

## **Session 7**

### **Drawing Conclusions and Highlighting Significance of the Research Giving an Academic Presentation (Poster Presentation Skills)**

#### **Learning Outcomes:**

By the end of this session, students should be able to:

- write the Conclusion section with appropriate organizational structure and linguistic resources
- highlight the significance of the research using appropriate expressions and rhetorical strategies
- engage their audience through telling compelling research story, maintaining eye contact, and providing thoughtful responses during poster presentations
- design visually appealing posters that enhance understanding, utilizing principles of layout, color, and typography

#### **Writing the Conclusion section**

The conclusion section of a research paper is a crucial component that ties together the main findings and implications of your work. It serves as the final opportunity to reinforce your research's significance, offering a concise summary of key insights and their relevance to the field. A well-crafted conclusion not only synthesizes the main arguments but also highlights the broader impact of your research, suggesting avenues for future study and inviting further exploration of the topic. Mastering this section enhances the overall coherence of your paper and leaves a lasting impression on your readers.

#### **Warm-up Task**

Find a partner and discuss the following questions.

1. What are the functions of the Conclusion section of a thesis and a journal article?
  
  
  
  
  
  
  
  
  
  
2. What should be avoided in the Conclusion section of a thesis and a journal article?

**Task 1**

Read and comment on the following two examples of the Conclusion section. Are they effective? Why/why not?

The abstracts below give you some ideas about the research.

Example 1:**Abstract**

This article provides an overview of language learning strategies (LLS) for second and foreign language (L2/FL) teachers. To do so it outlines the background of LLS and LLS training, discusses a three step approach teachers may follow in using LLS in their classes, and summarises key reflections and questions for future research on this aspect of L2/FL education.

**Conclusion**

This paper has provided a brief overview of LLS by examining their background and summarising the relevant literature. It has also outlined some ways that LLS training has been used and offered a three step approach for teachers to consider in implementing it within their own L2/FL classes. It has also raised two important issues, posed questions for further LLS research, and noted a number of contacts that readers may use in networking on LLS in L2/FL education. In my experience, using LLS and LLS training in the L2/FL class not only encourages learners in their language learning but also helps teachers reflect on and improve their teaching. Many readers also find this to be the case.

Source: Lessard-Clouston, M. (1997). Language learning strategies: An overview for L2 teachers. *The Internet TESL Journal*, 3, 1-16.

Example 2:**Abstract**

International management studies have been based primarily on the comparison of managerial behavior in countries around the world. Often, these studies have implied that business people behave similarly with their domestic colleagues as with their foreign counterparts. In questioning that assumption, this study tests whether intra-cultural behavior accurately predicts cross-cultural behavior. Using a negotiation simulation and a sample of 462 Japanese, American and Canadian businesspeople, behaviors in cross-cultural negotiations were found to differ in some important ways from those in intra-cultural negotiations.

**Conclusion**

[Para.1] Concisely stated, the central question of the study has been: Are negotiation processes and outcomes the same in cross-cultural interactions as in intra-cultural interactions? The study has considered six important negotiation constructs and tested for variation using four distinct cultural

groups. Changes in behavior and outcomes have been observed in seven out of the twenty-four possible instances. The overall conclusion of the study therefore must be that negotiations do indeed adapt their behavior in cross-cultural interactions.

[Para. 2] The literature in cross-cultural communication indicates that cross-cultural negotiations will be more difficult than intra-cultural negotiations. Furthermore, research on reciprocity and interactional synchrony suggests that negotiators will imitate or reflect one another's behaviors and thereby adapt to differing cultural situations. In two cases, such views are supported. There is only one finding that cannot be explained by established theory and that is why the Japanese negotiators were more attracted to Americans than they were to their fellow Japanese. It is conceivable that the phenomena appear to be more complex than our simple approach warrants.

[Para. 3] It is important to be aware of the limitations and shortcomings of the research design. Perhaps the most important consideration is the validity of the principal outcome measure, individual profits. Any laboratory experiment is open to criticism and this research is no exception. Additionally, much of the evidence supplied for accepting or rejecting hypotheses derives from participants' self-reports and judgments, which in turn depend on memory and impressions. Future studies should include improvements in both these areas. The help of foreign researchers and the use of more inductive methods in foreign cultures will be needed to mitigate such limitations.

Source: Adler, N., & Graham, J.L. (1989). Cross-cultural interaction: The international comparison fallacy? *Journal of International Business Studies*, 20(3), 515-537.

## Task 2

### Rhetorical Moves in the Conclusion Section

The Discussion/Conclusion sections model proposed by Hopkins and Dudley-Evans (1988)<sup>1</sup>, Kanoksilapatham (2015)<sup>2</sup> and Swales and Feak (1994)<sup>3</sup> consists of seven moves:

|               |   |
|---------------|---|
| <b>Move 1</b> | Re-stating the focus of the study (purposes, research questions and hypotheses restated) (Obligatory) |
| <b>Move 2</b> | Stating selected findings (Obligatory)  |
| <b>Move 3</b> | Making claims or generalizations (Conventional)   |
| <b>Move 4</b> | Recommendation for practical application (Optional)   |
| <b>Move 5</b> | Exemplifying (Optional)   |
| <b>Move 6</b> | Limitations of the study (Conventional)   |
| <b>Move 7</b> | Further research suggested (Conventional)   |

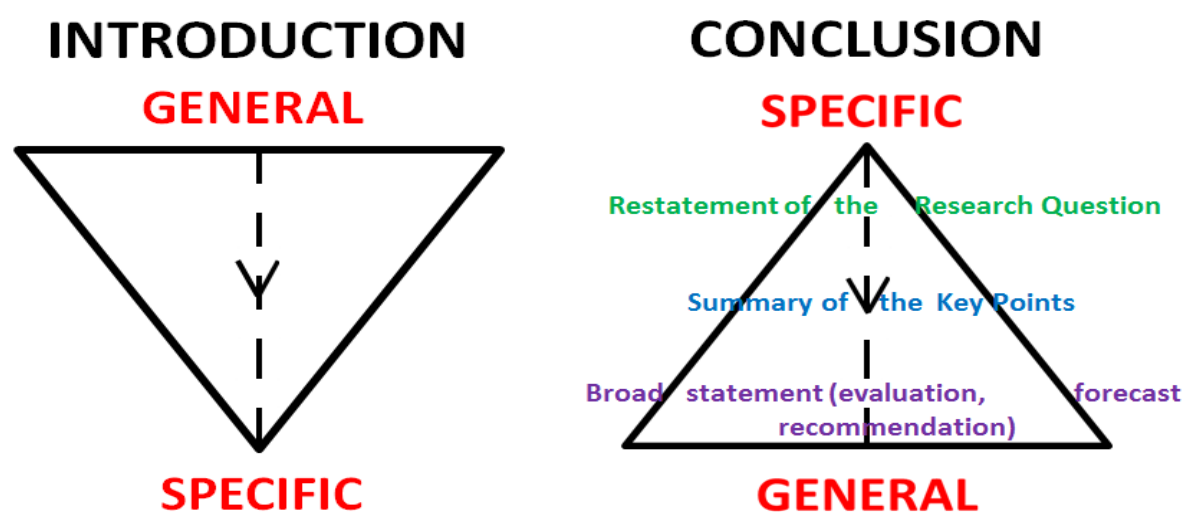
\* Note that not all the seven moves are obligatory.

<sup>1</sup> Dudley-Evans, T. (1994). Genre analysis; an approach to text analysis for ESP. In M. Coulthard (Ed.). *Advances in written text analysis* (pp.220-228). London: Routledge.

<sup>2</sup> Kanoksilapatham, B. (2015). Distinguishing textual features characterising structural variation in research articles across three engineering sub-discipline corpora. *English for Specific Purposes*, 37, 74-86.

<sup>3</sup> Swales, J., & Feak, C. (1994). *Academic writing for graduate students. A course for non-native speakers of English*. Ann Arbor: University of Michigan Press.

The introduction to a thesis or a journal article places the research questions in context by moving from a wide to a specific focus. This specificity is retained throughout the paper until the conclusion. It is at this point that the content moves to a broader context again. See the diagram below:



Read the Conclusion section of 2-3 journal articles of your field. Can you identify the moves stated in Task 2? Write down the moves in the table below. Compare i). the number and ii). the sequence of moves in the Conclusion section of the journal articles. Are they similar or different?

