Academic Writing: Perfecting your draft

Campinas, September 4, 2018

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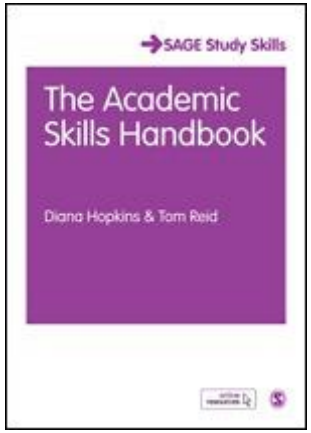
Co-author of



Being a successful scientist/researcher involves being an effective communicator.

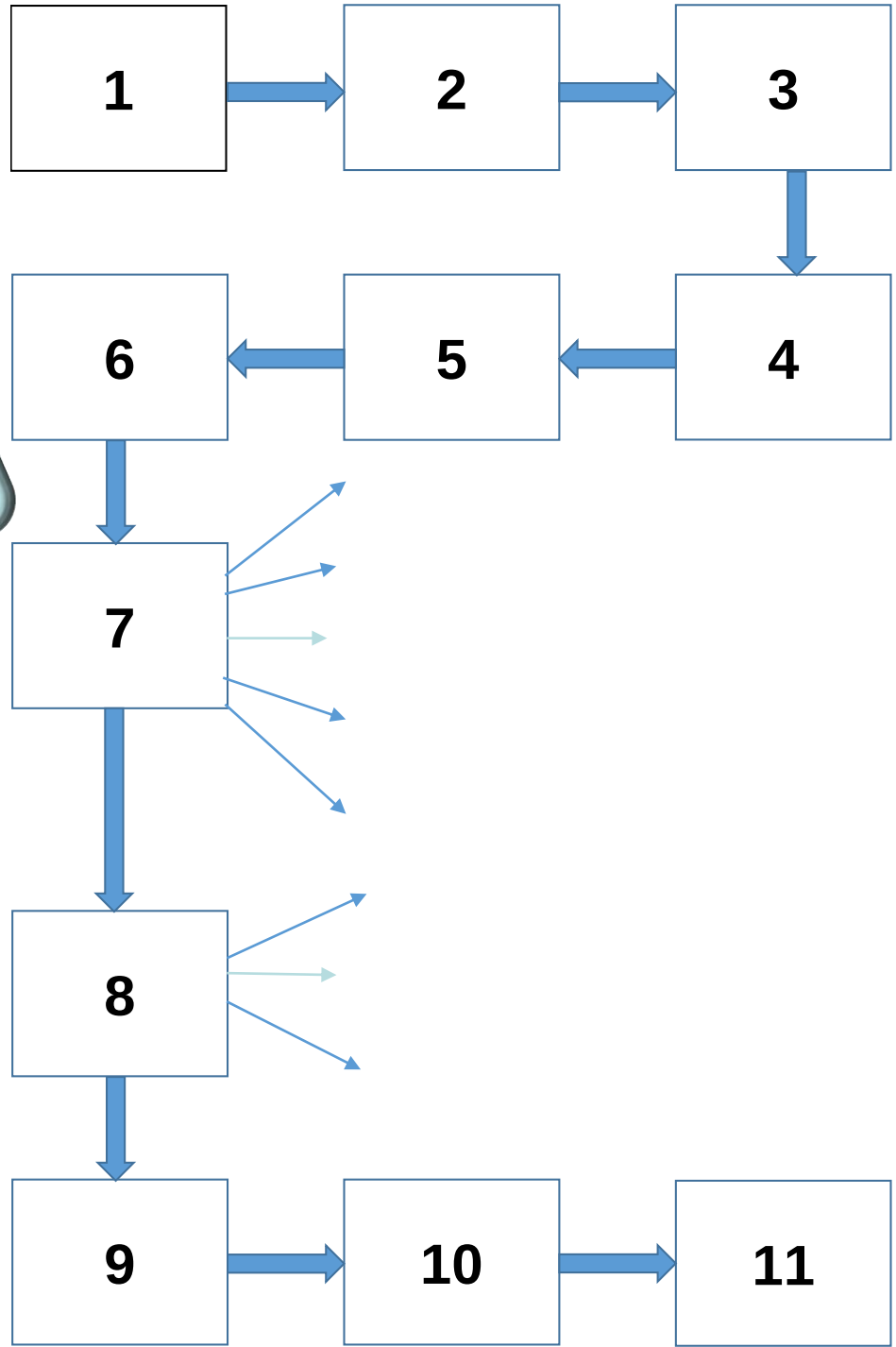
Aims of this workshop:

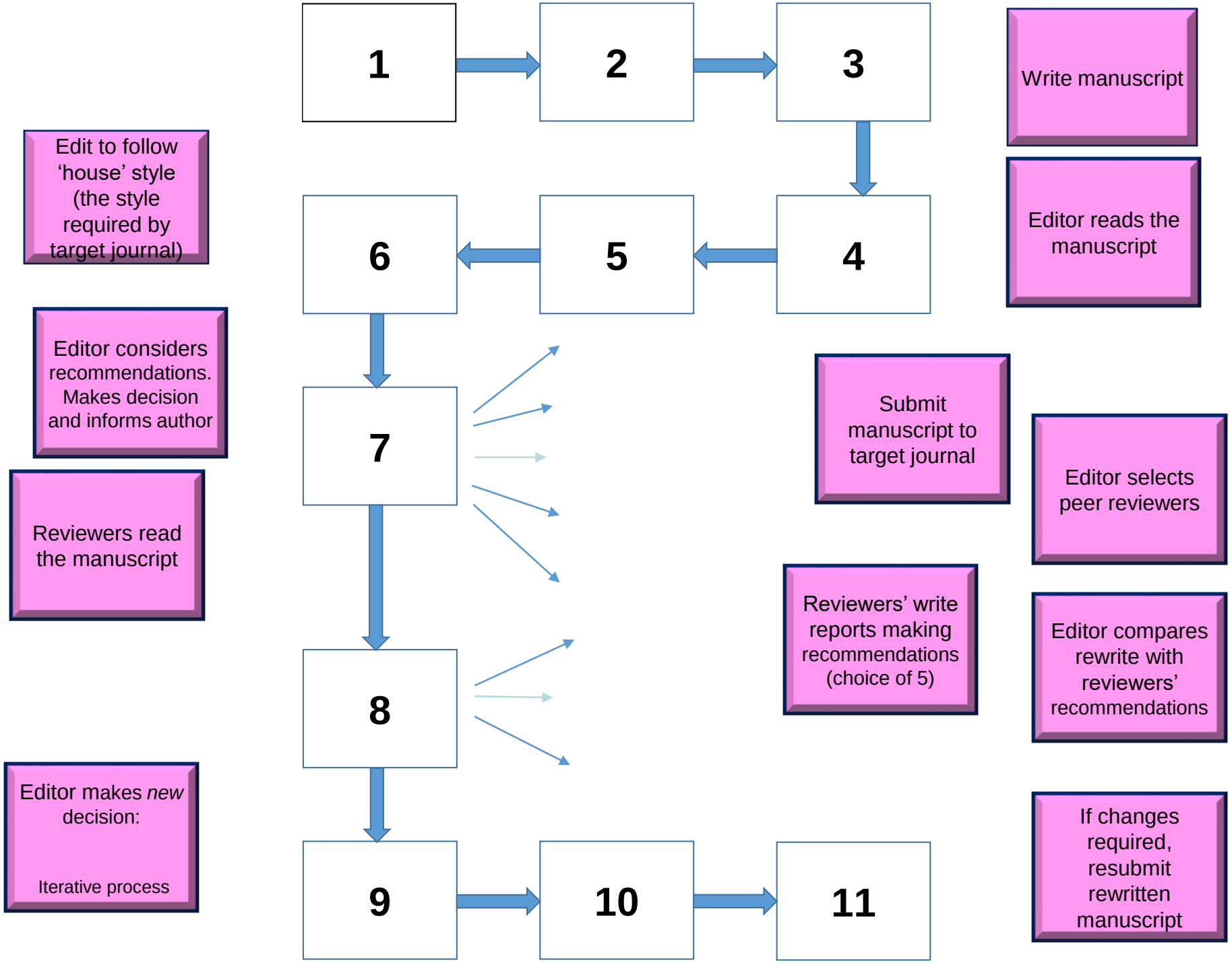
- To increase awareness of the process of writing for publication
- To recognise what we mean by ‘academic writing’ in English
- To consider clarity and accuracy in writing
- To identify areas of focus when editing and proof-reading drafts

But first:
What is the process of getting a scientific paper published?

