AN APPROACH

TO

ACADEMIC WRITING

Way

Academic writing is [...] the meta-discipline.

(Drechsler, 2015)

CONSIDERATIONS IN ACADEMIC WRITING

Audience

Purpose

Organization

Style

Flow

Presentation

CONSIDERATIONS IN ACADEMIC WRITING

Audience

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Presentation

AUDIENCE & PURPOSE

- The general public:

to instruct and facilitate people's understanding

- The specialists:

to display familiarity, intelligence, and expertise

AUDIENCE & PURPOSE

- "It is a golden age for studying inequality. Thomas Piketty, a French economist, set the benchmark in 2014 when his book, *Capital in the Twenty-First Century*, was published. The book mapped the contours of the crisis with a sweeping theory of economic history. Inequality, which had been on the wane from the 1930s until the 1970s, had risen sharply back toward the high levels of the Industrial Revolution, he argued. Now Branko Milanovic, an economist at the Luxembourg Income Study Centre and the City University of New York, has written a comprehensive follow-up. It reinforces how little is really known about economic forces of long duration."

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- "The United States experienced two major economic crises over the past century—the Great Depression starting in 1929 and the Great Recession starting in 2008. A striking and often overlooked similarity between these two crises is that both were preceded, over a period of decades, by a sharp increase in income inequality, and by a similarly sharp increase in debt-to-income ratios (DTI) among lower- and middle-income households. When debt levels started to be perceived as unsustainable, they contributed to triggering exceptionally deep financial and real crises."

AUDIENCE & PURPOSE

- 1. *The Economist* ⟺ 2. *American Economic Review*

- the amount of background knowledge
- the usage of disciplinary jargon and formal expression
- the intensity of information presented
- the complexity of sentence structure

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AUDIENCE & PURPOSE

antibiotic resistance

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- "The World Health Organization considers antibiotic resistance one of the biggest threats of the 21st century. The World Economic Forum calls it a 'potential disaster' for human health and the global economy. Just one such microbial threat, multidrug-resistant *Staphylococcus aureus*, caused more than 11,000 deaths in the United States in 2011 alone, and that one plus other resistant microbes kill hundreds of thousands of people annually around the world."

AUDIENCE & PURPOSE

- "Since the discovery of penicillin, antibiotics have become the cornerstone of modern medicine. However, the continued efficacy of these essential drugs is uncertain due to the global dissemination of antibiotic-resistance determinants. Moreover, the decreasing development of new antibiotics in the private sector that has resulted from a lack of economic incentives is exacerbating this already dire problem. Indeed, without immediate action to discover and develop new antibiotics, it is projected that deaths attributable to resistant infections will reach 10 million per year by 2050."

AUDIENCE & PURPOSE *National Geographic*

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Presentation

FLOW

- Old-to-New information flow
- logical connectors as a helper
- On the other hand / In contrast / On the contrary

FLOW

- Old-to-New information flow

➢ logical connectors as a helper

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"Specifically, we found that depression was not associated with increased WBC, CD40 ligand, CRP, fibrinogen, or IL-6. _____, mean levels of CRP, fibrinogen, and IL-6 appeared lower in depressed as compared with nondepressed participants." (*Biological Psychiatry*, 2007)

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"Previous research has suggested that depressed patients have lower olfactory scores; _____, other studies have found no significant difference between depressed participants and controls in terms of olfactory capacity." (*Journal of Alzheimer's Disease,* 2009)

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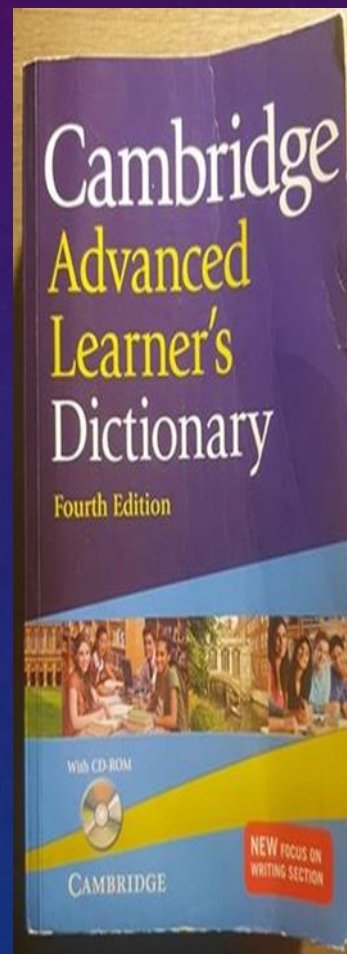
FLOW

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- Besides / In addition / Furthermore

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besides /bɪˈsaɪdz/ **adv, preposition** **B1** in addition to; also: *She won't mind your being late – besides, it's hardly your fault.* ◦ *Do you play any other sports besides football and basketball?*

! Common mistake: **besides or also?**

Warning: choose the correct adverb!

Use **besides** at the beginning of a clause to add a fact or reason that is stronger than what you have already said:

I'm too tired to go to the supermarket. Besides, it's closed on Sunday.

To just add extra information, don't say 'besides' say **in addition** or **also:**

~~I speak French fluently. Besides, I speak some Italian.~~

I speak French fluently. Also, I speak some Italian.