Share your findings with a partner.

|        | Journal Article 1 | Journal Article 2 | Journal Article 3 |
|--------|-------------------|-------------------|-------------------|
| Move 1 |                   |                   |                   |
| Move 2 |                   |                   |                   |
| Move 3 |                   |                   |                   |
| Move 4 |                   |                   |                   |
| Move 5 |                   |                   |                   |
| Move 6 |                   |                   |                   |
| Move 7 |                   |                   |                   |

### Task 3

#### Language Features of the Conclusion Section

Read the following example of the Conclusion section taken from a journal article in the field of Clinical Psychology. The abstract gives you some ideas about the research. Analyze the language features (e.g. tense, sentence structure, voice, and hedging language) of the Conclusion Section. Report your findings to a partner.

##### Abstract

Parkinson's disease (PD) is often associated with depression and anxiety. The availability of evidence-based psychological interventions is low. This pilot study investigates the feasibility and preliminary effect of internet-based cognitive behavioral therapy (ICBT) for depression and anxiety in PD. Nine patients with PD with comorbid symptoms on the relevant subscale of Hospital Anxiety and Depression Scale (HADS), of either depression (HADS-D > 7) or anxiety (HADS-A > 7) received 12 weeks of ICBT, specially adapted for depression and anxiety in PD. Primary outcome was change in depression and anxiety symptoms, measured with HADS total score. Effects on non-motor symptoms, PD specific health and quality of life and insomnia were explored, plus the participant's involvement, satisfaction, and subjective evaluation of the treatment. Participants reported lower symptoms on HADS after ICBT (Cohen's  $d = 0.79$ ,  $p < 0.05$ ). However, levels of inactivity were rather high and questionnaires and comments from participants suggested that the treatment can be improved, for example by adding more therapist support. The results suggest that ICBT could be a feasible way to alleviate depression and anxiety in PD. However, a somewhat simplified treatment and different ways to provide support to enhance adherence and outcome are warranted.

##### Conclusion

This study investigated the feasibility and effect of ICBT for depression and anxiety in PD. The ICBT tested in the study was based on behavioral activation for depression and optional symptom specific modules were matched to each participant's needs. The results suggest that this form of ICBT can be effective in the treatment of depressive symptoms in PD. ICBT was associated with a significant drop in HADS with a medium to large within group effect, especially in the depressive symptoms sub-scale HADS-D. No significant effects were seen on anxiety symptoms measured with the sub-scale HADS-A, or the secondary outcomes of insomnia, PD related health and quality of life, depressive symptoms measured with MADRS-S, or non-motor symptoms. The treatment might be a cost effective treatment alternative since the therapist spent less than 15 min per participant and week, which is less than seen in previous face-to-face or telephone-CBT (Dobkin et al., 2011a and Dobkin et al., 2011b).

Strengths of this study include the novelty of using an internet based treatment on PD patients which is an often neglected group when it comes to psychological treatments, the large number of questionnaire and interview data measuring the participant's interaction and satisfaction with treatment, and the significant effect on the main outcome. Internet based treatments have earlier rarely been used with patient groups with a high degree of functional impairment. The preliminary results indicating comparably low degrees of participant satisfaction and involvement could be

used as a warning not to assume that the adaptations made in this treatment program were sufficient.

This study also displays limitations. First, since this was a pilot study without a control condition, any detected effect could be caused by non-specific treatment factors such as time and the attention of a therapist. Thus, the findings in this feasibility study need to be replicated in a randomized controlled trial. Second, the small sample size makes the study underpowered, leading to difficulty detecting treatment effects. Third, there was no significant drop in depressive symptoms measured with MADRS-S similar to the drop in HADS-D. Fourth, only one psychologist (MK) treated the participants leading to difficulties generalizing the results to other therapists. Fifth, the participants were recruited by a single neurologist (PS) and may not be generalizable to the whole population of people with depression and anxiety in PD. The high degree of non-motor symptoms may for example be an indication that the participants were unusually symptomatic in this sample. Finally, since assessors were not blinded to time point, there could be a bias towards describing improvements in the participants.

Implications for future studies of internet-based treatment for depression and anxiety in PD include the need to adapt the treatment protocol to the patient group even further. The qualitative evaluation regarding adherence and drop out implies that the technological aspects of treatment easily can become a hurdle for this patient group. The internet platform needs to be simple enough for the participants to use, and the interaction between participants and therapist needs to be active to ensure participant involvement in treatment. Additionally, the engagement of a caregiver could motivate the participant to work with the treatment assignments.

ICBT for depression and anxiety in PD could be a time saving and accessible alternative. The results are encouraging in that ICBT had effect on depressive symptoms; however, further adaptations of the ICBT program, the type of therapeutic support, and technical platform could probably improve the participants' involvement in treatment and satisfaction. More feasibility trials of ICBT in different forms, as well as larger randomized-controlled trials, with long term follow-up data, are warranted to evaluate the short- and long-term efficacy of ICBT for this group of patients.

Source: Kraepeliena, M., Svenningsson, P., Lindefors, N., & Kaldor, V. (2015). Internet-based cognitive behavioural therapy for depression and anxiety in Parkinson's disease – A pilot study. *Internet Interventions*, 2(1), 1-6.

## Task 4

### Highlighting the Significance of the Research

One of the important moves in the Conclusion section is to highlight the significance of the research. There are a number of ways to do this:

1. You can highlight the contributions of your research (new knowledge discovered) which may be *methodological, theoretical, empirical, pedagogical contributions or potential applications of the new findings*.

2. If your research is pioneering in the field, you should emphasize the novelty in the conclusion and suggest how future research can build upon the findings of your study.
3. If your research builds on the findings of the previous studies, you can highlight how your research findings are similar or different from the previous research (e.g. whether your research findings confirm/support or refute the findings of the previous studies; what additional evidence is provided?)

Read the following excerpts taken from the Conclusion sections of three different research articles in the fields of Chemistry, Visual Arts and Computer Science. How did the author(s) highlight the significance of their research? Underline the expressions that were used to emphasize the significance of the research.

#### Excerpt 1 (Chemistry)

The proposed CMCPs electrodes based on the single ion-exchanger (ATS-DAUH) and ion-exchanger (ATS-PC) as the electroactive materials might be useful detectors and interesting alternative methods for the determination of [ATS] in different real samples. The present electrodes show high sensitivity, reasonable selectivity, fast static response, long-term stability and applicability over a wide pH range with minimal sample pretreatment. The presented methods for the determination of atorvastatin calcium with the prescribed electrodes are simple, sensitive, highly specific and advantageous over the previously described procedures for ATS determinations.

Source: Rassi, S.F. (2017). Chemically modified carbon paste ion-selective electrodes for determination of atorvastatin calcium in pharmaceutical preparations. *Analytical Chemistry Research*, 12, 65-73.

#### Excerpt 2 (Visual Arts)

Rather than understanding VR's capacity to shape emotion as limited to what goes on inside the device itself, I have argued here for a broader understanding of the VR empathy machine, including VR fictions, journalism, and other conduits for the heightened feelings surrounding the technology. This broader perspective reveals how the VR industry's most sustained empathetic investments (the strongest concerns for someone else's well-being, positive or negative) are aimed not at those serving as the subject of any particular VR experience, but rather at the game-master figures who serve as symbolic targets for popular emotions surrounding the technology...

Rather than seek to build a wider range of 'empathy simulators' (to go back to Yang's term, 2017), the reworked understanding of the VR empathy machine presented here suggests the most powerful nodes for shaping VR empathy are VR developers themselves and the stories popularly told about them. Whoever controls the narrative not just in VR but *about* VR will have the capacity to channel emotions surrounding the technology. Much can be gained from a clearer understanding of the mechanisms by which some are centered and some are marginalized by the current emotional pathways of the VR empathy machine, including negative empathy, and I have sought to contribute to that mapping here.

Source: Roquet, P. (2020). Empathy for the game master: how virtual reality creates empathy for those seen to be creating VR. *Journal of Visual Culture*, 19(1), 65-80.