Group task…

Process of getting a scientific paper published




1
2
3
Write manuscript
Edit to follow 'house' style (the style required by target journal)
Editor reads the manuscript
6
5
4
Editor considers recommendations. Makes decision and informs author
7
Submit manuscript to target journal
Editor selects peer reviewers
Reviewers read the manuscript
Reviewers' write reports making recommendations (choice of 5)
Editor compares rewrite with reviewers' recommendations
8
Editor makes *new* decision:
Iterative process
9
10
11
If changes required, resubmit rewritten manuscript

Process of getting a scientific paper published

Write manuscript

Edit to follow 'house' style (the style required by target journal)

Edit to follow 'house' style (the style required by target journal)

Submit manuscript to target journal

Submit manuscript to target journal

Editor reads the manuscript

Editor reads the manuscript

Editor selects peer reviewers

Editor selects peer reviewers

Reviewers read the manuscript

Reviewers read the manuscript

Reviewers' write reports making recommendations (choice of 5)

Reviewers' write reports making recommendations (choice of 5)

Accept with no cha

Return for minor

Return for major

Reject

Transfer to a different journal

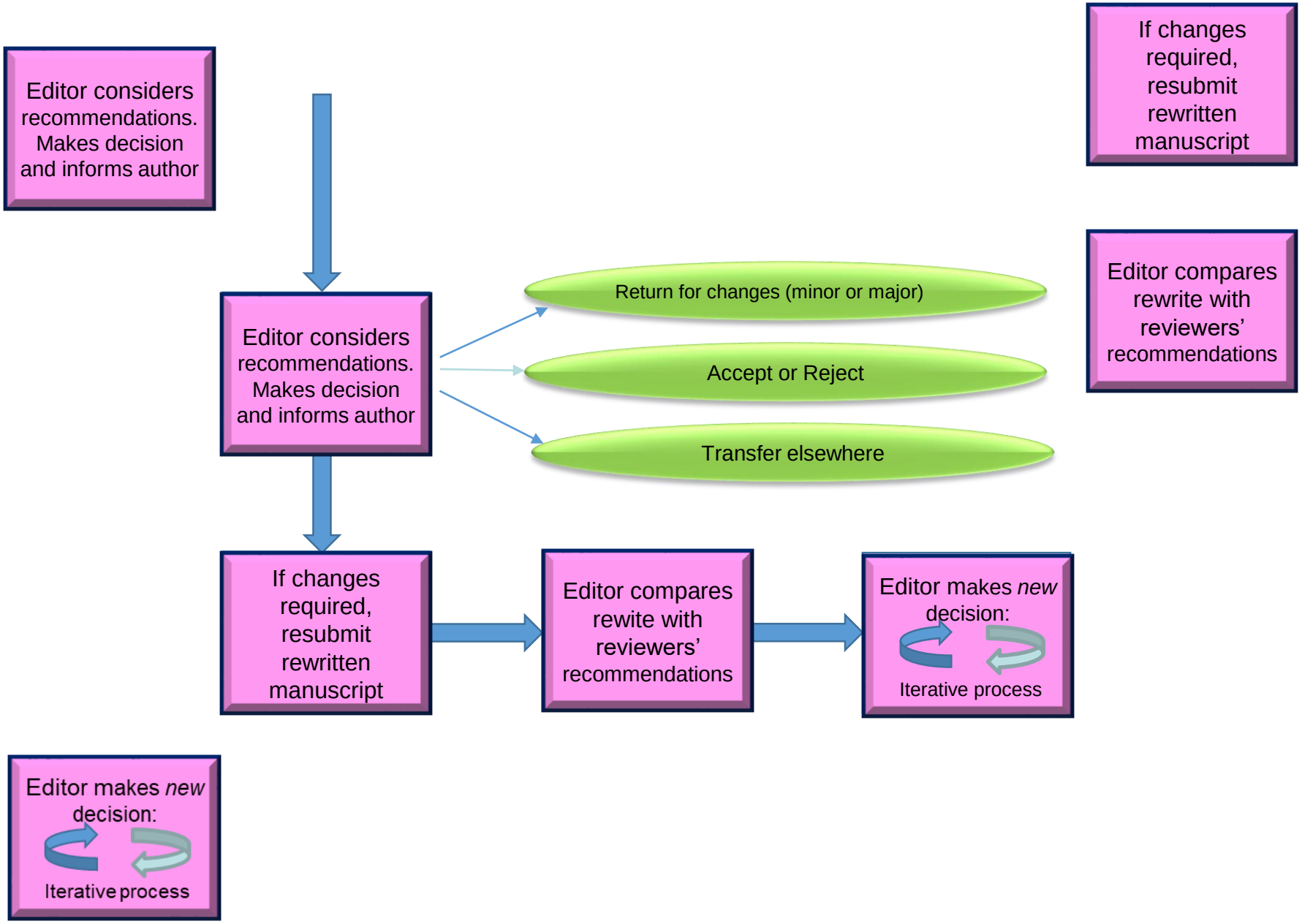
Editor considers recommendations. Makes decision and informs author

Editor compares rewrite with reviewers' recommendations

Editor makes *new* decision:

Iterative process

If changes required, resubmit rewritten manuscript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If changes required, resubmit rewritten manuscript
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Return for changes (minor or major)
Accept or Reject
Transfer elsewhere
Editor compares rewrite with reviewers' recommendations
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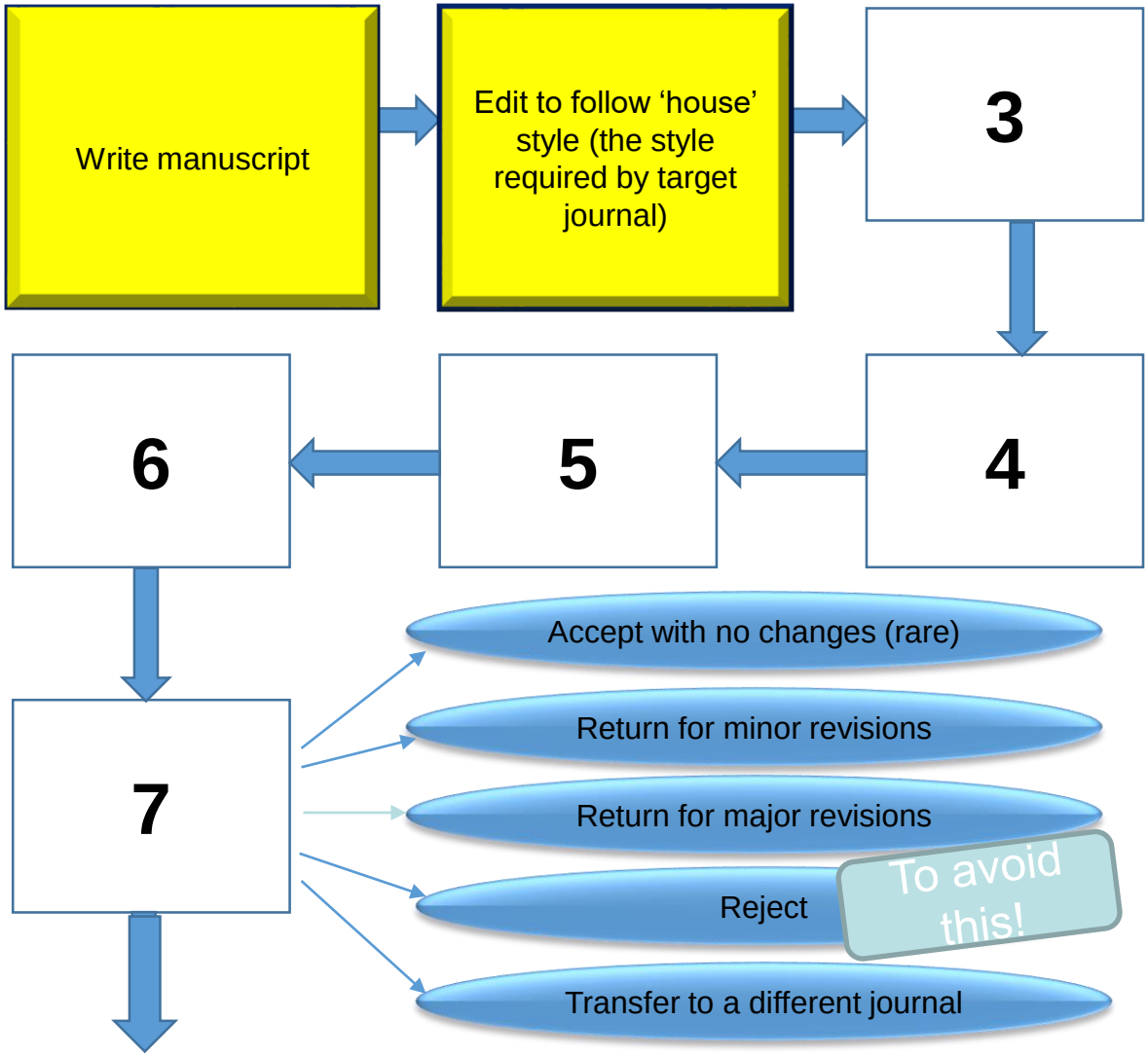
Our focus is on:

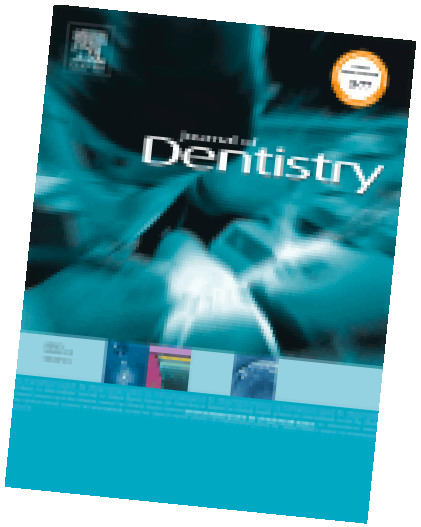


What are the challenges for you when you write (in English)?

Your writing needs to:

- Be easy to follow
- Be accurately expressed (grammar, spelling and vocabulary)
- Follow the appropriate conventions of style and genre
- Include a critical approach to your own research and that of others

What is good academic writing?



Good academic writing involves

- Engaging appropriately with the ***content***
- Using ***language*** skilfully
- Using the appropriate ***style***
- ***Organising the text*** to ensure clarity (whole paper level and paragraph level)

Good academic writing

Content

- Sophisticated
- Critical analysis demonstrated in the points made
- Line of reasoning
- Integration of sources
- Stance and voice

Language Use and Style

- A variety of sentence structures
- Accurate grammar and punctuation
- Noun phrases
- Accurate word choice and form
- Appropriate academic style

Text organisation and presentation

- Clear structure, thesis, purpose and map
- Logical transition between paragraphs, natural coherence and readability
- General to specific flow within paragraphs, given/new pattern of information
- Effective use of a variety of cohesive devices
- Citation and references fully in line with academic conventions

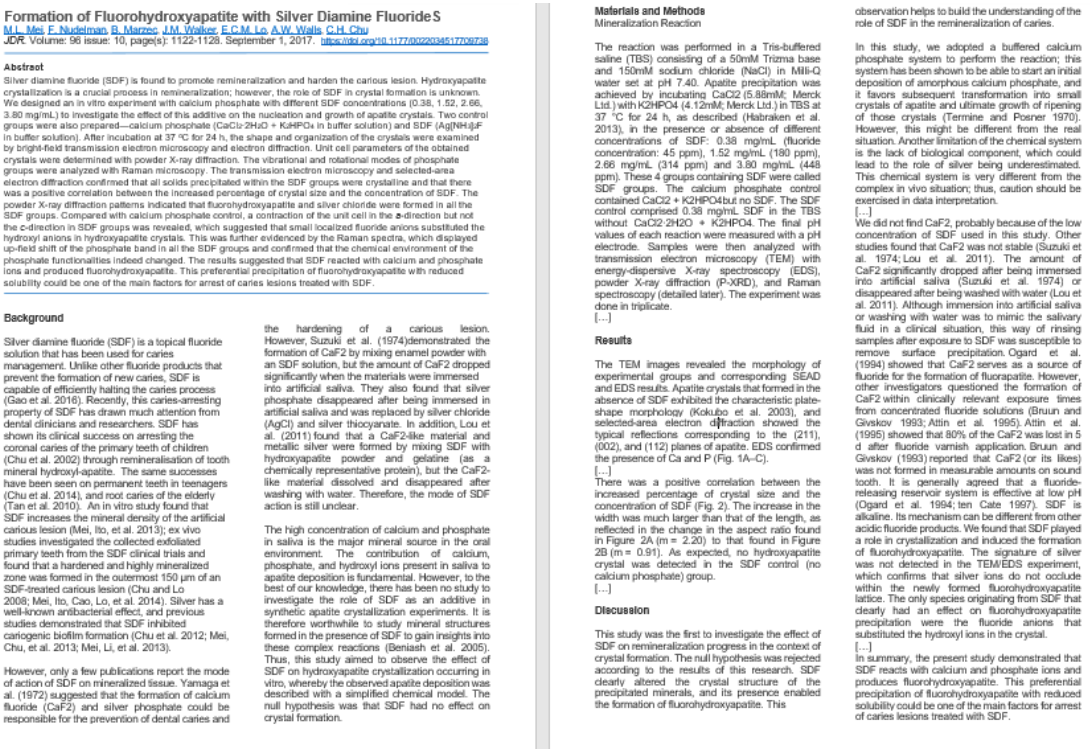
How to become a better writer involves

- finding high quality articles in your field
- looking at them for features of organisation, style and language.

In other words …

Becoming a discourse analyst…

If you know how to analyse a text, you can learn by analogy.



Formation of Fluorohydroxyapatite with Silver Diamine FluorideS

M L. Mei, F. Nudelman, B. Marzec, J.M. Walker, E.C.M. Lo, A.W. Walls, C.H. Chu

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Abstract

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2{\cdot}2H_2O$ + K_2HPO_4 in buffer solution) and SDF ($Ag(NH_3)_2F$ in buffer solution). After incubation at 37 °C for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

Background

Silver diamine fluoride (SDF) is a topical fluoride solution that has been used for caries management. Unlike other fluoride products that prevent the formation of new caries, SDF is capable of efficiently halting the caries process (Gao et al. 2016). Recently, this caries-arresting property of SDF has drawn much attention from dental clinicians and researchers. SDF has shown its clinical success on arresting the coronal caries of the primary teeth of children (Chu et al. 2002) through remineralisation of tooth mineral hydroxyl-apatite. The same successes have been seen on permanent teeth in teenagers (Chu et al. 2014), and root caries of the elderly (Tan et al. 2010). An in vitro study found that SDF increases the mineral density of the artificial carious lesion (Mei, Ito, et al. 2013); ex vivo studies investigated the collected exfoliated primary teeth from the SDF clinical trials and found that a hardened and highly mineralized zone was formed in the outermost 150 µm of an SDF-treated carious lesion (Chu and Lo 2008; Mei, Ito, Cao, Lo, et al. 2014). Silver has a well-known antibacterial effect, and previous studies demonstrated that SDF inhibited cariogenic biofilm formation (Chu et al. 2012; Mei, Chu, et al. 2013; Mei, Li, et al. 2013).