Besides vs. In addition

- During the past 27 years of my practice of internal medicine before my retirement, I treated many hundreds of people with eating disorders whose body mass index (BMI) ranged from malnourished to morbidly obese. They taught me much about how to treat all of my patients. As the article notes, for different racial, cultural, ethnic and socioeconomic groups, there are huge disparities in societal attitudes and acceptance, as well as in treatment received from the medical community. _____, I believe one of the greatest disparities is manifested in gender: Men are far less likely to experience bias against overweight people than women. Men also have eating disorders that are not as often recognized as they would be in women.

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FLOW

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- ➢ **logical connectors** as a helper

- ➢ **summarizing phrases** for a smoother flow
- less reliance on logical connectors

FLOW

"The history of China's early medieval period has been told by many voices. Written accounts of personal experience are vastly outnumbered by compiled works that gather texts from many sources. The compilers of these texts acted as both readers and writers, combing through documents and records compiled by others and weaving them together to create new texts."

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FLOW

"Processes involving the use of ion exchange membranes are frequently employed in water purification and wastewater treatment. These strategies are known as 'integrated membrane systems', which may be classified as pressure-driven and electrically-driven. Pressure-driven processes include microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO), whereas electrically-driven approaches encompass electrodialysis (ED) and electrodeionization (EDI)."

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FLOW: OLD-TO-NEW INFO

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"Uses cohesion in such a way that it attracts no attention."

IELTS Grading Rubric

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Organization

Style

Flow

Presentation

ORGANIZATION

- External: chapters, sections, and paragraphs

- Internal: Problem-Solution (SPSE) pattern

ORGANIZATION

- External: chapters, sections, and paragraphs

SVM algorithm [46], which can save lots of human labeling efforts and make it easy to train the DPM object detector.

IV. LEARNING DISCRIMINATIVE PATTERN FOR CAR CLASSIFICATION

A. Motivation and Mathematical Notation

After car detection using DPM, the problem of car recognition is converted into a multi-class image classification problem. Given a set of car images $\{I_1, \ldots, I_N\}$ from C classes, each car image has a label denoted as $L_i \in [1, C], i \in [1, N]$. To find the discriminative patterns for one class, we treat the current class as positive class and all the other classes as negative classes. This is a typical one-vs-rest setting. Then MIL algorithm can be used to solve this problem.

Here we briefly give the general notations of MIL [12]. In MIL, a set of bags $X = \{X_1, \ldots, X_N\}$ are given which corresponds to the set of images; in other words, we consider each image as a bag. Each bag contains a set of instances $X_i = \{x_{i1}, \ldots, x_{im}\}$, where m is the number of instances in this bag; and each instance is denoted as a d-dimensional vector $x_{ij} \in \mathbf{R}^{d \times 1}$; x_{ij} corresponds to the feature vector of P_{ij}, which is the jth patch in image I_i. The patches are densely sampled from the image using a fixed patch size and step size. The feature vector describes the visual appearance of P_{ij}. In addition, every bag

In the testing phase, we use the Spatial Pyramid Matching (SPM) strategy [47] to divide the patch features into different regions for image classification. In the following sub-sections, we will give the details of how to learn discriminative patterns and how to apply the learned discriminative patterns for image classification.

B. Problem Formulation of Discriminative Pattern Learning

Mathematically, without loss of generality, we model a discriminative pattern using a SVM classifier. For efficiency, we choose linear SVM classifier. Our method is agnostic to particular classifier. For example, AdaBoost [48], Random Forest [49], and Convolutional Neural Network (CNN) [44] can also be adopted in our approach.

Linear SVM is defined as $f(\mathbf{x}) = \mathbf{w}^T \mathbf{x}$, where $\mathbf{x}$ is an instance (a patch feature) and $\mathbf{w}$ is the classification hyper-plane of linear SVM. Recall that we have multiple discriminative patterns for one car category. Thus we learn K linear SVM classifiers for K discriminative patterns and one linear SVM classifier for background category, and stack all of them in one matrix denoted as $\mathbf{W} = [\mathbf{w}_0, \mathbf{w}_1, \ldots, \mathbf{w}_K], \mathbf{w}_k \in \mathbf{R}^{d \times 1}, k \in \{0, 1, \ldots, K\}$, where $\mathbf{w}_0$ is the classification hyperplane of the linear SVM for the background category and $\mathbf{w}_k, k \in \{1, \ldots, K\}$ is the classification hyper-plane of the linear SVM for the kth discriminative pattern.

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The Information-Motivation-Behavioral skills (IMB) model of adherence [21] meets each of these criteria with one exception – measures that operationalize the IMB constructs for diabetes medication adherence are lacking. According to the IMB model, adherence-related information, motivation (personal and social), and behavioral skills all determine adherence behavior [21]. Deficits or barriers in any of these areas reduce the likelihood of consistent performance of the behavior. The IMB model theorizes each component may have a direct effect on adherence, but that adherence-related information and motivation primarily act through adherence behavioral skills to influence behavior [21–23]. The IMB model

Nelson et al. 2018. Assessing barriers to diabetes medication adherence using the Information-Motivation-Behavioral skills model. *Diabetes Research and Clinical Practice*.

