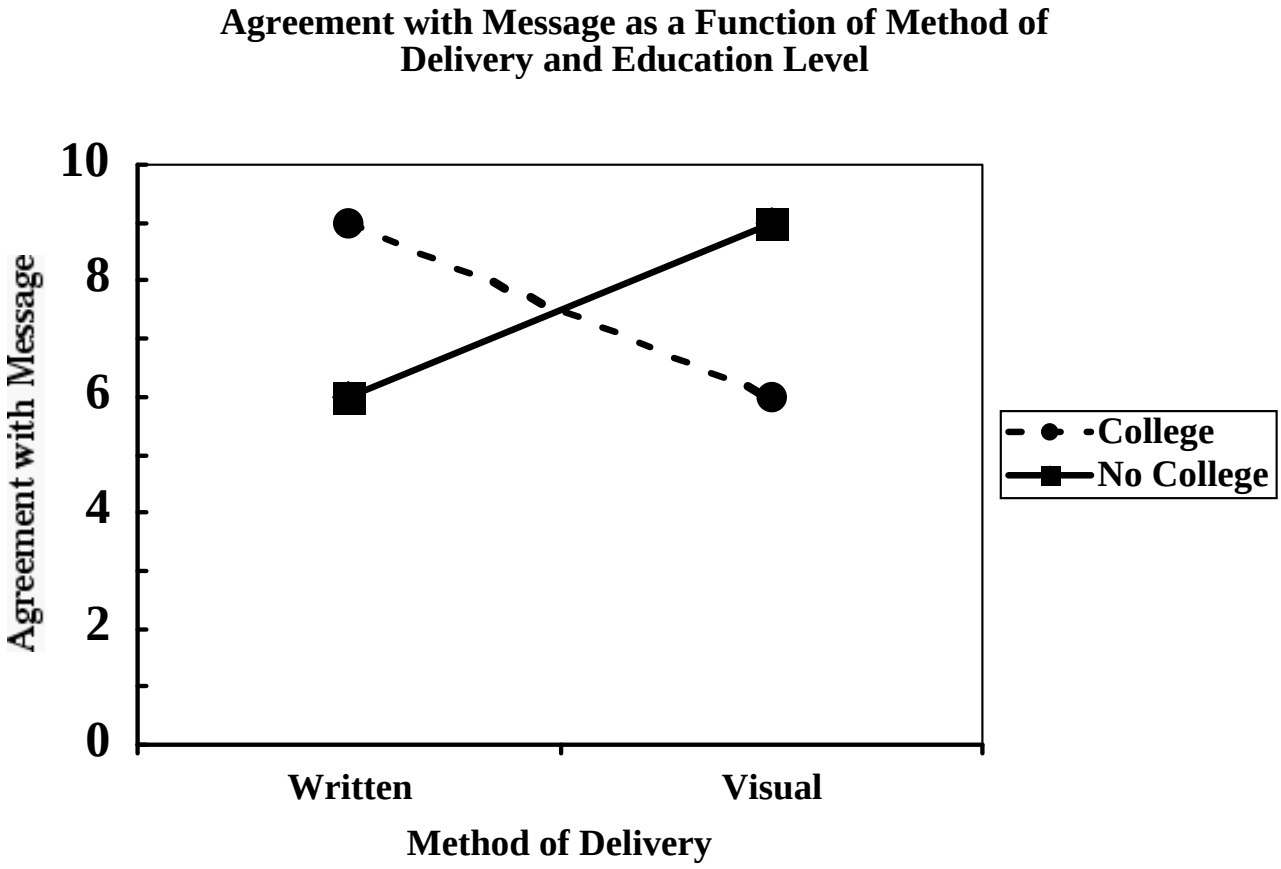


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 6

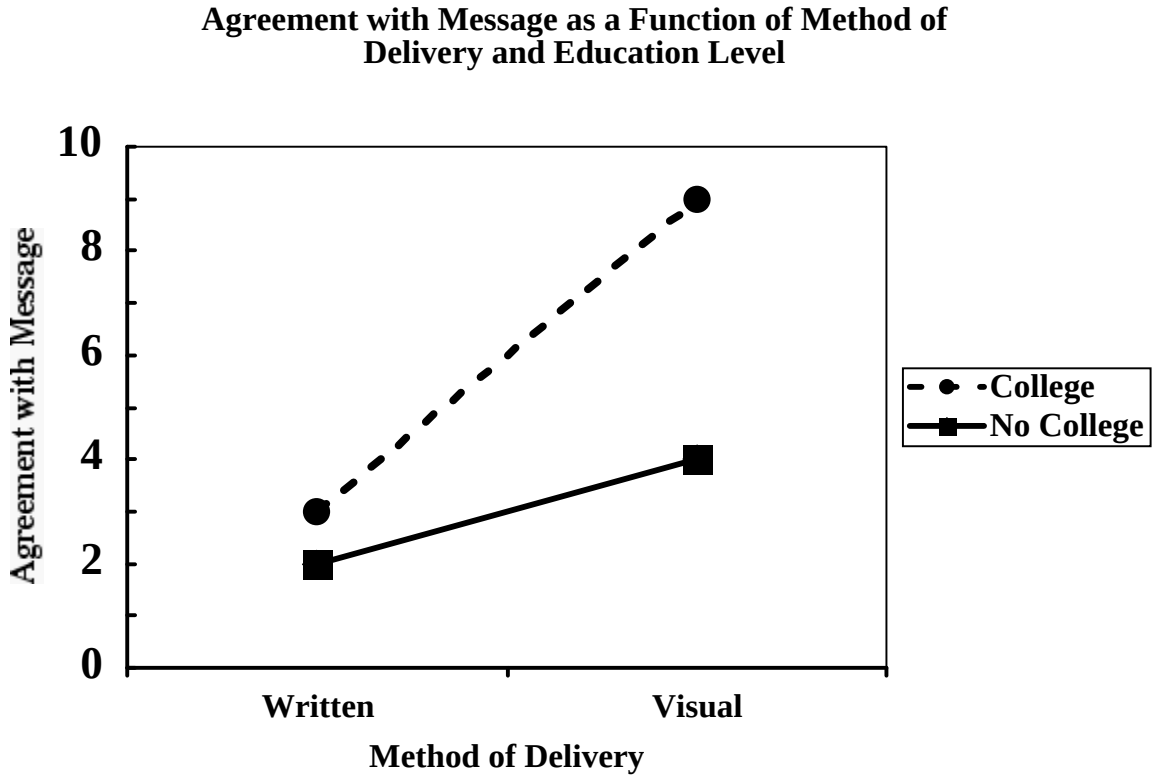