However, only a few publications report the mode of action of SDF on mineralized tissue. Yamaga et al. (1972) suggested that the formation of calcium fluoride (CaF_2) and silver phosphate could be responsible for the prevention of dental caries and the hardening of a carious lesion. However, Suzuki et al. (1974)demonstrated the formation of CaF_2 by mixing enamel powder with an SDF solution, but the amount of CaF_2 dropped significantly when the materials were immersed into artificial saliva. They also found that silver phosphate disappeared after being immersed in artificial saliva and was replaced by silver chloride (AgCl) and silver thiocyanate. In addition, Lou et al. (2011) found that a CaF_2-like material and metallic silver were formed by mixing SDF with hydroxyapatite powder and gelatine (as a chemically representative protein), but the CaF_2-like material dissolved and disappeared after washing with water. Therefore, the mode of SDF action is still unclear.

The high concentration of calcium and phosphate in saliva is the major mineral source in the oral environment. The contribution of calcium, phosphate, and hydroxyl ions present in saliva to apatite deposition is fundamental. However, to the best of our knowledge, there has been no study to investigate the role of SDF as an additive in synthetic apatite crystallization experiments. It is therefore worthwhile to study mineral structures formed in the presence of SDF to gain insights into these complex reactions (Beniash et al. 2005). Thus, this study aimed to observe the effect of SDF on hydroxyapatite crystallization occurring in vitro, whereby the observed apatite deposition was described with a simplified chemical model. The null hypothesis was that SDF had no effect on crystal formation.

Materials and Methods

Mineralization Reaction

The reaction was performed in a Tris-buffered saline (TBS) consisting of a 50mM Trizma base and 150mM sodium chloride (NaCl) in Milli-Q water set at pH 7.40. Apatite precipitation was achieved by incubating $CaCl_2$ (5.88mM; Merck Ltd.) with K_2HPO_4 (4.12mM; Merck Ltd.) in TBS at 37 °C for 24 h, as described (Habraken et al. 2013), in the presence or absence of different concentrations of SDF: 0.38 mg/mL (fluoride concentration: 45 ppm), 1.52 mg/mL (180 ppm), 2.66 mg/mL (314 ppm) and 3.80 mg/mL (448 ppm). These 4 groups containing SDF were called SDF groups. The calcium phosphate control contained $CaCl_2$ + K_2HPO_4but no SDF. The SDF control comprised 0.38 mg/mL SDF in the TBS without $CaCl_2{\cdot}2H_2O$ + K_2HPO_4. The final pH values of each reaction were measured with a pH electrode. Samples were then analyzed with transmission electron microscopy (TEM) with energy-dispersive X-ray spectroscopy (EDS), powder X-ray diffraction (P-XRD), and Raman spectroscopy (detailed later). The experiment was done in triplicate.

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Results

The TEM images revealed the morphology of experimental groups and corresponding SEAD and EDS results. Apatite crystals that formed in the absence of SDF exhibited the characteristic plate-shape morphology (Kokubo et al. 2003), and selected-area electron diffraction showed the typical reflections corresponding to the (211), (002), and (112) planes of apatite. EDS confirmed the presence of Ca and P (Fig. 1A–C).

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There was a positive correlation between the increased percentage of crystal size and the concentration of SDF (Fig. 2). The increase in the width was much larger than that of the length, as reflected in the change in the aspect ratio found in Figure 2A (m = 2.20) to that found in Figure 2B (m = 0.91). As expected, no hydroxyapatite crystal was detected in the SDF control (no calcium phosphate) group.

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Discussion

This study was the first to investigate the effect of SDF on remineralization progress in the context of crystal formation. The null hypothesis was rejected according to the results of this research. SDF clearly altered the crystal structure of the precipitated minerals, and its presence enabled the formation of fluorohydroxyapatite. This observation helps to build the understanding of the role of SDF in the remineralization of caries.

In this study, we adopted a buffered calcium phosphate system to perform the reaction; this system has been shown to be able to start an initial deposition of amorphous calcium phosphate, and it favors subsequent transformation into small crystals of apatite and ultimate growth of ripening of those crystals (Termine and Posner 1970). However, this might be different from the real situation. Another limitation of the chemical system is the lack of biological component, which could lead to the role of silver being underestimated. This chemical system is very different from the complex in vivo situation; thus, caution should be exercised in data interpretation.

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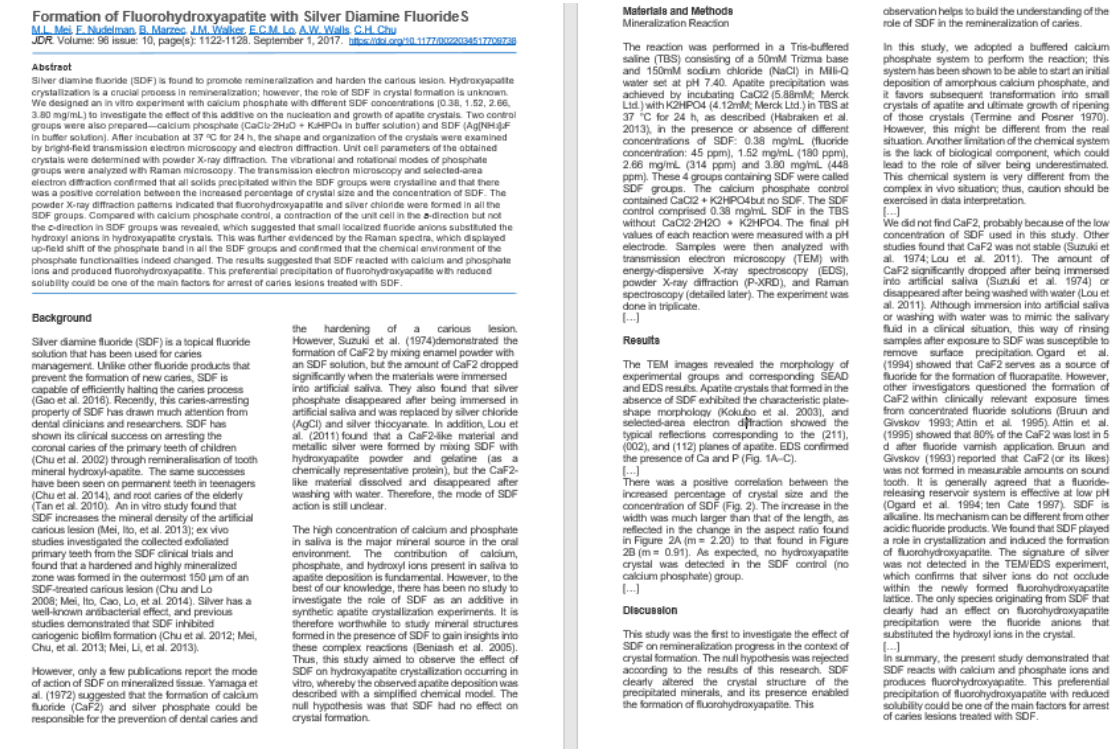
In summary, the present study demonstrated that SDF reacts with calcium and phosphate ions and produces fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

We will use this extract from a published paper to identify key features of ***good academic writing:***



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Example…

Abstract from a paper published in Journal of Dental Research (JDR) (2018)

Tristetraprolin Is Required for Alveolar Bone Homeostasis

Steinkamp et al, 2018*. JDR.* Volume: 97 issue: 8, page(s): 946-953

Tristetraprolin (TTP) is an RNA-binding protein that targets numerous immunomodulatory mRNA transcripts for degradation. Many TTP targets are key players in the pathogenesis of periodontal bone loss, including tumor necrosis factor–α. To better understand the extent that host immune factors play during periodontal bone loss, we assessed alveolar bone levels, inflammation and osteoclast activity in periodontal tissues, and immune response in draining cervical lymph nodes in TTP-deficient and wild-type (WT) mice in an aging study. WT and TTP-deficient (knockout [KO]) mice were used for all studies under specific pathogen-free conditions. Data were collected on mice aged 3, 6, and 9 mo. Microcomputed tomography (μCT) was performed on maxillae where 3-dimensional images were generated and bone loss was assessed. Decalcified sections of specimens were scored for inflammation and stained with tartrate-resistant acid phosphate (TRAP) to visualize osteoclasts. Immunophenotyping was performed on single-cell suspensions isolated from primary and peripheral lymphoid tissues using flow cytometry. Results presented indicate that TTP KO mice had significantly more alveolar bone loss over time compared with WT controls. Bone loss was associated with significant increases in inflammatory cell infiltration and an increased percentage of alveolar bone surfaces apposed with TRAP+ cells. Furthermore, it was found that the draining cervical lymph nodes were significantly enlarged in TTP-deficient animals and contained a distinct pathological immune profile compared with WT controls. Finally, the oral microbiome in the TTP KO mice was significantly different with age from WT cohoused mice. The severe bone loss, inflammation, and increased osteoclast activity observed in these mice support the concept that TTP plays a critical role in the maintenance of alveolar bone homeostasis in the presence of oral commensal flora. This study suggests that TTP is required to inhibit excessive inflammatory host responses that contribute to periodontal bone loss, even in the absence of specific periodontal pathogens

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Identifies research area and the problem.