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Organization: Sections

these mice was significantly higher than the WT-mice subjected to the same treatment (Fig. 2A). Longitudinal colonoscopic evaluation further determined precautious colonic tumor development in these mice and an increased tumor burden than age- and sex-matched WT-littermates (Fig. 2B). These findings were supported by the data at the time of the killing of mice, which demonstrated significant increases in colonic tumor burden, tumor size, and colon weight (Fig. 2B). Histopathological analysis of Swiss-rolled colons by a blinded, experienced mouse gastrointestinal pathologist (MKW) confirmed endoscopic observations, indicating increased overall inflammation, depth of inflammation, and crypt damage involved (Supplementary Fig. 4A–C). Histopathological examination of the tumors further demonstrated that Cld-1Tg mice had 100% tumor penetrance (high-grade dysplasia) compared to the <30% high-grade dysplasia in the WT cohort (Fig. 2C). The overall injury score was significantly high in Cld-1 Tg mice compared to WT mice under AOM/DSS exposure (Fig. 2C). Collectively, these results indicated a critical role for Cld-1 in accelerating colitis-associated tumorigenesis.

Cld-1 expression is upregulated in colitis-associated cancer (CAC)

Considering the fact that increased Cld-1 expression led to increased susceptibility to CAC and also promoted its severity, we further determined if Cld-1 expression is also upregulated in CAC and its association with disease severity. To test, we used the samples from chronic inactive colitis, mild to moderate dysplastic lesions (38 samples), low-grade (81 samples) and high-grade dysplasia (17 samples) and colon cancer samples (25 samples) (Fig. 3A). Intensity of anti-Cld-1 immunostaining was determined by a GI pathologist (CS) in a blinded manner. Outcome suggested a significant increase in Cld-1 expression (membrane + cytoplasmic; 4–5-fold) which was also stage-specific (progressive increase from inactive colitis to low-grade/high-grade dysplasia) (Fig. 3A and Supplementary Fig. 5C). Similar increase in Cld-1 expression was observed in Cld-1Tg mice in the colitis-associated cancer mouse model (AOM/DSS) compared to WT control mice as evidenced by immunohistochemistry and immunoblotting (Fig. 3B, C). Overall, these data suggested that Cld-1 may serve as a prognostic marker for the susceptibility of neoplasia growth in IBD patients.

Altered immune environment in Cld-1Tg tumors

Considering inflammation is the key driving force in CAC and persistent inflammatory milieu in Cld-1Tg mice, we further determined if tumor microenvironment in Cld-1Tg mice differs from the WT-mice. Herein, we primarily examined immune cell infiltrate in the tumors from WT and Cld-1 Tg mice primarily for the T-cell infiltrate (CD3) and macrophages (F-480) using immunohistochemistry. A marked increase in CD3 and F480 immune cells in Cld-1Tg tumors supported a proinflammatory milieu in Cld-1Tg mice tumors ($p < 0.01$) (Fig. 4A, B). However, considering that the macrophages identified by F480 can be pro- or antitumorigenic, we performed further analysis using specific markers for the M1 macrophages (antitumoral, the nitric oxide synthase (iNOS)) and M2 macrophages (protumorigenic, arginase1 (Arg1)) [15], respectively. It was interesting that the levels of F-480+/iNOS+macrophages, indicative of M1 phenotype, were quite diminished while levels of the F-480+/Arg1+macrophages, indicative of M2 phenotype, were markedly higher in Cld-1Tg tumors (Fig. 4B). Our additional data for DNA damage using pH2AX expression, which is known to increase with inflammation [16, 17], further supported a proinflammatory environment in Cld-1Tg mice tumors vs. WT-mice (Fig. 4C). Collectively, these data suggested a protumor inflammatory microenvironment in Cld-1Tg tumors.

Deregulated proliferation/apoptosis ratio characterized Cld-1Tg mice tumors

When pending increased tumorigenesis in Cld-1Tg mice, we postulated modulation of the proliferation/apoptosis ratio in these mice when subjected to the CAC. To examine potential alteration in the dynamic proliferation of the colonic epithelium in AOM/DSS-treated mice, we injected BrdU before sacrificing them. Tissue samples were subjected to Ki67, anti-Brdu, and anti-cleaved-caspase-3 immuno-detection, which demonstrated that the cell proliferation was markedly increased in Cld-1 mice tumors (Fig. 5A, B). Conversely, staining for cleaved caspase-3 indicated decrease in intratumoral apoptosis in Cld-1Tg mice as compared to WT mice (Fig. 5C). Taken together, the normal balance between apoptosis and proliferation was skewed towards hyperproliferative milieu in Cld-1Tg mice compared to the WT-mice.

Cld-1-mediated colonic epithelial plasticity and CAC progression is a product of overactivated β-Cat^ser552 signaling

The dysregulation of β-catenin homeostasis is a key indicator of the hyperactive Wnt signaling [18], and β-catenin is a mutational target in colitis-associated carcinogenesis, based on its increased expression and altered subcellular distribution [11]. We have previously demonstrated a cross-talk between Cld-1 and the Wnt-signaling [6]. Therefore, we postulated that the increased Cld-1 levels in colitis may also perturb the Wnt-signaling to promote tumorigenesis.