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 7

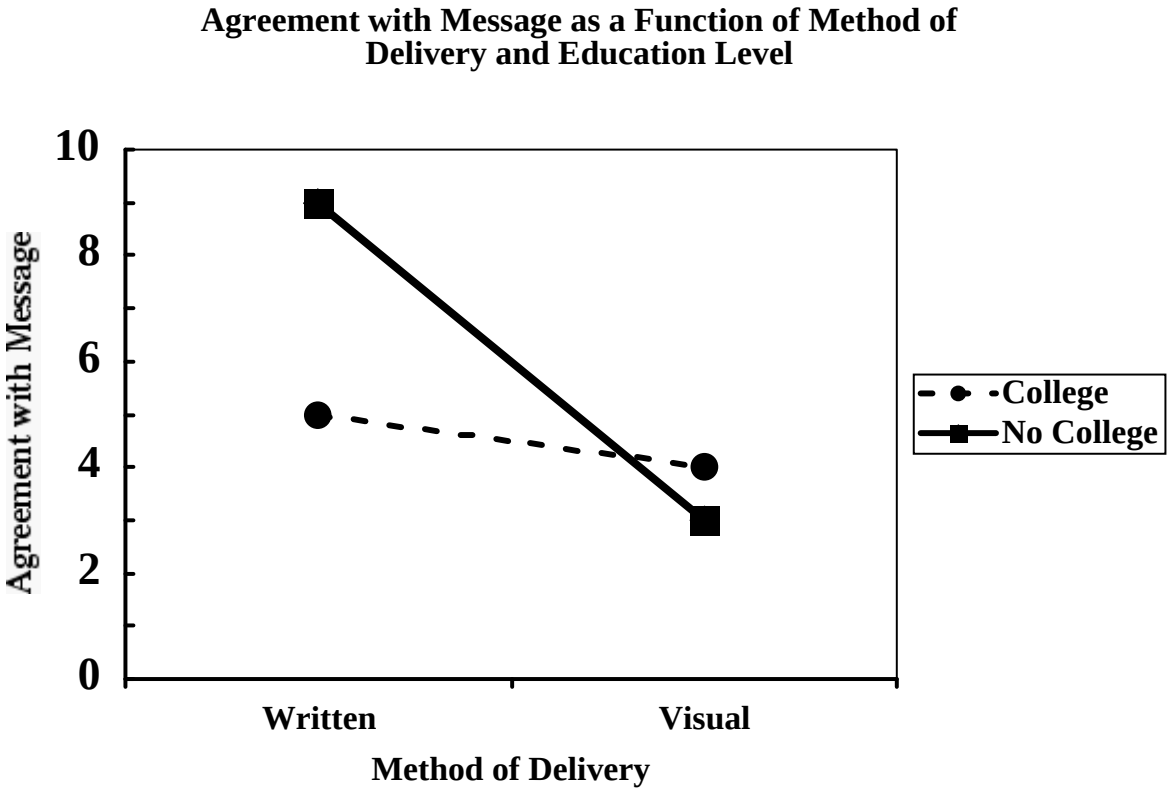


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