**Excerpt 3 (Computer Science)**

We have presented new methods based on EVM to compute length measurements, sphericity and roundness of 3D objects represented as binary volume datasets...

We have proposed a new EVM-based roundness index. The method to compute it is based on the ray-tracing paradigm and uses the vertices of the EVM representation. Besides, the time to compute the proposed index is also more than an order of magnitude faster compared with previous VXM-based methods, which depend on the surface area computation...

Source: Cruz-Matías, I., Ayala, D., Hiller, D., Gutsch, S., Zacharias, M., Estradé, S., & Peiró, F. (2019). Sphericity and roundness computation for particles using the extreme vertices model. *Journal of Computational Science*, 30, 28-40.

Visit the Academic Phrasebank to check for more expressions for highlighting the significance of the research: <http://www.phrasebank.manchester.ac.uk/writing-conclusions/>



Tell ChatGPT briefly what your research is about. Then, ask for suggestions regarding how to highlight the significance of your research in the Conclusion section. Share your ideas with the class.

**Task 5**

Use the expressions from the Academic Phrasebank (see below) and write 2-3 sentences to highlight the significance of your study.

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• <i>The findings will be of interest to ...</i></li> <li>• <i>This study has provided a deeper insight into ...</i></li> <li>• <i>The findings reported here shed new light on ...</i></li> <li>• <i>These results add to the rapidly expanding field of ...</i></li> <li>• <i>The contribution of this study has been to confirm ...</i></li> <li>• <i>This project is the first comprehensive investigation of ...</i></li> <li>• <i>The insights gained from this study may be of assistance to ...</i></li> <li>• <i>The analysis of X undertaken here, has extended our knowledge of ...</i></li> <li>• <i>The empirical findings in this study provide a new understanding of ...</i></li> <li>• <i>This approach will prove useful in expanding our understanding of how ...</i></li> </ul> | <ul style="list-style-type: none"> <li>• <i>This new understanding should help to improve predictions of the impact of ...</i></li> <li>• <i>The methods used for this X may be applied to other Xs elsewhere in the world.</i></li> <li>• <i>The X that we have identified therefore assists in our understanding of the role of ...</i></li> <li>• <i>This is the first study of substantial duration which examines associations between ...</i></li> <li>• <i>The findings from this study make several contributions to the current literature. First,...</i></li> <li>• <i>These findings contribute in several ways to our understanding of X and provide a basis for ...</i></li> <li>• <i>This study has been one of the first attempts to thoroughly examine ...</i></li> <li>• <i>This study has confirmed the findings of XXX which found that...</i></li> </ul> |
|--|--|

Write 2-3 sentences which highlight the significance of your research:



## Poster Presentations

Poster presentations are an integral part of academic communication, allowing researchers **to visually convey their work in a concise and engaging manner**. This format combines **elements of graphic design and verbal presentation**, enabling you to showcase your research findings to **a diverse audience**. A well-designed poster captures attention and facilitates discussion, making it an effective tool for networking and receiving feedback. In the following tasks, you will learn how to create compelling posters that not only highlight your research but also **engage viewers** and **foster meaningful interactions**.

### Task 6

Read the following examples of posters. Discuss in small groups.

1. What information is typically included in a poster for presentation at international conferences?
2. Which poster do you think presents the key research information most effectively? Why?
3. What are some design principles that should be taken into considerations when preparing a poster for presentation at international conferences?

## Example 1:

## NeurIPS Poster Counterfactual Fairness with Partially Known Causal Graph

**Counterfactual Fairness with Partially Known Causal Graph**

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**Introduction**

Fair machine learning aims to avoid treating individuals or sub-populations unfairly based on sensitive attributes, such as gender and race. Those methods in fair machine learning that are built on causal inference ascertain discrimination and bias through causal effects. Though causality-based fair learning is attracting increasing attention, current methods assume the true causal graph is fully known.

o This paper proposes a general method to achieve the notion of counterfactual fairness when the true causal graph is unknown.

o Interestingly, we find that counterfactual fairness can be achieved as if the true causal graph were fully known when specific background knowledge is provided: the sensitive attributes do not have ancestors in the causal graph.

**Background**

**Structural Causal Model and Causal Graph**

o Structural causal model (SCM) is a framework to model causal relations between variables, which induces a causal DAG over the variables. The parent set of a node in the causal graph represents its direct causes.

o A CPDAG  $\mathcal{G}^*$  represents a Markov equivalence class of a DAG, which encodes the same set of conditional independencies. An MPDAG  $\mathcal{G}^*$  can be seen as the CPDAG with background knowledge constraints.

o Example. (a) is a DAG  $\mathcal{G}$ , (b) is the corresponding CPDAG  $\mathcal{G}^*$ , (c) is the corresponding MPDAG  $\mathcal{G}^*$  following Meek's rules (Christopher Meek, 1995), with the background knowledge that  $E$  is a direct cause of  $K$ .

**Counterfactual Fairness (Matt J. Kusner et al., 2017)**

Counterfactual fairness defines that a fair classifier should give the same prediction had the person had a different protected attribute, which immediately suggests the following approach in Lemma 2.2 to design a counterfactually fair model.

**Lemma 2.2.** The prediction  $\hat{Y}$  will be counterfactually fair if it is a function of the non-descendants of the sensitive attribute  $A$ .

**Problem Formulation**

Our task is to achieve counterfactual fairness given MPDAGs that can be learned from observational data using causal discovery algorithms. Lemma 2.2 implies learning a counterfactually fair prediction can be framed as selecting the non-descendants of  $A$  to predict  $Y$ . If a causal DAG is used to encode the causal relations of all attributes, finding all non-descendants of  $A$  is straightforward. However, given observational data and optional background knowledge about direct causal information, we can only learn a CPDAG or an MPDAG  $\mathcal{G}^*$  instead of the true DAG  $\mathcal{G}$ . Unfortunately, not all ancestral relations between  $A$  and any attributes are identifiable in a CPDAG or MPDAG.

Therefore, to achieve counterfactually fair prediction, we have two problems to solve:

o Identify the type of ancestral relations of any other attributes with  $A$  in  $\mathcal{G}^*$ .

o Build a counterfactually fair model based on the identified ancestral relations.

**Counterfactual Fairness in MPDAGs**

**Identifiability of Ancestral Relations in MPDAGs**

**Theorem 4.5.** Let  $S$  and  $T$  be two distinct vertices in an MPDAG  $\mathcal{G}^*$ , and  $C$  be the critical set of  $S$  with respect to  $T$  in  $\mathcal{G}^*$ . Then  $T$  is a definite descendant of  $S$  if and only if either  $S$  has a definite arrow into  $C$ , that is  $C \setminus \text{Pa}(S, \mathcal{G}^*) \neq \emptyset$ , or  $S$  does not have a definite arrow into  $C$  but  $C$  is non-empty and induces an incomplete subgraph of  $\mathcal{G}^*$ .

**Illustrative example.** Consider the MPDAG  $\mathcal{G}^*$  on the right and the node  $A$ . We show the ancestral relations between  $A$  and any other nodes. By Theorem 4.5, the nodes  $B, C, D, E$  and  $H$  are possible descendants of  $A$ , node  $F$  is a definite descendant of  $A$ .

**Constructing a Counterfactual Fair Classifier in MPDAGs**

We propose two methods:

o **FairRelax:** making predictions using all definite non-descendants and possible descendants of the sensitive attribute in an MPDAG.

o **Fair:** making predictions using all definite non-descendants of the sensitive attribute in an MPDAG.

**Assumption 5.1.** The sensitive attribute can only be a root node in an MPDAG.

**Proposition 5.2.** In an MPDAG  $\mathcal{G}^*$  with sensitive attribute  $A$ , if Assumption 5.1 holds, then any other attribute is either a definite descendant or a definite non-descendant of  $A$ .

From Proposition 5.2, it is very interesting to see that fitting a model with the definite non-descendants of  $A$  in  $\mathcal{G}^*$  is the same thing as fitting a model with the non-descendants of  $A$  in the true DAG  $\mathcal{G}$ . Thus, counterfactual fairness can be achieved as if the true causal DAG is fully known.