Organization: Sections

these mice was significantly higher than the WT-mice subjected to the same treatment (Fig. 2A). Longitudinal colonoscopic evaluation further determined precautious colonic tumor development in these mice and an increased tumor burden than age- and sex-matched WT-littermates (Fig. 2B). These findings were supported by the data at the time of the killing of mice, which demonstrated significant increases in colonic tumor burden, tumor size, and colon weight (Fig. 2B). Histopathological analysis of Swiss-rolled colons by a blinded, experienced mouse gastrointestinal pathologist (MKW) confirmed endoscopic observations, indicating increased overall inflammation, depth of inflammation, and crypt damage involved (Supplementary Fig. 4A–C). Histopathological examination of the tumors further demonstrated that Cld-1Tg mice had 100% tumor penetrance (high-grade dysplasia) compared to the <30% high-grade dysplasia in the WT cohort (Fig. 2C). The overall injury score was significantly high in Cld-1 Tg mice compared to WT mice under AOM/DSS exposure (Fig. 2C). Collectively, these results indicated a critical role for Cld-1 in accelerating colitis-associated tumorigenesis.

Cld-1 expression is upregulated in colitis-associated cancer (CAC)

Considering the fact that increased Cld-1 expression led to increased susceptibility to CAC and also promoted its severity, we further determined if Cld-1 expression is also upregulated in CAC and its association with disease severity. To test, we used the samples from chronic inactive colitis, mild to moderate dysplastic lesions (38 samples), low-grade (81 samples) and high-grade dysplasia (17 samples) and colon cancer samples (25 samples) (Fig. 3A). Intensity of anti-Cld-1 immunostaining was determined by a GI pathologist (CS) in a blinded manner. Outcome suggested a significant increase in Cld-1 expression (membrane + cytoplasmic; 4–5-fold) which was also stage-specific (progressive increase from inactive colitis to low-grade/high-grade dysplasia) (Fig. 3A and Supplementary Fig. 5C). Similar increase in Cld-1 expression was observed in Cld-1Tg mice in the colitis-associated cancer mouse model (AOM/DSS) compared to WT control mice as evidenced by immunohistochemistry and immunoblotting (Fig. 3B, C). Overall, these data suggested that Cld-1 may serve as a prognostic marker for the susceptibility of neoplasia growth in IBD patients.

Altered immune environment in Cld-1Tg tumors

Considering inflammation is the key driving force in CAC and persistent inflammatory milieu in Cld-1Tg mice, we further determined if tumor microenvironment in Cld-1Tg mice differs from the WT-mice. Herein, we primarily examined immune cell infiltrate in the tumors from WT and Cld-1 Tg mice primarily for the T-cell infiltrate (CD3) and macrophages (F-480) using immunohistochemistry. A marked increase in CD3 and F480 immune cells in Cld-1Tg tumors supported a proinflammatory milieu in Cld-1Tg mice tumors ($p < 0.01$) (Fig. 4A, B). However, considering that the macrophages identified by F480 can be pro- or antitumorigenic, we performed further analysis using specific markers for the M1 macrophages (antitumoral, the nitric oxide synthase (iNOS)) and M2 macrophages (protumorigenic, arginase1 (Arg1)) [15], respectively. It was interesting that the levels of F-480+/iNOS+ macrophages, indicative of M1 phenotype, were quite diminished while levels of the F-480+/Arg1+ macrophages, indicative of M2 phenotype, were markedly higher in Cld-1Tg tumors (Fig. 4B). Our additional data for DNA damage using pH2AX expression, which is known to increase with inflammation [16, 17], further supported a proinflammatory environment in Cld-1Tg mice tumors vs. WT-mice (Fig. 4C). Collectively, these data suggested a protumor inflammatory microenvironment in Cld-1Tg tumors.

Deregulated proliferation/apoptosis ratio characterized Cld-1Tg mice tumors

When pending increased tumorigenesis in Cld-1Tg mice, we postulated modulation of the proliferation/apoptosis ratio in these mice when subjected to the CAC. To examine potential alteration in the dynamic proliferation of the colonic epithelium in AOM/DSS-treated mice, we injected BrdU before sacrificing them. Tissue samples were subjected to Ki67, anti-Brdu, and anti-cleaved-caspase-3 immuno-detection, which demonstrated that the cell proliferation was markedly increased in Cld-1 mice tumors (Fig. 5A, B). Conversely, staining for cleaved caspase-3 indicated decrease in intratumoral apoptosis in Cld-1Tg mice as compared to WT mice (Fig. 5C). Taken together, the normal balance between apoptosis and proliferation was skewed towards hyperproliferative milieu in Cld-1Tg mice compared to the WT-mice.

Cld-1-mediated colonic epithelial plasticity and CAC progression is a product of overactivated β-Cat^{ser552} signaling

The dysregulation of β-catenin homeostasis is a key indicator of the hyperactive Wnt signaling [18], and β-catenin is a mutational target in colitis-associated carcinogenesis, based on its increased expression and altered subcellular distribution [11]. We have previously demonstrated a cross-talk between Cld-1 and the Wnt-signaling [6]. Therefore, we postulated that the increased Cld-1 levels in colitis may also perturb the Wnt-signaling to promote tumorigenesis.