 8



Main Effect: Method of Delivery?

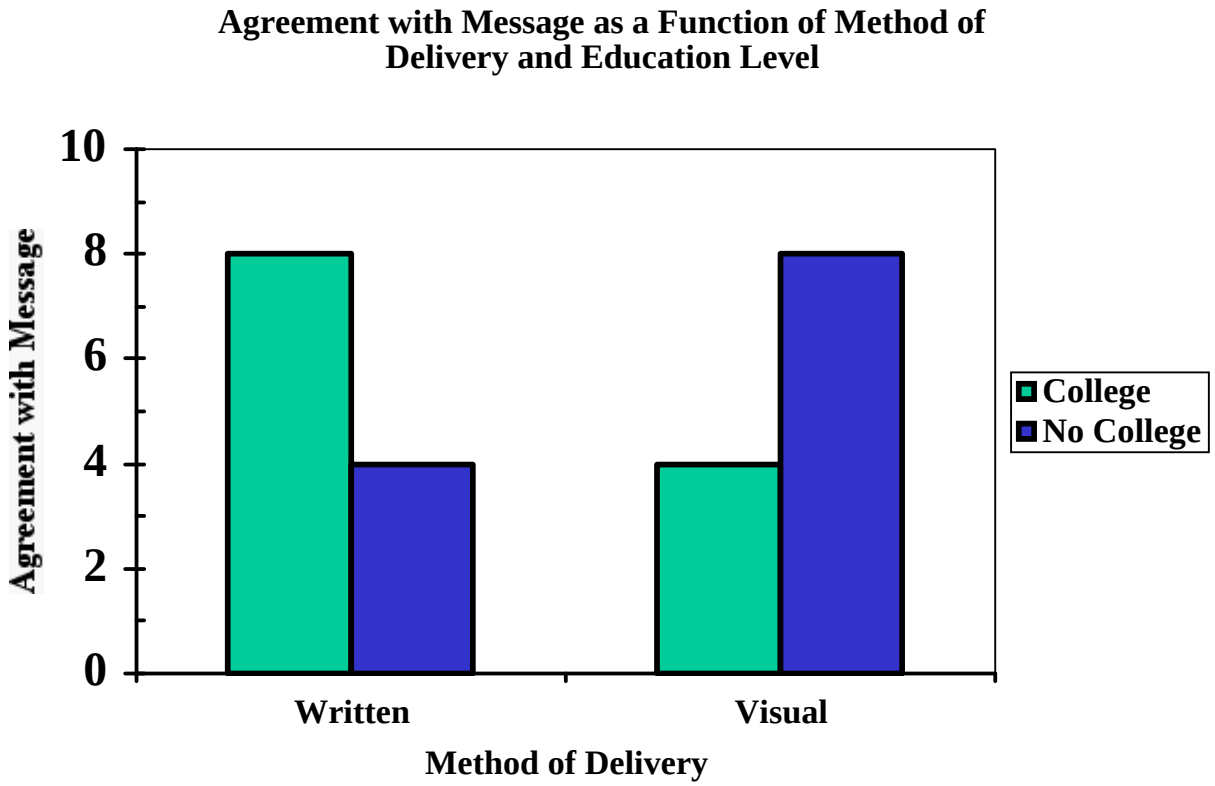
Main Effect: Education Level?