**Experimental Results**

**Synthetic Data**

Average unfairness and RMSE for synthetic datasets on held-out test set. For each graph setting, the unfairness gets decreasing from left to right, while RMSE has the opposite trend.

**Real Data (The UCI Student Performance Data Set)**

Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 1. (a) Average unfairness for each causal graph setting. (b) Average RMSE for each causal graph setting.

Figure 2. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 3. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 4. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 5. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

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Figure 75. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 76. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 77. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 78. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 79. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 80. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 81. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 82. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 83. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 84. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 85. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 86. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 87. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 88. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 89. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 90. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 91. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 92. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 93. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 94. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 95. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 96. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 97. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 98. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 99. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

Figure 100. (a) Average RMSE unfairness for the Student dataset on held-out test sets.

## Example 2:

## "What Do We Think About Birth Order?" by Jessica Garcia

**DOMINICAN UNIVERSITY OF CALIFORNIA**

# What Do We Think About Birth Order?

Jessica A. Garcia  
Dominican University of California

**Background**

Birth order research and its effects on personality:  
• Psychological perspective - Alfred Adler believed it is the role the child adapts from its interaction with others and the environment that creates its unique set of personality traits (Eckstein et al., 2010)

• Evolutionary adaption - Frank Sulloway theorized a child develops certain characteristics in their fight for survival of parental investment (Eckstein, 2000)  
• Both have found conflicting evidence to support their work

Current research:  
• Questions if our expectations and predisposed judgements of a child can influence our interactions so much that it can impact children's personality development.

• Are personality differences among birth order due to children behaving in a way that is a result of society and people's perceptions of what is expected of each child?

**Methods**

**Participants:**  
N = 50, 64% women, ages ranged from 18 to 62

Undergraduate students from Dominican University of California were recruited from via personal contact by the researcher and subjects studied at non-Dominican locations

Only children are not included in this sample as only children and first-borns are thought to display similar qualities (Eckstein, 2010)

• Data collected from an only child have been combined with participants who selected themselves to be the oldest

**Procedure:**  
Participants completed an online survey consisting of demographic questions and two different personality measures; shortened versions of the Big 5 personality scale:

**Measures:**  
The Mini-IPIP survey - Participants filled out this survey first as it was used to gather data on their self-reported personality traits. Once complete, were then asked to identify their birth order

The TIPI survey - Participants concluded the survey portion by taking the TIPI as it was used to evaluate their perception as to which traits they believe are to be expected of a child in regard to their assigned birth order.

**Hypotheses**

**Hypothesis #1** - There is a positive relationship between people's perception of birth order traits and self-reported personality

**Hypothesis #2** - People will perceive the oldest sibling to be the most conscientious and open/intellectual than the middle and youngest sibling

**Hypothesis #3** - The middle sibling will be perceived to be the most agreeable than the oldest and youngest sibling

**Hypothesis #4** - The youngest sibling will be perceived to be the most extraverted and neurotic than the oldest and middle sibling

**Results**

**Hypothesis #1** - Used 5 different Pearson R correlations, one for each trait, and found results that support there is a positive correlation between participant's self-reported personality traits and perceived birth order traits (see Figure 1 box highlights). However, the study found no correlation for the trait Agreeableness.

**Hypothesis #2** - A one-way MANOVA was used to compare the oldest sibling to the middle and youngest on the dependent variables of Conscientiousness and Intellect.

• No significant differences were found for Conscientiousness ( $F(2) = .476, p > .05$ ) or Intellect ( $F(2) = .175, p > .05$ )

**Figure 1**

|                                 | Perceived Extraversion | Perceived Agreeableness | Perceived Conscientiousness | Perceived Emotional Stability | Perceived Openness |
|---------------------------------|------------------------|-------------------------|-----------------------------|-------------------------------|--------------------|
| Self-reported Extraversion      | .684***                | -.079                   | -.087                       | .365**                        | 0.076              |
| Self-reported Agreeableness     | 0.114                  | .120                    | 0.246                       | .303*                         | 0.008              |
| Self-reported Conscientiousness | 0.144                  | 0.261                   | .635***                     | 0.215                         | 0.128              |
| Self-reported Neuroticism       | -0.184                 | -.327*                  | 0.007                       | -.550**                       | 0.019              |
| Self-reported Intellect         | 0.129                  | -0.168                  | -0.024                      | 0.206                         | .499***            |

Note.  $p < .05$  \*;  $p < .01$  \*\*;  $p < .000$  \*\*\*

**Figure 2 - Perceived Traits for Birth Order**

Legend: Only/Oldest (blue), Middle (purple), Youngest (green)

**Results**

**Hypothesis #3** - A one-way ANOVA was used comparing the middle sibling to the oldest and youngest on the dependent variable of Agreeableness.

• No significant differences were found ( $F(2) = .942, p > .05$ )

**Hypothesis #4** - A one-way MANOVA was used to compare the youngest sibling to the oldest and middle on the dependent variables of Extraversion and Neuroticism.

• No significant differences were found for Extraversion ( $F(2) = .385, p > .05$ ) or Neuroticism ( $F(2) = .213, p > .05$ )

**Discussion**

**Findings**

This study discovered that participants generalize the personality traits that they report of themselves onto a person who has the same birth order as them (see Figure 1) We did not find a relationship for Agreeableness between participant's self-reported personality traits and perception of people of their birth order. Future research is needed to expand upon this.

For Hypothesis #2,3,4 we see no differences in how the participants perceive people of different birth orders to be across the personality traits (see Figure 2). The researcher suggests that the participants are not getting their information on personality traits and birth order from cultural norms or research literature.

The hypotheses were inaccurate descriptors of birth order traits and do not provide further support to past research whose findings conclude which personality traits are associated with birth order.

**Future Directions**

Need for future research to further study Adler's psychological perspective to increase our understanding of whether or not personality development is influenced by people's perceptions of birth order traits. Research should consider whether or not birth order has any effect on personality at all.

Future research should work towards identifying which personality traits accurately represent what is expected from people in different birth orders.