ORGANIZATION

- External: chapters, sections, and paragraphs
  ➢ the bridging of paragraphs (overall coherence)
  ➢ disruption of a coherent delivery of ideas (if overly)

- Internal: Problem-Solution (SPSE) pattern

ORGANIZATION

- External: chapters, sections, and paragraphs

- Internal: Problem-Solution (SPSE) pattern

ORGANIZATION

- External: chapters, sections, and paragraphs

- Internal: Problem-Solution (SPSE) pattern
  - ➢ exercise on page 11

ORGANIZATION

- External: chapters, sections, and paragraphs

- Internal: Problem-Solution (SPSE) pattern
  - exercise on page 11 (S:1-3 P: 4-7 S: 8-11 E: 12)

ORGANIZATION

- External: chapters, sections, and paragraphs

- Internal: Problem-Solution (SPSE) pattern
  - exercise on page 11 (S:1-3 P: 4-7 S: 8-11 E: 12)
  - extension on page 13 (SPSESE)

ORGANIZATION

- A well-structured paragraph:

ORGANIZATION

- A well-structured paragraph:

➢ Topic sentence

➢ Supporting sentences

➢ Concluding sentence

ORGANIZATION
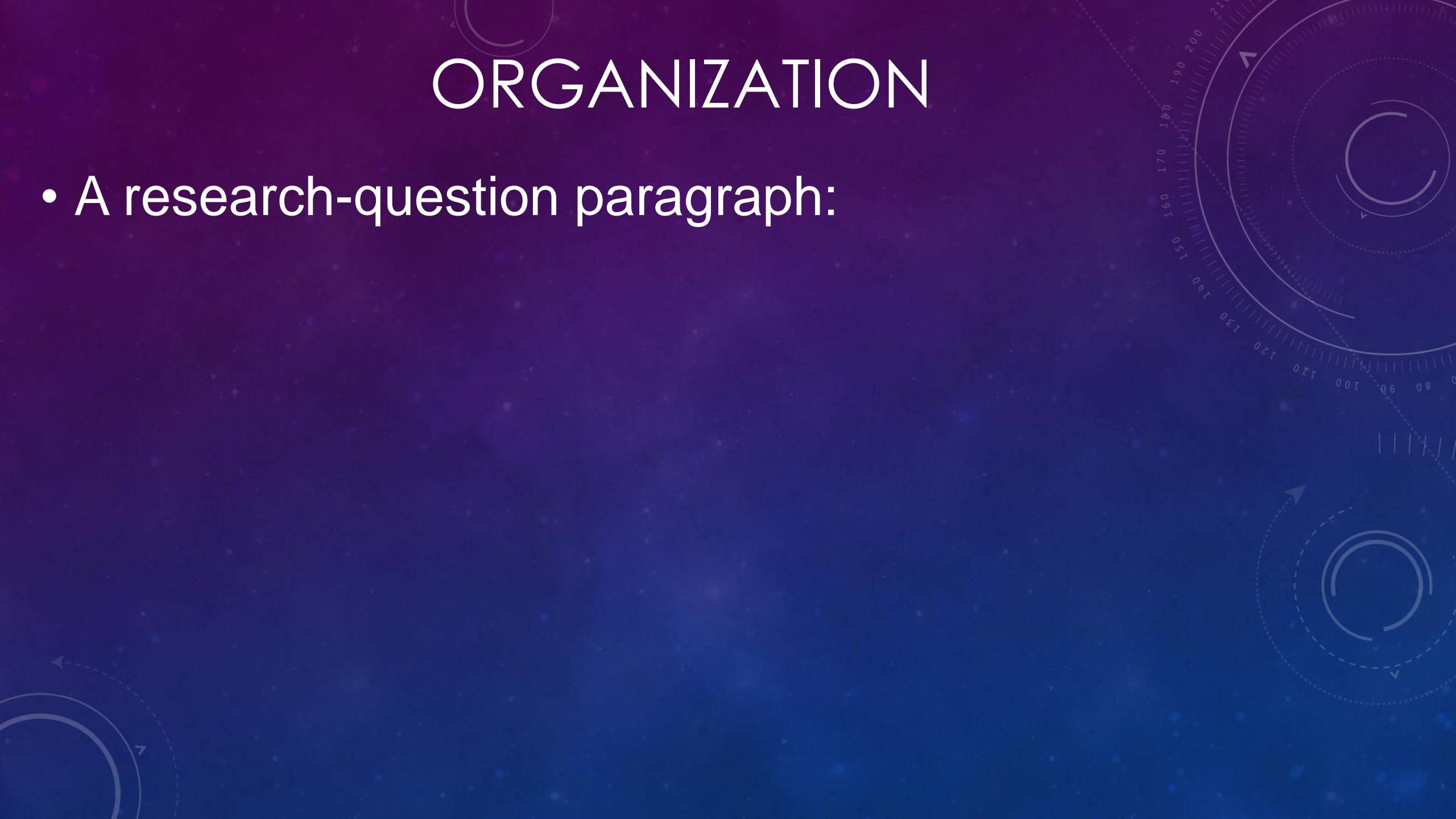
- A well-structured paragraph:
  - Topic sentence
  - Supporting sentences
  - Concluding sentence

- Not necessarily so neat in research paper (RP)

ORGANIZATION

- A research-question paragraph:

ORGANIZATION

- A research-question paragraph:

➢ Research questions unnecessarily in a question-form

➢ Questions in a sequence (general → specific)

➢ Questions answered, right below, or not?