Interaction?

INTERPRETING MAIN EFFECTS AND INTERACTIONS FROM BAR GRAPHS

Scenario: Let's stay with the same scenario and independent variables as we had for figures. Once again, the dependent variable is the participants' rating of how much they agree with the message, using a 10 point scale (1= Totally Disagree; 10 = Totally Agree). **Assume that any difference of 1 full point or more is statistically significant.**

EXAMPLE 1

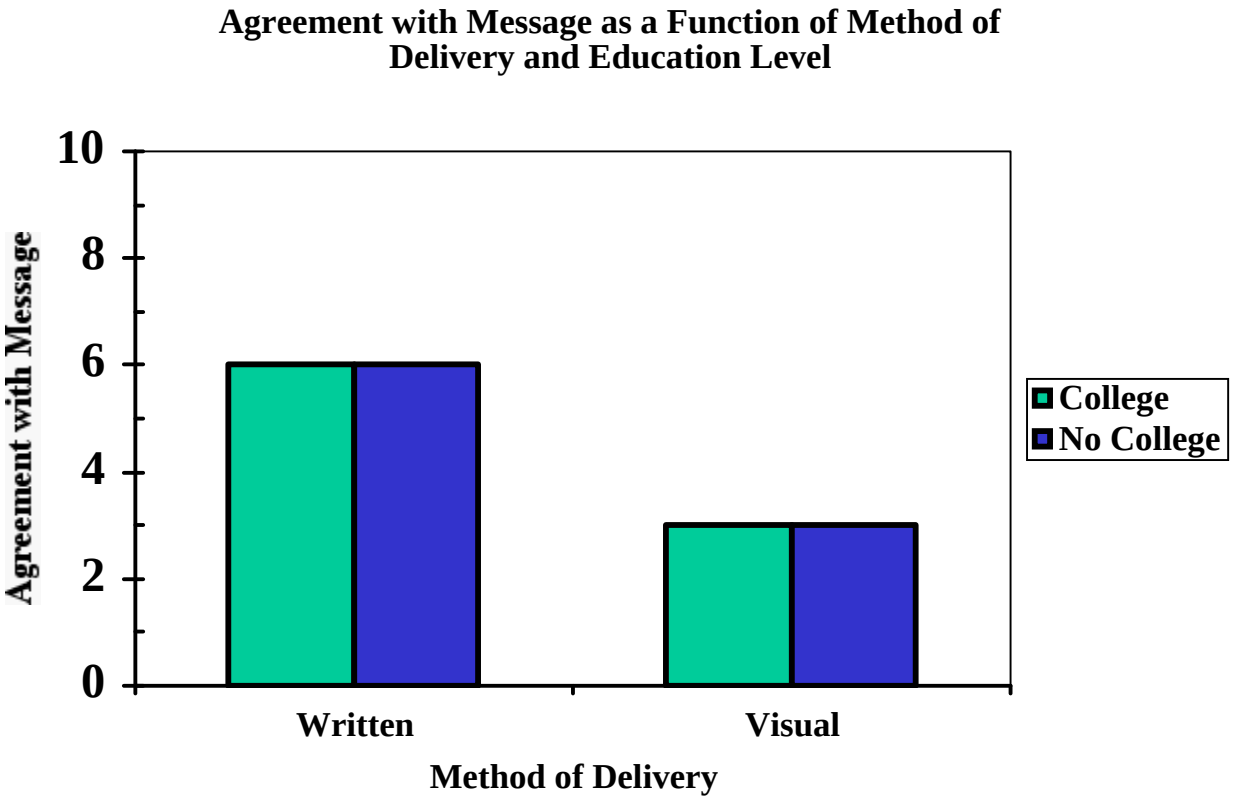


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 2

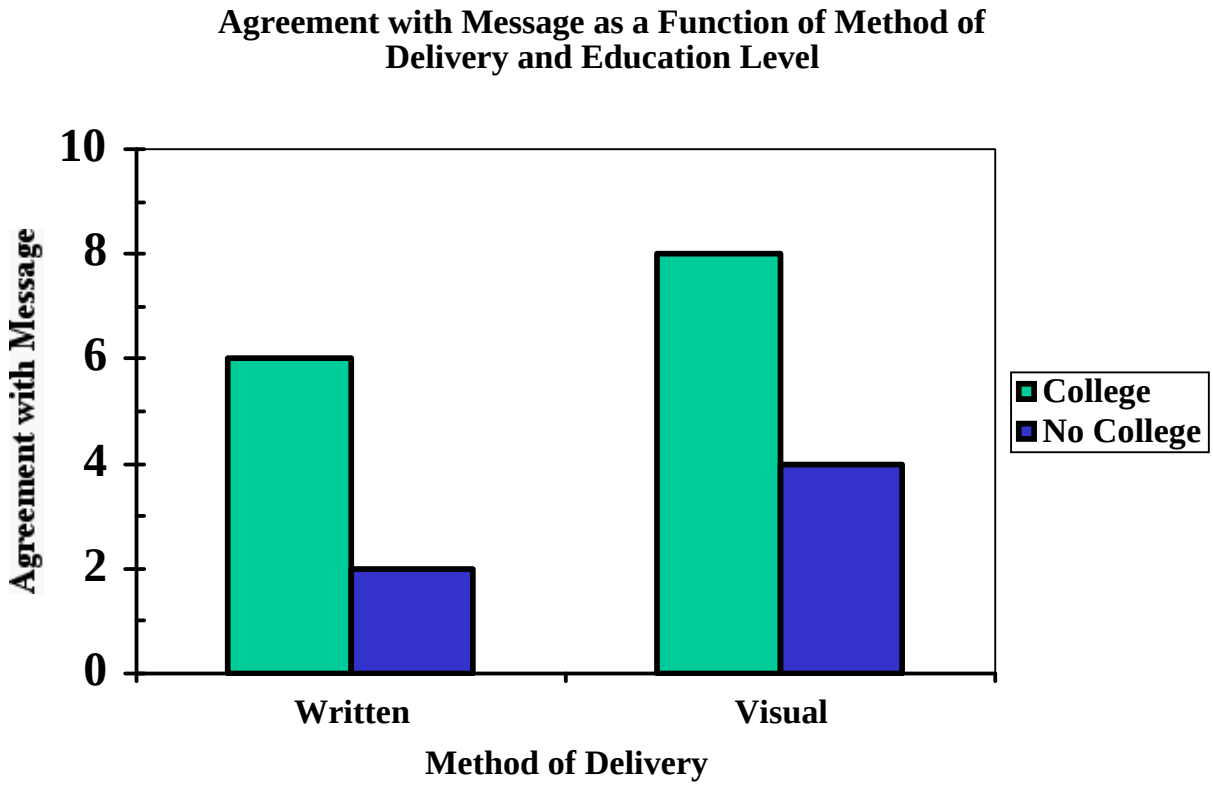


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 3

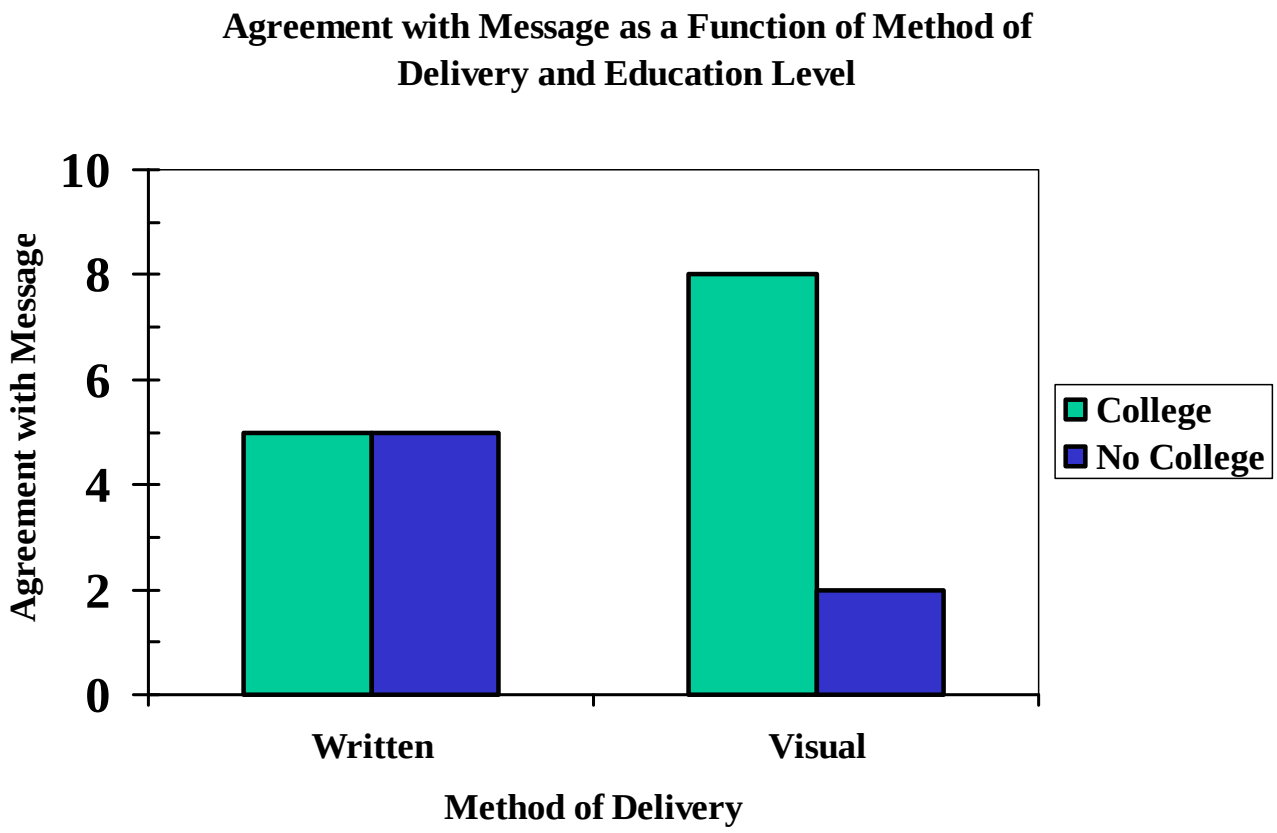


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 4