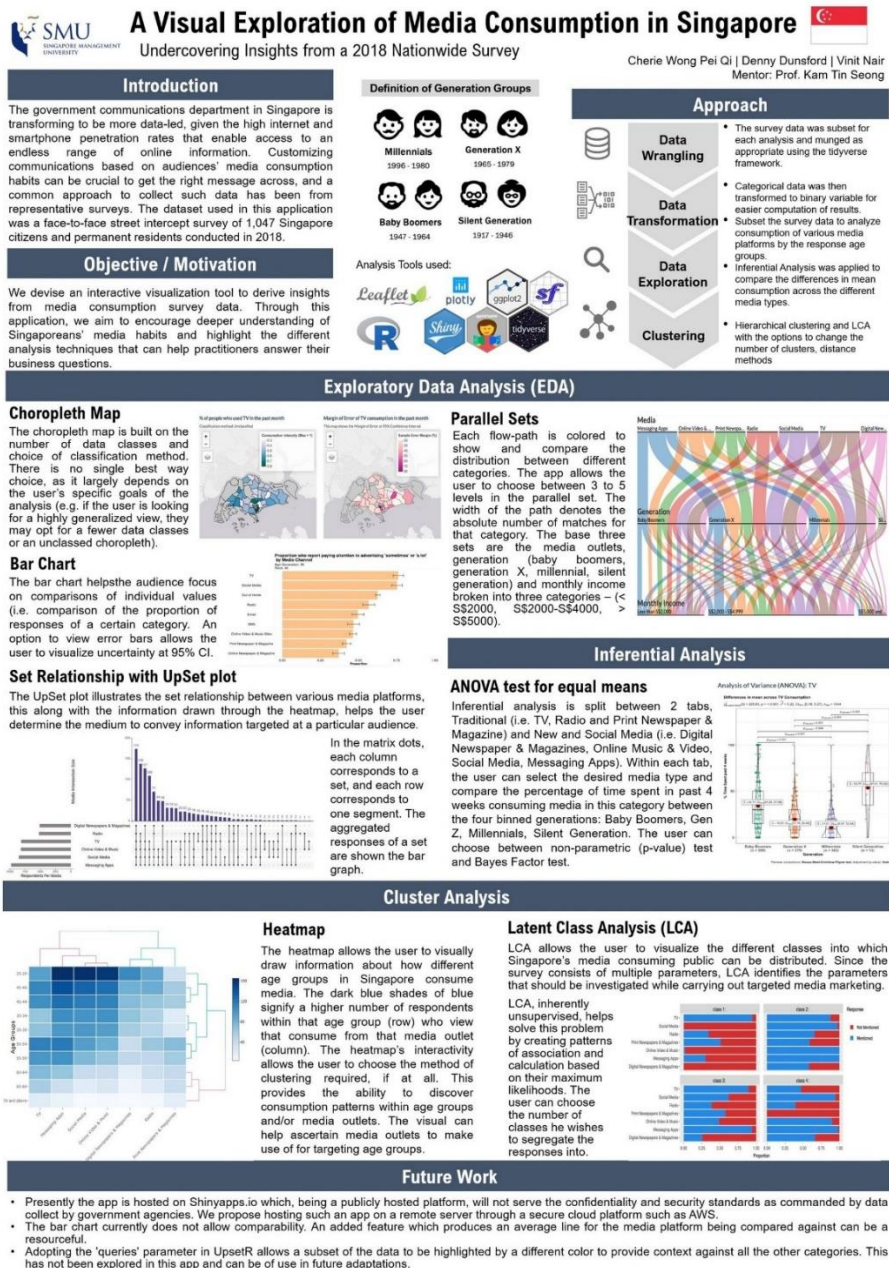
**References**

Eckstein, D. (2000). Empirical studies indicating significant birth-order related personality differences. *The Journal of Individual Psychology*, 56(4), 481-484.

Eckstein, D., Aycock, K. J., Sperber, M. A., McDonald, J., Van Wiesner, V. I., Watts, R. E., & Ginsburg, P. (2010). A review of 200 birth-order studies: Lifestyle characteristics. *Journal of Individual Psychology*, 66(4), 408-434.

## Example 3:

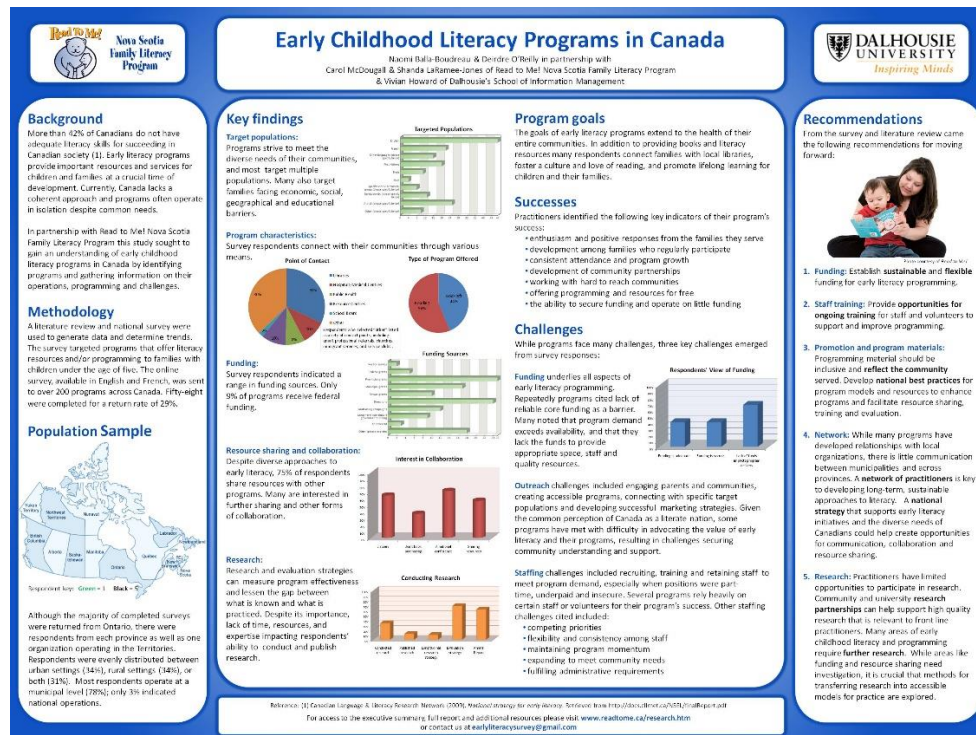
## Group02 poster - ISSS608-Visual Analytics and Applications





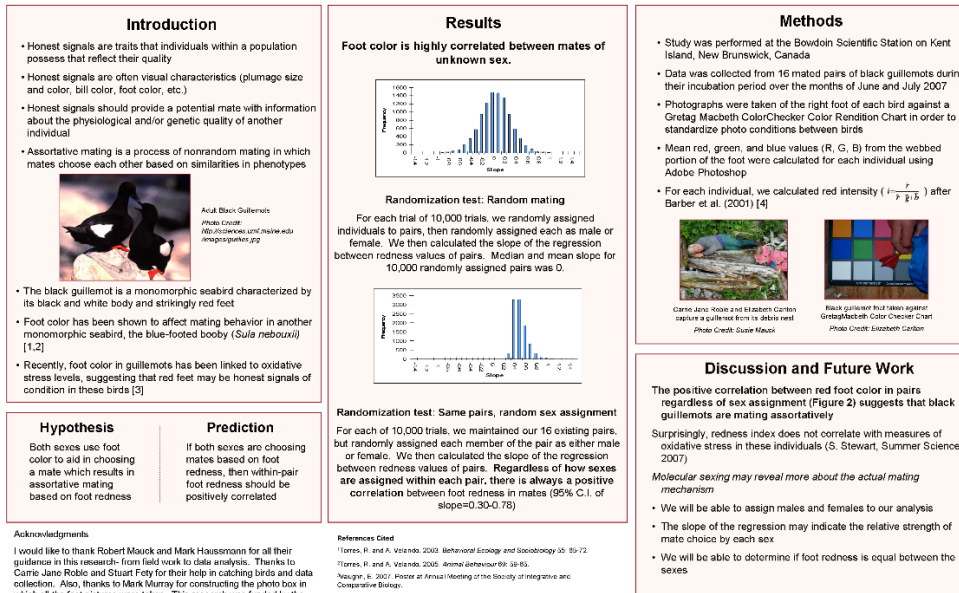
## Example 4:

## Poster Examples - Designing Research Posters - Research Guides at University of Colorado Colorado Springs



## Example 5:

## Poster Examples - Designing Research Posters - Research Guides at University of Colorado Colorado Springs

Assortative mating by foot color in the black guillemot (*Cephus grylle*)Elizabeth D. Carlton<sup>1</sup>, Mark F. Haussmann<sup>1</sup>, Robert A. Mauck<sup>1,2</sup><sup>1</sup>Kenyon College, <sup>2</sup>Bowdoin College

**Task 7**

Watch this video [Giving an Effective Poster Presentation](#) about giving poster presentations at international conferences. Answer the following questions:

1. What are the Dos and Don'ts in a poster presentation?
2. How to decide what information to put in a poster?
3. What should you do if you do not know how to answer the questions from the audience?

**Task 8**

Data visualization is the graphical representation of information and data. It is a commonly used technique for presenting research results in research writing and presentations. By using data visualization tools such as charts, tables, graphs, and maps, it will be easier for both technical and non-technical audiences to see and understand trends, outliers, and patterns in data.

**Steps for explaining data visualization in an academic presentation:**

1. Tell the audience what the visual is about
2. Guide the audience to read and understand the visual in a particular sequence according to your intended purpose
3. Highlight the significant aspects which are worth noting when interpreting the data
4. Explain the significance/meaning of the data (What do the data show?)