Purpose of the study

Details of how the study was carried out

Results

Conclusions and significance

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KO mice was significantly different with age from WT cohoused mice. The severe bone loss, inflammation, and increased osteoclast activity observed in these mice support the concept that TTP plays a critical role in the maintenance of alveolar bone homeostasis in the presence of oral commensal flora. This study suggests that TTP is required to inhibit excessive inflammatory host responses that contribute to periodontal bone loss, even in the absence of specific periodontal pathogens.

Abstract for a research paper often follows these moves

Identifies research area and the problem.

Purpose of the study

Details of how the study was carried out

Results

Conclusions and significance

Task

Use the Abstract on your sheet to identify sections with the following functions:

- Identifies research area and the problem.
- Purpose of the study
- Details of how the study was carried out
- Results
- Conclusions and significance

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2 \cdot 2H_2O + K_2HPO_4$ in buffer solution) and SDF ($Ag[NH_3]_2F$ in buffer solution). After incubation at 37 ºC for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

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Identifies research area and the problem.

Purpose of the study

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Results

Conclusions and significance

But be careful…

- Different journals have different styles
- Abstract organisational principles can vary

For example:

Trend-analysis of dental hard-tissue conditions as function of tooth age

Algarni AA, Ungar PS, Lippert F, Martínez-Mier EA, Eckert GJ, González-Cabezas C, Hara AT
J Dent. 2018 Jul;74:107-112. doi: 10.1016/j.jdent.2018.05.011. Epub 2018 May 22.

Organised into discrete sections under clear sub-headings

Abstract

Objective

This retrospective in-vitro study investigated tooth age effect on dental hard-tissue conditions.

Methods

Unidentified extracted premolars (n = 1500) were collected and their individual age was estimated (10–100 (±10) years old (yo)) using established dental forensic methods Dental caries, fluorosis and tooth-wear (TW) were assessed using the International Caries Detection and Assessment System (ICDAS; 0–5 for crown and 0–2 for root), Thylstrup-Fejerskov (TFI; 0–9) and Basic Erosive Wear Examination (BEWE; 0–3) indices, respectively. Staining and color were assessed using the modified-Lobene (MLI) (0–3) and VITA shade (B1-C4) indices, respectively. Relationships between indices and age were tested using regression models.

Results

Starting at age ~10yo, presence of caries increased from 35% to 90% at ~50yo (coronal), and from 0% to 35% at ~80yo (root). Caries severity increased from ICDAS 0.5 to 2 at ~40yo and from ICDAS 0 to 0.5 at ~60yo for coronal and root caries, respectively. Presence of TW increased from 25% (occlusal) and 15% (smooth-surfaces) to 100% at ~80yo. TW severity increased from BEWE 0.5 to 2 at ~50yo (occlusal) and ~0.3 to 1.5 at ~50yo (smooth-surfaces). Percentage and severity of fluorosis decreased from 70% to 10% at ~80yo, and from TFI 1 to 0 at ~90yo, respectively. Percentage of extrinsic staining increased from 0% to 85% at ~80yo and its severity increased from MLI 0 to 2 at ~70yo. Color changed from A3 to B3 at ~50yo (crown), and from C2 to A4 at ~85yo (root).

Conclusions

Aging is proportionally related to the severity of caries, TW, staining, and inversely to dental fluorosis. Teeth become darker with age.

Trend-analysis of dental hard-tissue conditions as function of tooth age

Algarni AA, Ungar PS, Lippert F, Martínez-Mier EA, Eckert GJ, González-Cabezas C, Hara AT

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Conclusions

Aging is proportionally related to the severity of caries, TW, staining, and inversely to dental fluorosis. Teeth become darker with age.

What are key linguistic characteristics of academic writing?

Task

Key linguistic characteristics of academic writing?

Compare:

Taking care of your oral hygiene is one of the most important things you can do for your teeth and gums. Looking after your teeth not only makes you look and feel good, it also makes it possible to eat and speak properly. Healthy teeth, therefore, play a significant role in your overall well-being.

From: https://www.colgate.com/en-us/oral-health/life-stages/adult-oral-care/what-is-good-oral-hygiene

with

Maintaining good oral health status is important as oral health can impact on general health in several ways. Poor oral health can cause considerable pain and suffering, can influence food choices, and affect speech, all of which impact on quality of life and well-being. Improvements in oral health are therefore a high priority in health-care.

Adapted from: http://www.who.int/bulletin/volumes/83/9/editorial30905html/en/

Lexical Words and Function Words

A useful measure of the difference between texts is **lexical density**.

Lexical Words and Function Words

To understand lexical density we need to identify different types of words:

1. **lexical words:** *content / information-carrying words*

2. **function words:** *binding and grammatical words*

Lexical Words and Function Words

Lexical words include:

nouns (e.g. *dog, Susan, oil*)

lexical verbs (e.g. *run, walk, sit*)

adjectives (e.g. *red, happy, cold*)

adverbs (e.g. *very, carefully, yesterday*)

Function words, therefore include the remaining:

determiners (e.g. *the, those, my*)

pronouns (e.g. *she, yourself, who*)

prepositions (e.g. *in, to, after*)

conjunctions (e.g. *and, but, if*)

numerals (e.g. *two, three, first*)

auxiliary verbs (e.g. *can, will, have*)

$$\text{Lexical density} = \frac{\text{number of lexical words}}{\text{total number of words}} \times 100$$

Task

Example 1

Task: *Identify the lexical words in the following:*

Taking care of your oral hygiene is one of the most important things you can do for your teeth and gums. Looking after your teeth not only makes you look and feel good, it also makes it possible to eat and speak properly. Healthy teeth, therefore, play a significant role in your overall well-being.

nouns (e.g. dog, Susan, oil)
lexical verbs (e.g. run, walk, sit)
adjectives (e.g. *red, happy, cold*)
adverbs (e.g. *very, carefully, yesterday*)

Taking care of your oral hygiene is one of the most important things you can do for your teeth and gums. Looking after your teeth not only makes you look and feel good, it also makes it possible to eat and speak properly. Healthy teeth , therefore, play a significant role in your overall well-being.

What is the lexical density?

Lexical density

Taking care of your oral hygiene is one of the most important things you can do for your teeth and gums. Looking after your teeth not only makes you look and feel good, it also makes it possible to eat and speak properly. Healthy teeth , therefore, play a significant role in your overall well-being.

Lexical density = 29/54 x 100 = **54%**

Task

And now for this one:

Maintaining good oral health status is important as oral health can impact on general health in several ways. Poor oral health can cause considerable pain and suffering, can influence food choices, and affect speech, all of which impact on quality of life and well-being. Improvements in oral health are therefore a high priority in health-care.

UNIVERSITY OF BATH

Task

Maintaining good oral health status is important as oral health can impact on general health in several ways. Poor oral health can cause considerable pain and suffering, can influence food choices, and affect speech, all of which impact on quality of life and well-being. Improvements in oral health are therefore a high priority in health-care.

What is the lexical density?

Lexical density

Maintaining good oral health status is important as oral health can impact on general health in several ways. Poor oral health can cause considerable pain and suffering, can influence food choices, and affect speech, all of which impact on quality of life and well-being. Improvements in oral health are therefore a high priority in health-care.

Lexical density = 35/55 = 64%

So we have…

Taking care of your oral hygiene is one of the most important things you can do for your teeth and gums. Looking after your teeth not only makes you look and feel good, it also makes it possible to eat and speak properly. Healthy teeth, therefore, play a significant role in your overall well-being.