ORGANIZATION

➢ Are the differences in risk aversion documented in Figure 1 statistically significant? To answer this question we regress the total number of Option A choices (the safer option) on dummy variables representing each of our weather related variables, plus some additional controls that we will discuss below.

Bassi et al. 2012. An Experimental Analysis of Weather and Risk Attitudes in Financial Decisions. *Social Science Research Network (SSRN)*.

ORGANIZATION

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ORGANIZATION

➢ Finally, does a quantitative metric that compares the temporal structure in a participant's tapping behavior with the temporal structure of the music predict the subjective feeling of being in the groove? An answer to this question is of importance for further studies of the groove in which it would be advantageous to not have to rely on subjective ratings of being in the groove. To this end, we quantified the correspondence between the temporal structure in the music and the temporal structure of the tapping responses utilizing a model that serves to describe and compare the temporal structures present in a various data streams (Tomic & Janata, 2008)

Janata et al. 2012. Sensorimotor Coupling in Music and the Psychology of the Groove. *Journal of Experimental Psychology: General*.

ORGANIZATION

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Janata et al. 2012. Sensorimotor Coupling in Music and the Psychology of the Groove. *Journal of Experimental Psychology: General*.

QUESTION-BASED STRUCTURE

Madison (2006) operationally defined groove as "wanting to move some part of the body in relation to some aspect of the sound pattern" (p. 201) and proceeded to examine interindividual variability in ratings of perceived groove in 64 brief (8-s) musical exemplars drawn from a variety of styles and cultural traditions, alongside 14 other descriptors that connoted various forms of motion and emotional constructs of arousal and valence. Variation in groove ratings was similar to that observed for the other descriptors, and a factor analysis of the ratings showed that the descriptors *groove* and *driving* characterized one dimension of a four-factor solution. Notably, this dimension was distinct from a dimension characterized by *happy*, *rocking*, and *having swing*—attributes that might be expected to relate to the groove. No attempt was made, however, to examine any sensorimotor correlates of the groove or the degree to which the feeling of the groove or positive affect was induced in the listeners. In addition, although the listeners were able to apply the concept of groove as defined by the author to their perceptual judgments, no systematic attempt was made to establish the participants' native understanding of the concept.

In a detailed study of emotional responses to a small number of musical pieces drawn from a diverse set of genres, Grewe, Nagel, Kopiez, and Altenmüller (2007) observed the highest subjective ratings of arousal and valence in response to an energetic and somewhat comical dance piece (Quincy Jones's, "Soul Bossa Nova"), which also elicited the strongest desire to move from among the pieces tested. Though the notion of groove was not examined in this study, such coupling of a desire to move with positive affect is expected for pieces of music that would be perceived as high in groove. The study also reinforced the fact that many pieces (and perhaps entire genres) of music do not groove.

The term *groove* is commonly used by musicians to refer to a pleasing state in which the creation of music becomes seemingly effortless (Berliner, 1994; Pressing, 2002). Particularly when playing in an ensemble, the groove may be experienced when the interaction among the different instruments becomes seamless and the musical result feels right subjectively. In this regard, the sense of the groove may be closely related to the concept of flow, two characteristics of which are (a) that actions feel automatic and few or no attentional resources are required for executing action sequences and (b) that a state of positive affect is induced (Csikszentmihalyi, 1990; de Manzano et al., 2010). Although variability in the experience of flow was found to correlate with some physiological indicators of mental effort and affect in expert pianists, thus providing support for the psychological characterization of the flow state (de Manzano et al., 2010), there is so far no clear understanding of how sensorimotor performance measures correlate with subjective or other measures of flow or groove, or affective states, across a wide range of musical expertise. In sum, there is growing scientific interest in understanding the relationships between music and sensorimotor coordination, affect, and underlying physiological mechanisms.

Phenomenological, Behavioral, and Computational Approaches to Understanding the Groove

Our approach to characterizing the psychology of the groove spans several levels of analysis, and in the present article, we sought to answer several questions. First, is the concept of the groove consistently represented in the minds of individuals? Attaining some sort of consensus definition and demonstrating that the concept is reasonably pervasive and consistent in a large population are both prerequisites for examining a subjective phenomenon in the laboratory. Thus, rather than relying solely on music-theoretic definitions of groove or our own intuitions, we sought to derive a working definition from the definitions of a large number of undergraduate students who were asked to define the term, along with responses to a survey that contained a variety of descriptive phrases that we believed might be associated with the concept of the groove to varying degrees.