**Useful phrases for explaining data visualization in an academic presentation:**

| Tell the audience what the visual is about  | Guide the audience to read and understand the visual in a particular sequence according to your intended purpose | Highlight the significant aspects which are worth noting when interpreting the data   | Explain the significance/meaning of the data  |
|---|--|---|---|
| <ul style="list-style-type: none"> <li>Let's look at this bar graph which shows...</li> </ul> | <ul style="list-style-type: none"> <li>The vertical axis shows...</li> </ul>                                     | <ul style="list-style-type: none"> <li>It is worth noting that there was a</li> </ul> | <ul style="list-style-type: none"> <li>XXX clearly shows..., meaning that...</li> </ul> |

|  |   |  |  |
|--|---|--|--|
| <ul style="list-style-type: none"> <li>• Let's turn to this diagram which presents...</li> <li>• If you look at this line chart, you will notice...</li> <li>• To illustrate my point, let's look at some charts...</li> <li>• Here we can see...</li> </ul> | <ul style="list-style-type: none"> <li>• The horizontal axis represents...</li> <li>• This curve illustrates...</li> <li>• The solid line shows...</li> <li>• The shaded area represents...</li> <li>• This colored segment is for...</li> <li>• The table below...</li> <li>• Above the table, you can see...</li> </ul> | <p>rapid increase in...</p> <ul style="list-style-type: none"> <li>• I'd like to draw your attention to...</li> <li>• As you can see, there was a sudden drop in...</li> <li>• It's interesting that...</li> <li>• Take a look at this part of the diagram...</li> </ul> | <ul style="list-style-type: none"> <li>• The data show that...</li> <li>• Overall, the data show a strong positive correlation between...</li> <li>• Overall, the data provide evidence to support the argument that...</li> </ul> |
|--|---|--|--|

Below is an example of good data visualization and the explanation of the visual.



Source of the visual: <https://www.visualcapitalist.com/the-50-most-visited-websites-in-the-world/>

**An example showing how the visual can be explained to the audience in a presentation:**

**[Step 1]** Let's turn to this diagram which shows the world's most popular websites as of November 2020. **[Step 2]** The bar chart at the top left shows a breakdown of websites by categories. Here you can see the global rank of the website at the top of the circle, and the circle size is based on monthly traffic volume. **[Step 3]** It is clear that Google, YouTube and Facebook are the top three most visited websites. What's more, as the pandemic transformed the way we work, learn, communicate and shop, a majority of these activities migrated online. For example, it is not surprising that Zoom has grown explosively, with its number of monthly visitors surpassing Netflix, LinkedIn and Reddit. **[Step 4]** Overall, the data provide evidence to support the argument that social media and news have become part of everyday life of a majority of people worldwide. The data presented gives insight into the industries in which these sites operate and the traffic they attract.

### Practice

Refer to a journal article in your discipline which includes data visualization. Imagine that you need to explain one of the visuals in the journal article to a group of both technical and non-technical audience in an academic presentation.

- How would you start your explanation?
- How would you guide your audience to understand the data?
- What information will you highlight to the audience?
- How would you explain the significance/meaning of the data?

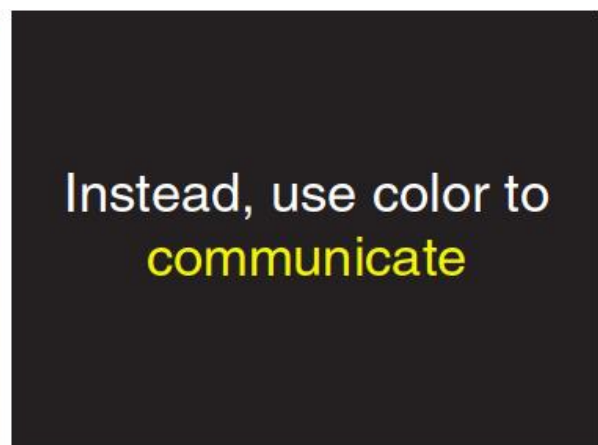
Follow the steps of explaining data visualization introduced above. Practise explaining the visual to a partner.

### OPTIONAL TASK - Supplementary Information on Visual Aids for Academic Presentations (Paper Presentations and Poster Presentations)

Effective use of visual aids can enhance your presentations. They can increase the audience's understanding of your topic, make an impact and engage the audience. Visual aids are chosen depending on their purpose. In an academic presentation, power point slides are always used. The following tasks give you some suggestions about the choice of **colouring** and **typographical features** in academic presentations.

#### Colouring

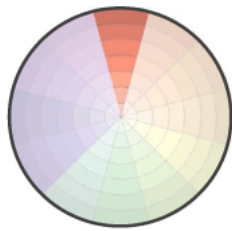
1. Have a look at the four example PPT slides below. Which two slides do you find easier to read? Why?



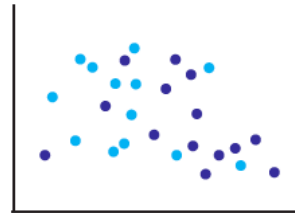
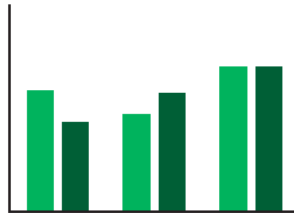
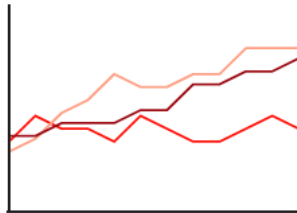


There are three effective ways of using multiple colours:

1.



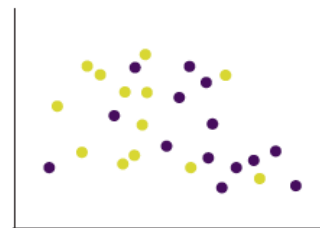
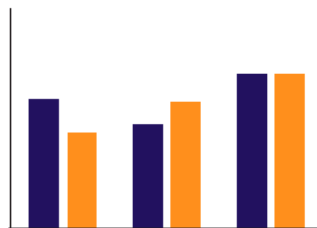
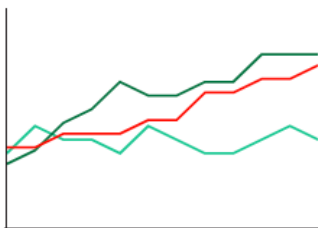
**Monochromatic:** Only one hue in various shades or tints. The advantage to this strategy is that it creates a consistent, unified look. Even though data may be categorized differently (as in different bars on a chart), it seems representative of a uniform, larger category.



2.



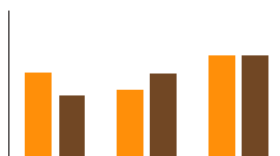
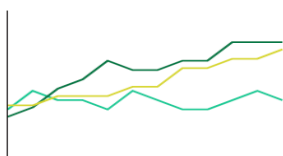
**Complementary:** Two hues on opposite sides of a color wheel. This strategy enhances the difference between two categories and makes them seem like opposites.



3.



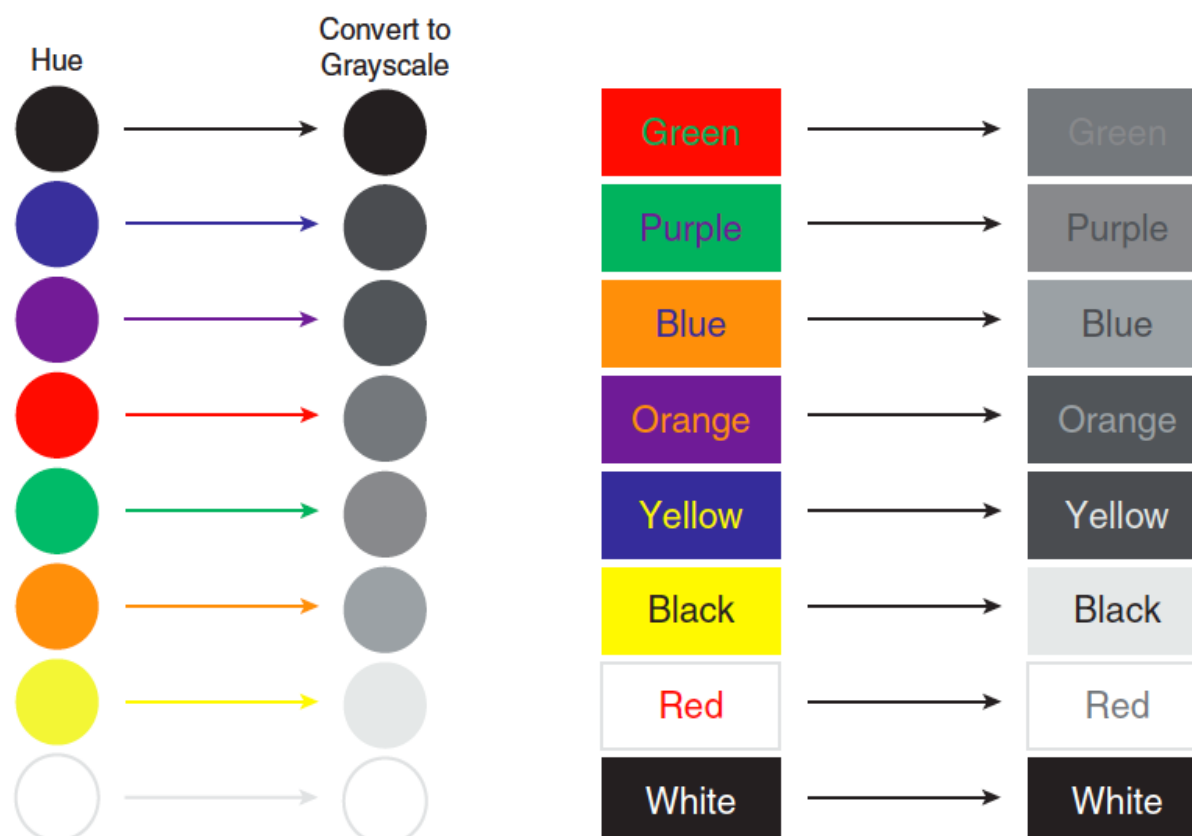
**Analogous:** Two or three hues that are relatively close together on the color wheel. This strategy combines elements of both the monochromatic and complementary strategies, using multiple colors while also achieving a consistent, harmonious look.