Lexical density = 29/54 x 100 = 54%

Maintaining good oral health status is important as oral health can impact on general health in several ways. Poor oral health can cause considerable pain and suffering, can influence food choices, and affect speech, all of which impact on quality of life and well-being. Improvements in oral health are therefore a high priority in health-care.

Lexical density = 35/55 = 64%

What does Lexical density show?

- high lexical density indicates a large amount of information-carrying words

- lexically-dense writing tends to be concise

Key point:

Academic writing (in English) has **high** lexical density

Another example

Water fluoridation is when we add fluoride to a public water supply in a controlled way so that we can reduce tooth decay.

vs

Water fluoridation is the controlled addition of fluoride to a public water supply to reduce tooth decay.

From: https://en.wikipedia.org/wiki/Water_fluoridation

Another example

Water fluoridation is when we add fluoride to a public water supply in a controlled way so that we can reduce tooth decay.

Lexical density
12/23 x 100 = 52%

vs

Water fluoridation is the controlled addition of fluoride to a public water supply to reduce tooth decay.

From: https://en.wikipedia.org/wiki/Water_fluoridation

More concise

Lexical density
11/17 x 100 = 65%

To write concise, appropriate, lexically dense texts:

- you need to make your texts ‘nouny’

The noun phrase

We can do several things to add information to nouns in English.

- Count – ***twenty*** *dentists*
- Describe – *twenty* ***qualified*** *dentists*
- Classify – *twenty qualified* ***paediatric*** *dentists*
- Describe further – *twenty qualified paediatric dentists* ***with many years' experience***

We cannot do this to the same extent with verbs.

Look again:

Water fluoridation is the controlled addition of fluoride to a public water supply to reduce tooth decay.

From: https://en.wikipedia.org/wiki/Water_fluoridation

Noun phrase 1

Noun phrase 2

Water fluoridation is the controlled addition of fluoride to a public water supply to reduce tooth decay

One verb

Noun phrase facts

Information that comes ***before*** the noun in a noun phrase is usually expressed through:

- determiners: ***this*** *study*
- adjectives: *a* ***longitudinal*** *study*

Information that comes ***after*** nouns is usually expressed through:

- prepositional phrases: *the role* ***of this protein***
- past participle clauses: *the results* ***presented in this paper***
- present participle (*-ing*) clauses: *the treatments* ***being used today***
- *to*-infinitive clauses: *a study* ***to explore causes of caries***
- *relative clauses:* *the treatments* ***which are being used today***

Where are the ***prepositional phrases with 'of'*** - how many are there? (first paragraph of Background section):

1

Silver diamine fluoride (SDF) is a topical fluoride solution that has been used for caries management. Unlike other fluoride products that prevent the formation of new caries, SDF is capable of efficiently halting the caries process (Gao et al. 2016). Recently, this caries-arresting property of SDF has drawn much attention from dental clinicians and researchers. SDF has shown its clinical success on arresting the coronal caries of the primary teeth of children through remineralisation of tooth mineral hydroxyl-apatite (Chu et al. 2002). The same successes have been seen in permanent teeth in teenagers (Chu et al. 2014), and root caries of the elderly (Tan et al. 2010). An in vitro study found that SDF increases the mineral density of the artificial carious lesion (Mei, Ito, et al. 2013); ex vivo studies investigated the collected exfoliated primary teeth from the SDF clinical trials and found that a hardened and highly mineralized zone was formed in the outermost 150 µm of an SDF-treated carious lesion (Chu and Lo 2008; Mei, Ito, Cao, Lo, et al. 2014). Silver has a well-known antibacterial effect, and previous studies demonstrated that SDF inhibited cariogenic biofilm formation (Chu et al. 2012; Mei, Chu, et al. 2013; Mei, Li, et al. 2013).

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Now find ***other prepositional phrases:***

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Now find ***prepositional phrase chains*** – what's the longest?

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Task

Those prepositional phrases were in the Background section.

Identify an example of different types of noun modification in the Abstract section (see list below).

Look for:

1 Prepositional phrase (First two or three sentences only)
2 Infinitive clause
3 Past participle clause
4. Relative clause

1 Prepositional phrases

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2 \cdot 2H_2O + K_2HPO_4$ in buffer solution) and SDF ($Ag[NH_3]_2F$ in buffer solution). After incubation at 37 °C for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

2 Infinitive clause

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2 \cdot 2H_2O + K_2HPO_4$ in buffer solution) and SDF ($Ag[NH_3]_2F$ in buffer solution). After incubation at 37 °C for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

3 Past participle clause

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2 \cdot 2H_2O + K_2HPO_4$ in buffer solution) and SDF ($Ag[NH_3]_2F$ in buffer solution). After incubation at 37 ^oC for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

4 Relative clause

Silver diamine fluoride (SDF) is found to promote remineralization and harden the carious lesion. Hydroxyapatite crystallization is a crucial process in remineralization; however, the role of SDF in crystal formation is unknown. We designed an in vitro experiment with calcium phosphate with different SDF concentrations (0.38, 1.52, 2.66, 3.80 mg/mL) to investigate the effect of this additive on the nucleation and growth of apatite crystals. Two control groups were also prepared—calcium phosphate ($CaCl_2 \cdot 2H_2O + K_2HPO_4$ in buffer solution) and SDF ($Ag[NH_3]_2F$ in buffer solution). After incubation at 37 °C for 24 h, the shape and organization of the crystals were examined by bright-field transmission electron microscopy and electron diffraction. Unit cell parameters of the obtained crystals were determined with powder X-ray diffraction. The vibrational and rotational modes of phosphate groups were analyzed with Raman microscopy. The transmission electron microscopy and selected-area electron diffraction confirmed that all solids precipitated within the SDF groups were crystalline and that there was a positive correlation between the increased percentage of crystal size and the concentration of SDF. The powder X-ray diffraction patterns indicated that fluorohydroxyapatite and silver chloride were formed in all the SDF groups. Compared with calcium phosphate control, a contraction of the unit cell in the *a*-direction but not the *c*-direction in SDF groups was revealed, which suggested that small localized fluoride anions substituted the hydroxyl anions in hydroxyapatite crystals. This was further evidenced by the Raman spectra, which displayed up-field shift of the phosphate band in all the SDF groups and confirmed that the chemical environment of the phosphate functionalities indeed changed. The results suggested that SDF reacted with calcium and phosphate ions and produced fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

More language to consider:

Tenses – which ones and why?

Tenses – which ones and why?

Introduction /Background Identifies research area and the problem.

Present simple and present perfect simple for facts

Silver diamine fluoride (SDF) **is** a topical fluoride solu[illegible] that **has been used** for caries management. Unlike ot[illegible] fluoride products that **prevent** the formation of new ca[illegible] SDF **is** capable of efficiently halting the caries process (Gao et al., 2016). Recently, this caries-arresting property of SDF **has drawn** much attention from dental clinicians and researchers. SDF **has shown** its clinical success on arresting the coronal caries of the primary teeth of children (Chu et al., 2002) through remineralisation of tooth mineral hydroxyl-apatite.

Tenses – which ones and why?

Materials and Method

Past simple (often passive) for steps that were taken

The reaction was performed in a Tris-buffered saline (TBS) consisting of a 50mM Trizma base and 150mM sodium chloride (NaCl) in M[illi]water set at pH 7.40. Apatite precipitation was achieved by incub CaCl2 (5.88mM; Merck Ltd.) with K2HPO4 (4.12mM; Merck Ltd.) TBS at 37 °C for 24 h, as described (Habraken et al. 2013), in the presence or absence of different concentrations of SDF: 0.38 mg/m (fluoride concentration: 45 ppm), 1.52 mg/mL (180 ppm), 2.66 mg/mL (314 ppm) and 3.80 mg/mL (448 ppm). These 4 groups containing SDF were called SDF groups. The calcium phosphate control contained CaCl2 + K2HPO4but no SDF. The SDF control comprised 0.38 mg/mL SDF in the TBS without CaCl2·2H2O + K2HPO4. The final pH values of each reaction were measured with a pH electrode. Samples were then analyzed with transmission electron microscopy (TEM) with energy-dispersive X-ray spectroscopy (EDS), powder X-ray diffraction (P-XRD), and Raman spectroscopy (detailed later). The experiment was done in triplicate.