Second, is the groove an attribute of music that can be perceived and consistently judged? To what extent might additional factors, such as familiarity with a piece of music, influence the perceived attribute? To address these questions, we examined variability in the perceived degree of groove present in a large sample of 30-s music exemplars selected from a range of musical styles and tempi. At the same time, we assessed the interrelationship between perceived groove and the familiarity and enjoyment of the music. This experiment also served to develop a normative library of musical excerpts that varied in the degree of perceived groove for use in the further experiments.

Third, how is the experiential state of being in the groove shaped by sensorimotor tasks that are performed in association with music that varies in the degree of perceived groove? This question gets at the important distinction between appraising an attribute of the music (driven primarily by perception) and appraising the subjective quality of one's own sensorimotor interaction with the music. Accordingly, utilizing our newly obtained normative library of musical exemplars, categorized into three levels of groove, we engaged participants in sensorimotor interactions with the music across three levels of sensorimotor constraint: no tapping, isochronous bimanual tapping, and free-form (unconstrained) bimanual tapping. The trial-level data allowed us to examine the relationships between several subjective variables: perceived groove in the music, enjoyment of the task, the degree of groove experienced while tapping, and experienced difficulty while performing the task. The motivation for the tapping manipulation (isochronous vs. free-form) was the hypothesis that the most unconstrained condition would allow for the freest degree of self-expression in relation to the music and therefore the strongest sense of being in the groove.

Fourth, is sensorimotor coupling spontaneously manifested when listening to music that has a higher degree of groove? Video recordings obtained in the behavioral experiment described earlier allowed us to assess the degree of spontaneous movement during the no-tapping trials as a function of the groove category of the stimuli.

Finally, does a quantitative metric that compares the temporal structure in a participant's tapping behavior with the temporal structure of the music predict the subjective feeling of being in the groove? An answer to this question is of importance for further studies of the groove in which it would be advantageous to not have to rely on subjective ratings of being in the groove. To this end, we quantified the correspondence between the temporal structure in the music and the temporal structure of the tapping responses utilizing a model that serves to describe and compare the temporal structures present in a various data streams (Tomic & Janata, 2008).

ORGANIZATION

> What explains voter turnout? Few questions have attracted more attention, both theoretical and empirical, in political science. Early efforts to explain turnout from a rational choice perspective (Downs 1957, Riker & Ordeshook 1968) treated voters as strategic actors who vote in order to influence election outcomes. More recently, attention has shifted to political parties as the locus of strategic activity: citizens' voting decisions may be driven largely by social norms such as a sense of duty, but strategic elites decide whether to activate those norms based in part on the probability that their mobilization efforts will tip the outcome (Aldrich 1993, Cox 1999). Both approaches imply that …

Eggers, A. 2013. Proportionality and Turnout: Evidence from French Municipalities. *Social Comparative Political Studies*.

ORGANIZATION

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ORGANIZATION

➢ This paper presents a hybrid approach that combines high-frequency temperature variation with long-run climate differences to analyze two questions. First, how important is adaptation in the cross-section? For example, does extreme heat increase mortality more in areas that less often experience extreme heat? Second, do cross-sectional adaptation rates converge? For example, does the vulnerability of cold locations to extreme heat converge toward the vulnerability of hot locations to extreme heat?

Barreca et al. 2015. Convergence in Adaptation to Climate Change: Evidence from High Temperatures and Mortality, 1900–2004. *American Economic Review*.

ORGANIZATION

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ORGANIZATION

- A research-question paragraph:
  - Research questions unnecessarily in a question-form
  - Questions in a sequence (general → specific)
  - Questions answered, right below, or **not**?

CONSIDERATIONS IN ACADEMIC WRITING

Audience

Purpose

Organization

Style

Flow

Presentation

STYLE

- The vocabulary shift—verbs

Given our fast-paced society, people must routinely put creative solutions to unexpected problems into practice.

STYLE

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Given our fast-paced society, people must routinely put creative solutions to unexpected problems into practice.

Given our fast-paced society, people must routinely **implement** creative solutions to unexpected problems.

STYLE

- The vocabulary shift—verbs

Given our fast-paced society, people must routinely put creative solutions to unexpected problems into practice.

Given our fast-paced society, people must routinely **implement** creative solutions to unexpected problems.

e.g.

We should not put up with widespread copyright violations.

Scientists would look into innovative drug delivery systems.

The new voting system could get rid of many year-old problems.

STYLE

- The vocabulary shift—verbs

Given our fast-paced society, people must routinely put creative solutions to unexpected problems into practice.

Given our fast-paced society, people must routinely **implement** creative solutions to unexpected problems.

e.g.   p. 18

We should not tolerate widespread copyright violations.

Scientists would investigate innovative drug delivery systems.

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STYLE

- The vocabulary shift—nouns
  - ✓ **nominalization (p. 20)**

STYLE

- The vocabulary shift—nouns

✓ **nominalization**

The emergence of English as the international language of scientific communication has been widely documented.

vs.

English has emerged as the international language of scientific communication. This phenomenon has been widely documented.

STYLE

- The vocabulary shift—nouns

✓ **nominalization**

The emergence of English as the international language of scientific communication has been widely documented.

vs.