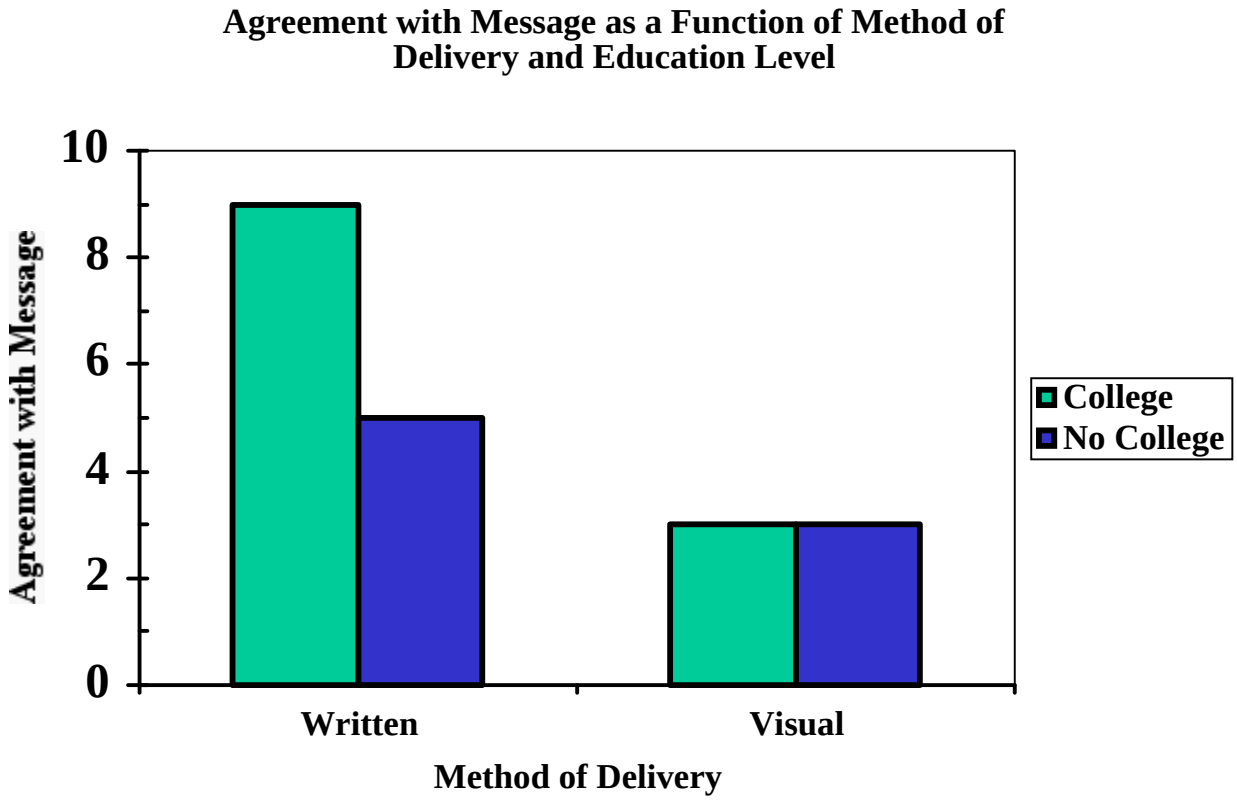


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 5

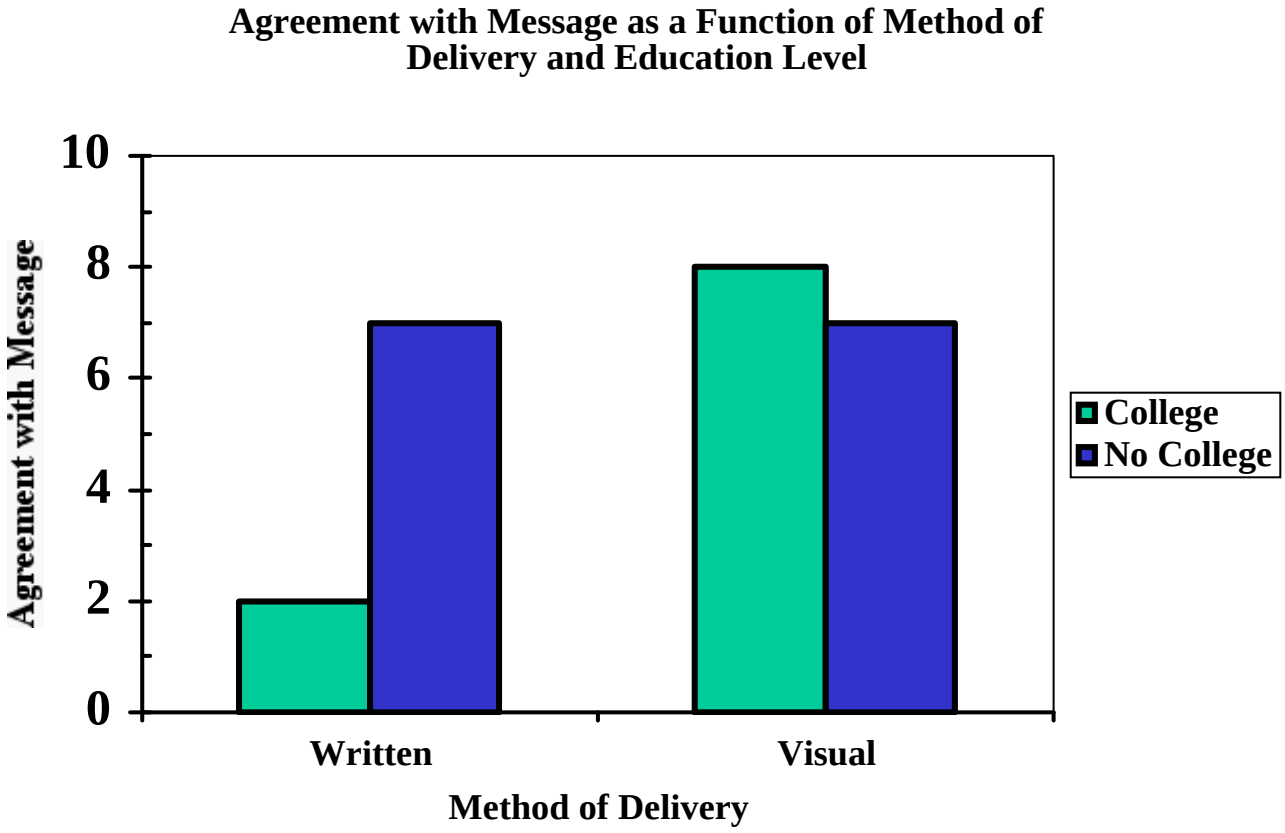


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 6

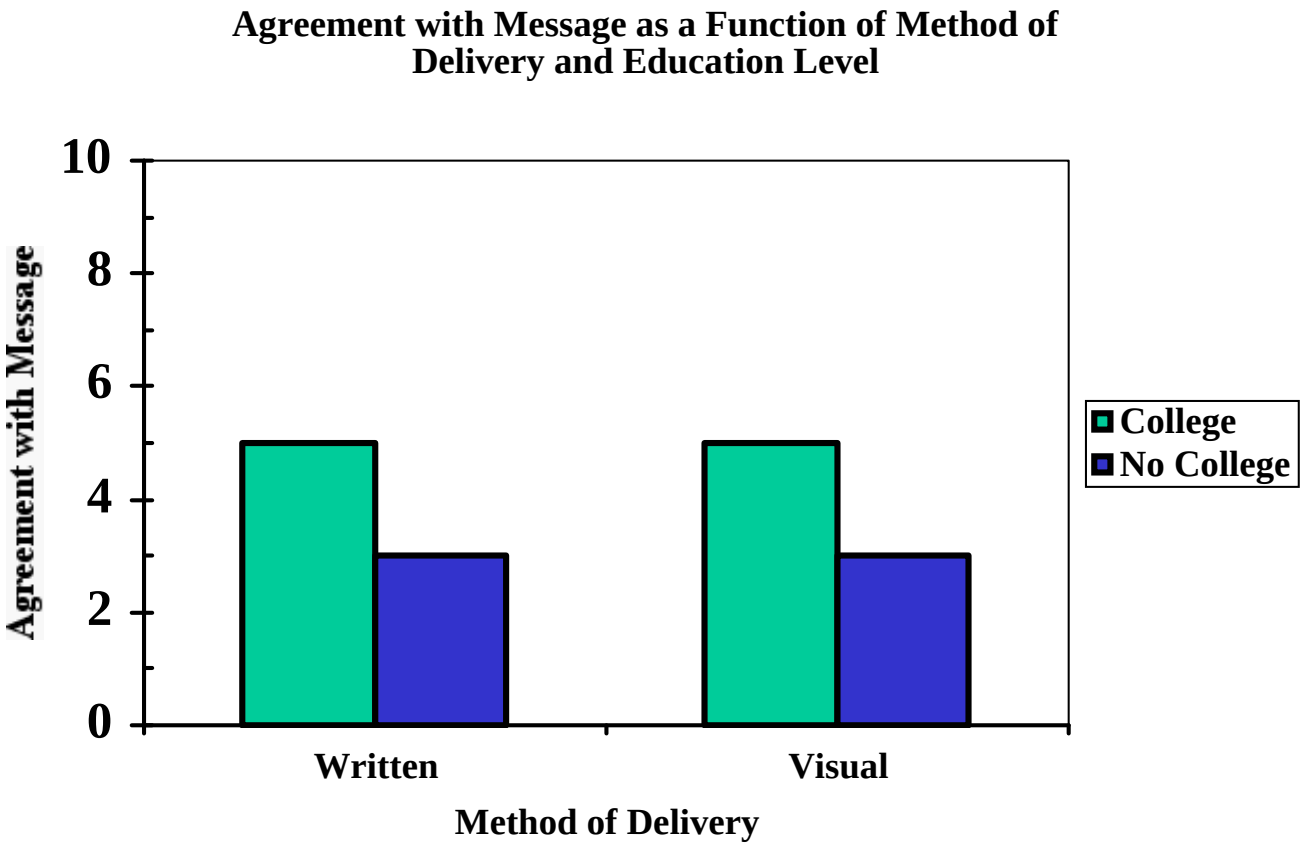


Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

EXAMPLE 7



Main Effect: Method of Delivery?

Main Effect: Education Level?

Interaction?

ANSWERS

Tables

1. "d"
2. "a"
3. "c"
4. "f"
5. "b"
6. "e"
7. "g"

Figures: Line Graphs

1. Main effect Education Level
2. Main effect Method of Delivery
3. Both main effects
4. Main effect Method of Delivery & interaction
5. Main effect Education Level & interaction
6. Interaction
7. Both main effects & interaction (fyi: this is an ordinal interaction)
8. Both main effects & interaction (fyi: this is a disordinal interaction)

Figures: Bar Graphs

1. Interaction
2. Main effect Method of Delivery
3. Both main effects
4. Main effect Education Level & interaction
5. Both main effects and interaction
6. Both main effects and interaction
7. Main effect Education Level