Tenses – which ones and why?

Results

The TEM images **revealed** the morphology of experimental groups and corresponding SEAD and EDS results. Apatite crystals that **formed** in the absence of SDF **exhibited** the characteristic plate-shape morphology (Kokubo et al., 2003), and selected-area electron diffraction **showed** the typical reflections corresponding to the (211), (002), and (112) planes of apatite. EDS **confirmed** the presence of Ca and P (Fig. 1A-C).

Past simple (less likely to be passive)

Tenses – which ones and why?

Discussion

This study **was** the first to investigate the effect of SDF on remineralization progress in the context of crystal formation. The null hypothesis **was rejected** according to the results of this research. SDF clearly **altered** the crystal structure of the precipitated minerals, and its presence **enabled** the formation of fluorohydroxyapatite. This observation **helps** to build the understanding of the role of SDF in the remineralization of caries.

Past simple (less likely to be passive) to talk about findings. BUT also…

Tenses – which ones and why?

Discussion

In this study, we adopted a buffered calcium phosphate system to perform the reaction; this system **has been shown** to be able to start an initial deposition of amorphous calcium phosphate, and it **favors** subseq transformation into small crystals of apatite and ultima growth of ripening of those crystals (Termine and Posn 1970). However, this might be different from the real situation. Another limitation of the chemical system **is** th lack of biological component, in which the role of silver could be underestimated. This chemical system **is** very different from the complex in vivo situation; thus, caution should be exercised in data interpretation.

Also … **Present simple** and **present perfect simple** to talk about what the findings show/reveal. ALSO …

Tenses – which ones and why?

Discussion

In this study, we adopted a buffered calcium phosphate system to perform the reaction; this system has been shown to be able to start an initial deposition of amorphous calcium phosphate, and it favors subsequent transformation into small crystals of apatite and ultimate growth of ripening of those crystals (Termine and Posner, 1970). However, this **might be** different from the real situation. Another limitation of the chemical system is the lack of biological component, in which the role of silver **could be** underestimated. This chemical system is very different from the complex in vivo situation; thus, caution **should be** exercised in data interpretation.

Hedging – cautious language to talk about limitations and speculation

Consider the language used:

Look at the abstract on your handout.

Find examples of:

- The passive
- Personal pronoun ‘we’

Now look for ‘we’ in the Discussion section too.

Any comments?

Check with the target journal re use of personal pronouns.

Personal pronouns are generally used (when journals accept this style):

- to show ownership of the research
- to clarify where the responsibility for the research lies.

NB: Even if personal pronouns are used, it will also be necessary to use the passive.

Discourse analysis

We have analysed different sections of a paper to:

- Identify features of structure (moves)
- Understand how to write concisely using modification of nouns to create noun-phrases
- Identify the tense choices made in different sections

How to ensure *your* writing works

How to start:

Brainstorm Outline First Draft

Write down a statement of the purpose of the article/paper

Write down all the issues /areas you want to cover

Now look at your ideas and group them into themes. Arrange them into groups and an order

Adapted from: Schultz, D. 2010.

Brainstorm **Outline** First Draft

Write down section headings (using target journal article to guide you)

Add detail (using your brainstorm information)

Decide what figures you might want to use and arrange in order

Adapted from: Schultz, D. 2010.

Brainstorm Outline First Draft

Start writing (fast and dirty?)

Read your draft and ask questions, check against your outline, and revise

Edit for: logical organisation

Edit for: clear links

Edit for: accuracy

Edit for: no waffle

Allow yourself to discard unnecessary sections. Refer to your initial statement constantly. Edit.*

Adapted from: Schultz, D. 2010.

The writing cycle

Re-drafting

This is where your final edits happen.

Checklist:

- Does each section do what it is meant to do?
- Does each paragraph focus on a single theme? Does it have a topic sentence?
- Is the flow between paragraphs clear?
- Is the language accurate, concise and clear?
- Have you used sources to inform your work?
- Have you cited sources accurately?

What are coherence & cohesion?

Coherence ⟹ the way a text makes sense to the reader (organization of its content, relevance and clarity of its concepts and ideas).

A paragraph has coherence if it contains a series of sentences that develop *a single, main idea*.

Cohesion ⟹ the linking of ideas from one sentence to another (and one paragraph to another).

Is the following text coherent? And is it cohesive?

My favourite animal is the domestic cat. Cats were domesticated almost 10,000 years ago in ancient Mesopotamia. Mesopotamia is a name that literally means "the land between two rivers," taken from Greek. The Greek language is one of the oldest written languages, and its alphabet forms the basis of many other writing systems, including Latin. Latin ...

https://cgi.duke.edu/web/sciwriting/index.php?action=lesson2

The paragraph is ***cohesive***, but is not ***coherent***.

It sticks together with forward and backward references

It does not give a clear message about a *single* topic

Good writing ‘flows’ logically and guides the reader

How to organise information in your writing

We usually:

- begin our sentences with *known information* and
- end them with *new information*

Examples…

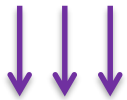
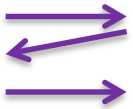
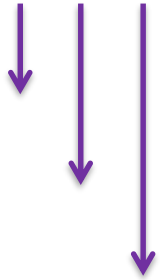
Flow of information in paragraphs summary:

‘Themes’ (or beginnings of sentences, *before* the verb):

- are (generally) already known (**not** new)
- maintain continuity of ideas
- remind the reader of important concepts already mentioned

Flow of information in paragraphs:

Thematic progression can follow different patterns:

- Reiteration 
- Zig-zag 
- Multiple themes (e.g. one theme leads to several new themes) 

How to organise ideas – Starting point and new information

Re-iteration ↓↓↓

✓ keeps a text focused on the topic

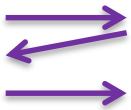
But

⇨ little variation in the starting point

⇨ uninteresting to read

⇨ suggests that the text is ‘going nowhere’

How to organise ideas – Starting point and new information

Zig-zag pattern 

- ✓ new information is taken up and becomes the following starting point
- ✓ ideas are moved forward
- ✓ sense of progression

Most well-written texts:

- a mix of reiteration, multiple, and zig zag thematic progression

Example …

Extract from second paragraph of paper on your handout

However, only a few publications report the mode of action of SDF on mineralized tissue. Yamaga et al. (1972) suggested that the formation of calcium fluoride (CaF2) and silver phosphate could be responsible for the prevention of dental caries and the hardening of a carious lesion. However, Suzuki et al. (1974) demonstrated the formation of CaF2 by mixing enamel powder with an SDF solution, but the amount of CaF2dropped significantly when the materials were immersed into artificial saliva. They also found that silver phosphate disappeared after being immersed in artificial saliva and was replaced by silver chloride (AgCl) and silver thiocyanate. In addition, Lou et al (2011) found that a CaF2-like material and metallic silver were formed by mixing SDF with hydroxyapatite powder and gelatine (as a chemically representative protein), but the CaF2-like material dissolved and disappeared after washing with water. Therefore, the mode of SDF action is still unclear.