English has emerged as the international language of scientific communication. This phenomenon has been widely documented.

STYLE

- The vocabulary shift—nouns
- ✓ **nominalization**

"First, making use of phrases helps us communicate. It produces writing that is consistent with the fundamental nature of the English language. The brains of English speakers are conditioned to expect phrases; when a writer provides them, he makes it easier for readers to process his sentences."

(Baig, 2015)

STYLE

- The vocabulary shift—nouns
- ✓ **nominalization**

"First, making use of phrases helps us communicate. It produces writing that is consistent with the fundamental nature of the English language. The brains of English speakers are conditioned to expect phrases; when a writer provides them, he makes it easier for readers to process his sentences."

(Baig, 2015)

STYLE

- Nominalization

"Motivation to perform the task remained high over the ten-day post-injury testing period, as evidenced by no alterations in latency to consume the sugar pellet reward, engaging in significant numbers of total trials (>100), despite a small but significant injury-induced elevation in latency to poke (approx. 0.5–1 s per trial)."

Kutash et al. 2023. Sustained attention performance deficits in the three-choice serial reaction time task in male and female rats after experimental brain trauma. *Brain Research*.

STYLE

- Nominalization

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STYLE

- Verbs to replace Nouns

Improvement of the system is achieved by variation of the control frequencies.

STYLE

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Improvement of the system is achieved by variation of the control frequencies.

Varying the control frequencies improves the system.

STYLE

- Verbs to replace Nouns

Improvement of the system is achieved by variation of the control frequencies.

Varying the control frequencies improves the system.

- Drop the empty verb (achieved, made, done, performed, ...)

- Discussion of the challenges and strategies for facilitation and promotion of ERP was performed by Smith (2007).

STYLE

- Verbs to replace Nouns

Improvement of the system is achieved by variation of the control frequencies.

Varying the control frequencies improves the system.

- Drop the empty verb (achieved, made, done, performed, ...)

- Discussion of the challenges and strategies for facilitation and promotion of ERP was performed by Smith (2007).

- Smith (2007) discussed the challenges and strategies for facilitating and promoting ERP.

STYLE

- Confusion caused by Negative Form

STYLE

- Confusion caused by Negative Form

The experiments do not consider the subtle differences across regions and collect data over a limited period of time.

STYLE

- Confusion caused by Negative Form

The experiments do not consider the subtle differences across regions and collect data over a limited period of time.

The experiments ignore / neglect the subtle differences across regions and collect data over a limited period of time.

STYLE

- Confusion caused by Negative Form

The experiments do not consider the subtle differences across regions and collect data over a limited period of time.

The experiments ignore / neglect the subtle differences across regions and collect data over a limited period of time.

- Exercise:

The model does not meet technical requirements and propose a macro-scaled scenario.

STYLE

- Confusion caused by Negative Form

The experiments do not consider the subtle differences across regions and collect data over a limited period of time.

The experiments ignore / neglect the subtle differences across regions and collect data over a limited period of time.

- Exercise:

The model does not meet technical requirements and propose a macro-scaled scenario.

➢ The model neither meets technical requirements nor proposes a macro-scaled scenario.

STYLE

- The style of being academic: formality

Informal elements:

➢ sentence-initial

➢ general terms

➢ imperatives

   ~~2nd POV, "You"~~

➢ contractions

STYLE

- The style of being academic: formality

Informal elements:

➤ sentence-initial (e.g. but, and, so ...)

➤ general terms (e.g. more and more, very, really ...)

➤ imperatives (e.g. "Pay attention to the side-effect of this policy.")
  ~~2nd POV, "You"~~

➤ contractions (e.g. don't, won't, he's ...)

STYLE

- The style of being academic: formality

Informal elements:

➢ sentence-initial (e.g. but, and, so ...)

➢ general terms (e.g. more and more, very, really ...)

➢ imperatives (e.g. "Pay attention to the side-effect of this policy.")

~~2nd POV, "You"~~   cf. "Consider the case of ... "

"Note that the assumption may ..."

➢ contractions (e.g. don't, won't, he's ...)

STYLE

- The style of being academic: formality

縮寫：

➢ contraction

➢ abbreviation

➢ initialism

➢ acronym

STYLE

- The style of being academic: formality

縮寫：

➢ contraction (e.g. don't, won't, he's …)

➢ abbreviation (e.g. lab, exam, St, Rd ...)

➢ initialism (e.g. NTU, USA, …)

➢ acronym (e.g. NASA, RADAR …)

CONSIDERATIONS IN ACADEMIC WRITING

Audience

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Presentation

PRESENTATION

- **Format**
  - ➢ APA, MLA, IEEE, Chicago Style, ASCE, AER, …

- **Positioning**
  - ➢ apprentice
  - ➢ facilitator
  - ➢ master

PRESENTATION

- Format
  - ➤ APA, MLA, IEEE, Chicago Style, ASCE, AER, …

- Visualization (Min Chen, 2013)
  - ➤ invention
  - ➤ analytics
  - ➤ dissemination
  - ➤ observation

Task I next week (4/14)

- The test will begin at 9:15 next Friday.

- No make-up exam.

- Please review Chapter I, especially pages 22-26.

Q & A