### Choosing background colours:

The colours you choose for your foreground and background should be as far apart in value as possible to maximize visibility.

To test various foreground/background combinations, convert your colours to grayscale. The more your two colours approach the values of black and white, the greater the contrast and the clearer your message.



### Using colours to highlight:

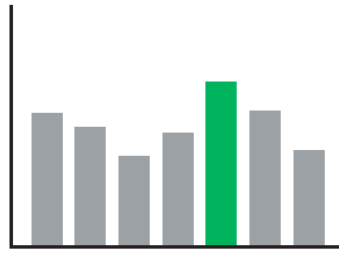
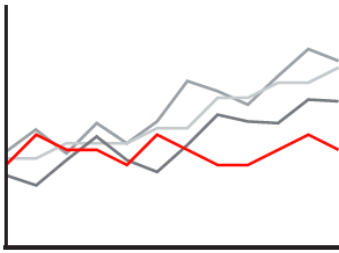
When there is too much information in a slide and you would like to draw the audience attention to certain points, you can use colours to highlight those you will talk about.

**Table 4.** Population, area, and density of the top 12 most populous US cities<sup>a</sup>

| Rank | City         | State        | Population | Area (sq. mi) | Density (per sq. mi) |
|------|--------------|--------------|------------|---------------|----------------------|
| 1    | New York     | New York     | 8,175,133  | 302.6         | 27,016.3             |
| 2    | Los Angeles  | California   | 3,792,621  | 468.7         | 8,091.8              |
| 3    | Chicago      | Illinois     | 2,695,598  | 227.6         | 11,843.6             |
| 4    | Houston      | Texas        | 2,099,451  | 599.6         | 3,501.4              |
| 5    | Philadelphia | Pennsylvania | 1,526,006  | 134.1         | 11,379.6             |
| 6    | Phoenix      | Arizona      | 1,445,632  | 516.7         | 2,797.8              |
| 7    | San Antonio  | Texas        | 1,327,407  | 460.9         | 2,880.0              |
| 8    | San Diego    | California   | 1,307,402  | 325.2         | 4,020.3              |
| 9    | Dallas       | Texas        | 1,197,816  | 340.5         | 3,517.8              |
| 10   | San Jose     | California   | 945,942    | 176.5         | 5,359.4              |
| 11   | Jacksonville | Florida      | 821,784    | 747.0         | 1,100.1              |
| 12   | Indianapolis | Indiana      | 820,235    | 361.4         | 2,270.2              |

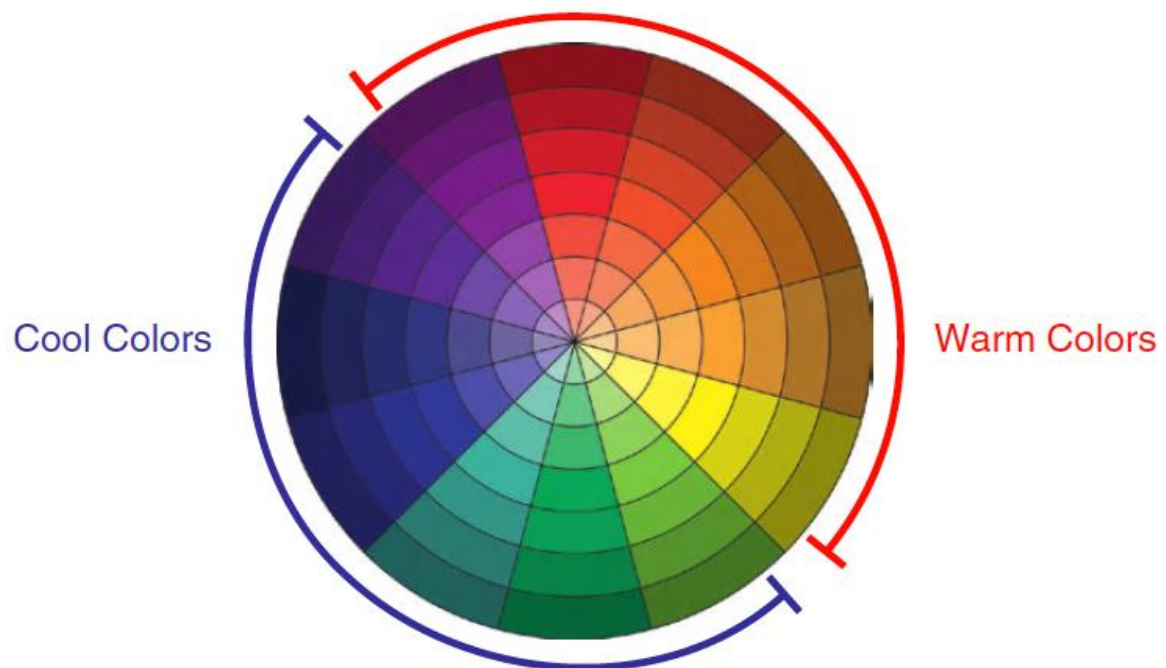
<sup>a</sup>Data from the 2010 United States Census.

Which colour in each diagram do you see immediately?



|   | X    | Y    | Z    |
|---|------|------|------|
| A | 15.4 | 12.3 | 11.1 |
| B | 14.8 | 15.8 | 19.9 |
| C | 10.4 | 10.6 | 14.7 |
| D | 10.9 | 41.2 | 14.1 |
| E | 14.2 | 16.3 | 12.1 |

When multiple colours are present, the audience will tend to see warm colours first.



## Typographical features

Which slides are easier to read, those on the left or right?

### Never use a single bullet

- Bullets are for lists

### Never use a single bullet

Bullets are for lists

### Don't write wordy bullet items

- The problem with writing long bullet items is that the eye has a difficult time reading several lines of text for a single bullet
- Even for written presentations, it is best to limit text to 1–3 lines. Otherwise, you are writing a paragraph!

### Don't write wordy bullet items

- Several lines of text are hard for the eye to read
- Try to limit yourself to 1–3 lines instead of writing a paragraph

Rule 1: Never use a single bullet

Rule 2: Don't write wordy bullet items

Which slides are easier to read, those on the left or right?

### Increase the spacing

- Without good spacing, bulleted items are too close together
- Without good spacing, bulleted items are too close together
- Without good spacing, bulleted items are too close together

### Increase the spacing

- Without good spacing, bulleted items are too close together
- Without good spacing, bulleted items are too close together
- Without good spacing, bulleted items are too close together

### Indent the text

- Help your audience see bullets easier by indenting your text
- Help your audience see bullets easier by indenting your text
- Help your audience see bullets easier by indenting your text

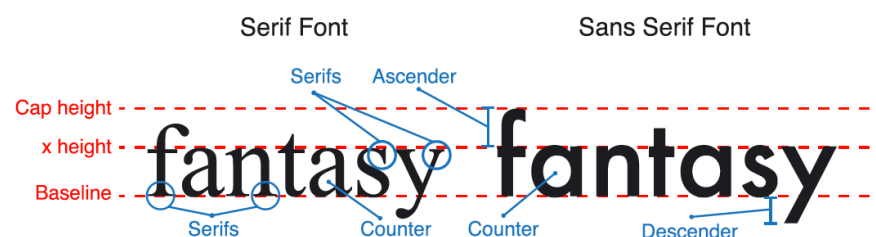
### Indent the text

- Help your audience see bullets easier by indenting your text
- Help your audience see bullets easier by indenting your text
- Help your audience see bullets easier by indenting your text

Rule 3: Increase the spacing

Rule 4: Indent the text

Which font do you prefer, Serif or Sans Serif? Why?



- i. Sans serif fonts are usually perceived as simple or pure. They are easier to see from a distance. They are best for slide and poster presentations.

### Font

Calibri

Century Gothic

Helvetica

### Personality

formal, neutral

grand, optimistic

simple, pure, contemporary

- ii. Serif fonts convey tone and personality and are good for smaller character sizes (10–14 pts) in multiple lines of type.

### Font

Garamond

Georgia

Times New Roman

### Personality

classic, refined

elegant, mature

professional, traditional

- iii. Some sans serif fonts convey a bit more personality than others. They are more playful and can make a presentation seem less standard or routine.

### Font

Comic Sans

Gill Sans

Myriad Pro

### Personality

silly, fun

warm, friendly

jovial, friendly, casual

- iv. Non-proportional (or “monospaced”) fonts are those with each character having the same width. They catch people’s attention easily and are best used in isolation, such as in title slides, flyers.

## Font

Courier

Letter Gothic

Lucida Sans

Typewriter

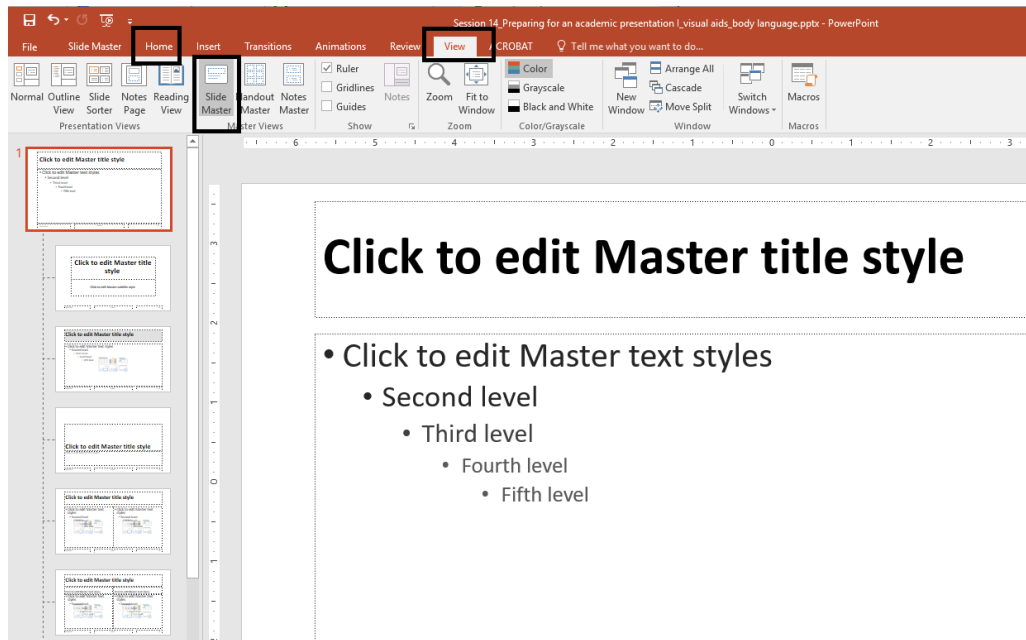
## Personality

retro, nerdy

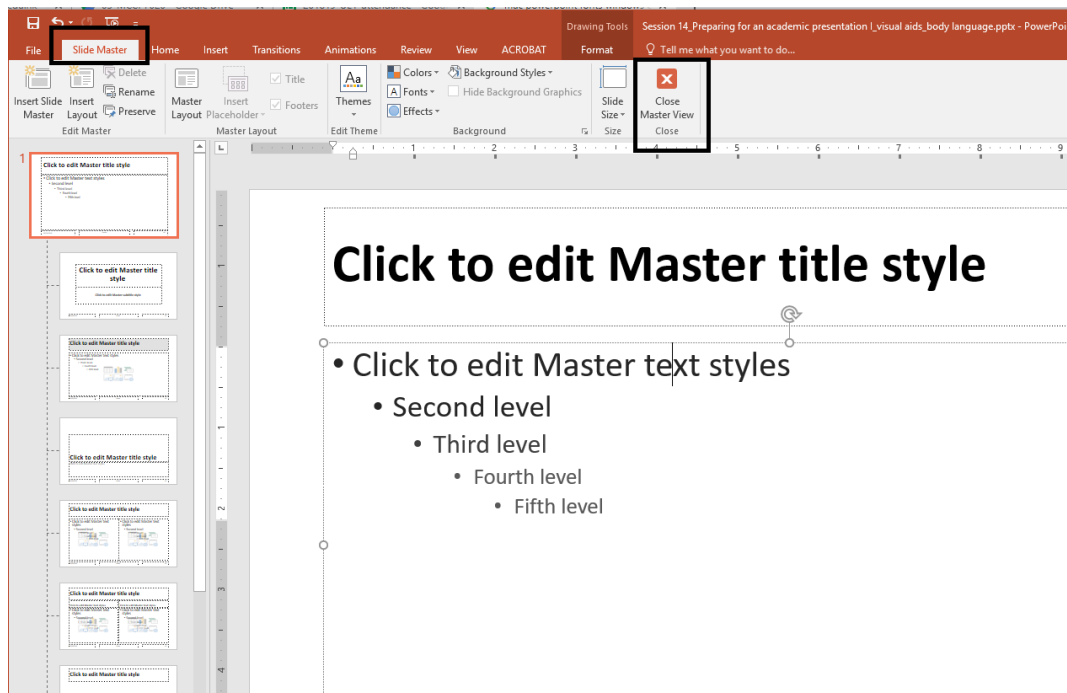
simple, elementary

informal, quirky

### Formatting Fonts: Using the Slide Master



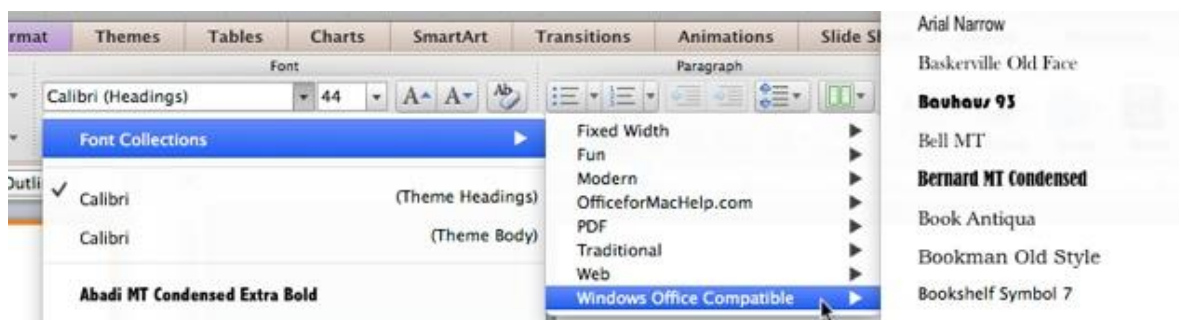
1. Click on “**View**”
2. Then click on “**Slide Master**”
3. Now click on “**Home**” to change the font format



After you have finished formatting the fonts, click on “**Slide Master**” and then click “**Close Master View**” to go back to the slides.

### Formatting Consistency across Platforms

If you use MS PowerPoint on Mac, select Windows-compatible fonts:



If possible, always check on the computer in the room where you are going to present before the presentation.