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but the amount of CaF2	dropped significantly when the materials were immersed into artificial saliva.
They	also found that silver phosphate disappeared after being immersed in artificial saliva
and (silver phosphate)	was replaced by silver chloride (AgCl) and silver thiocyanate.
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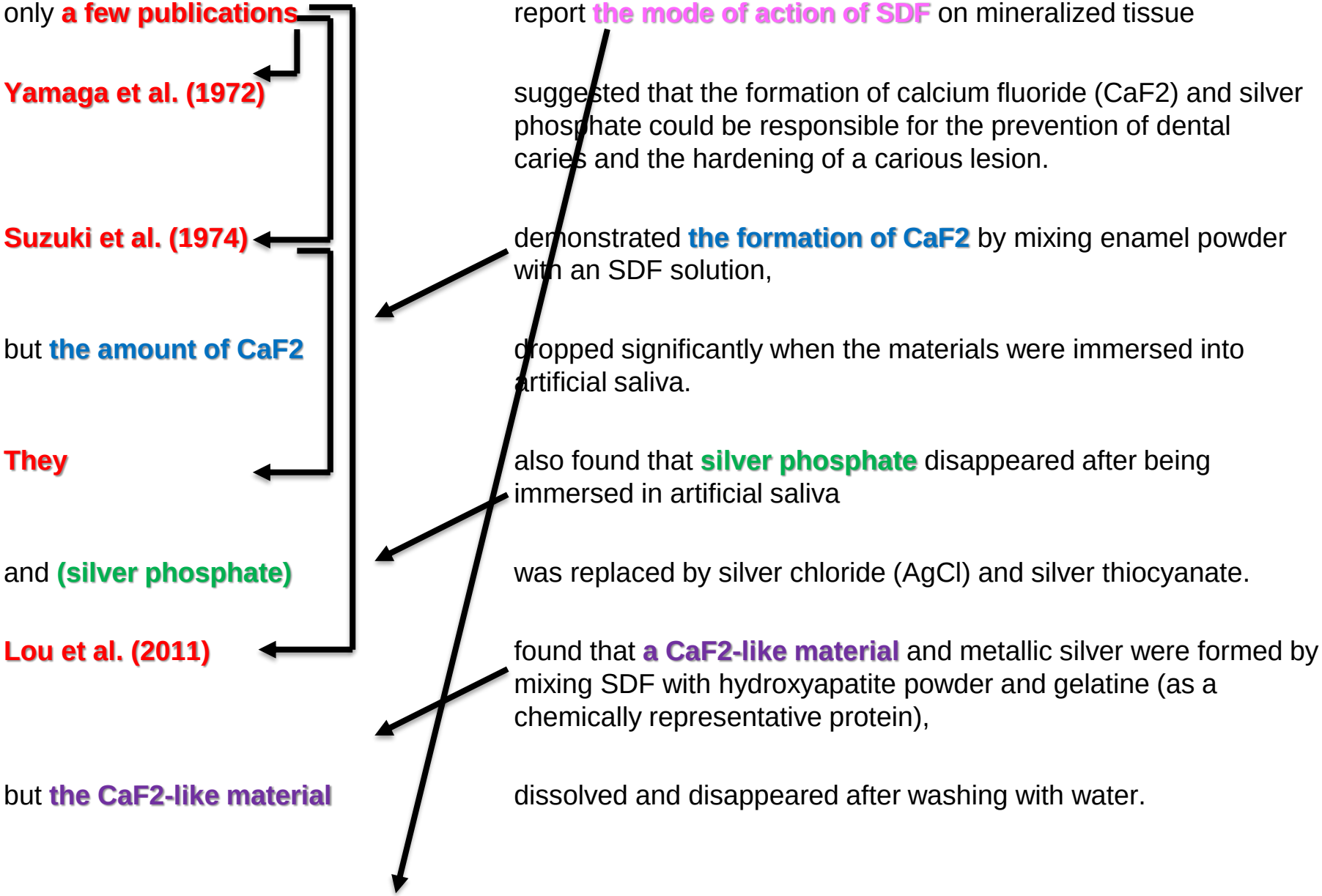
Therefore, the mode of SDF action	is still unclear.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Task

Identify links in the final paragraph on your sheet.

Task

Identify links in the final paragraph on your sheet.

In summary, the present study demonstrated that SDF reacts with calcium and phosphate ions and (this reaction) produces fluorohydroxyapatite. This preferential precipitation of fluorohydroxyapatite with reduced solubility could be one of the main factors for arrest of caries lesions treated with SDF.

In summary, the present study → demonstrated that **SDF reacts with calcium and phosphate ions**

and (**this reaction**) → produces **fluorohydroxyapatite**.

This preferential precipitation of **fluorohydroxyapatite** with reduced solubility → could be one of the main factors for arrest of caries lesions treated with SDF.

Coherence and cohesion tip:

Ensure you have links between beginnings of sentences, and a mix of thematic progression formats (reiteration, zigzag, multiple).

Using language to make links/aid coherence and cohesion

Use this extract (page 2, column 2, paragraph 1) to find examples of:

- This/these referring backwards
- This/these + key word/summary word(s)

In this study, we adopted a buffered calcium phosphate system to perform the reaction; this system has been shown to be able to start an initial deposition of amorphous calcium phosphate, and it favors subsequent transformation into small crystals of apatite and ultimate growth of ripening of those crystals (Termine and Posner, 1970). However, this might be different from the real situation. Another limitation of the chemical system is the lack of biological component, in which the role of silver could be underestimated. This chemical system is very different from the complex in vivo situation; thus, caution should be exercised in data interpretation.

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Other language features of coherence and cohesion

Find examples of other linking devices.

- conjunctive adverbs (link ideas between sentences)
- pronoun reference
- repetition of lexical items

Conjunctive adverbs

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Pronoun reference

In this study, we adopted a buffered calcium phosphate system to perform the reaction: **this system** has been shown to be able to start an initial deposition of amorphous calcium phosphate, and it favors subsequent **transformation** into small crystals of apatite and ultimate growth of ripening of those crystals (Termine and Posner, 1970). However, this might be different from the real situation. Another limitation of the chemical system is **the lack of biological component**, which could lead to the role of silver being underestimated. This chemical system is very different from the complex in vivo situation; thus, caution should be exercised in data interpretation.

Repetition of lexical items

In this study, we adopted a buffered calcium phosphate system to perform the reaction; this system has been shown to be able to start an initial deposition of amorphous calcium phosphate, and it favors subsequent transformation into small crystals of apatite and ultimate growth of ripening of those crystals (Termine and Posner, 1970). However, this might be different from the real situation. Another limitation of the chemical system is the lack of biological component, which could lead to the role of silver being underestimated. This chemical system is very different from the complex in vivo situation; thus, caution should be exercised in data interpretation.

Links between paragraphs:

In animal cells ATP is mainly obtained from the electron transport chain. High energy compounds NADH and $FADH_2$ donate electrons to electron carriers in the electron transport chain. As electrons pass down the chain through mobile carriers and membrane complexes, they lose energy. This energy is used to pump hydrogen ions from the inner mitochondrial membrane into the mitochondrial matrix, producing a steep proton gradient in the inner membrane. Hydrogen ions then pass through ATP synthase as they travel down their concentration gradient back to the inner membrane. ATP synthase is a transmembrane protein with a peripheral stalk and round head in the mitochondrial matrix. As hydrogen ions pass through, energy is provided to spin the stalk very quickly. This provides kinetic energy, which can be converted to chemical bond energy, forming ATP from ADP and inorganic phosphate. The main source of ATP energy are food groups such as carbohydrates, fats and proteins (Bray, A., *et al* 2010).

How do you expect the next paragraph to start?

The main source of ATP energy are food groups such as carbohydrates, fats and proteins (Bray, A., *et al* 2010).

Starts by picking up on key final point of previous paragraph: topic sentence

Carbohydrates are made up of sugar monomers and have a general formula of $C_nH_{2n}O_n$. Their digestion starts in the mouth, as salivary amylase proceeds to break 1,4 glycosidic linkages in polysaccharides. This causes starch to be broken down into smaller sugars such as maltose and glucose. In the small intestine pancreatic amylases break down the sugars further into monosaccharides and disaccharides. Here, monosaccharides are absorbed into the bloodstream. This glucose can be stored as glycogen in the liver or in muscle cells, directly utilised by tissues or it can be converted into fats, amino acids and other compounds. The hormone insulin enables cells to take up carbohydrates using GLUTs (plasma membrane transporters) (Bray *et al.,* 2010). They are not stored for long as most carbohydrates have a strong affinity towards water, so storing large amounts would be energetically unfavourable. This makes carbohydrates ideal as an immediate energy source for organisms (Wardlaw *et al*, 2002).

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If ***energy is needed immediately***, carbohydrate metabolism begins when glucose enters glycolysis in the cytosol.

Each section (and paragraph) should (more-or-less) follow this structure:

Introduce the main idea of the section/paragraph (a topic sentence)

Explain and expand the idea, defining any key terms

Present relevant evidence to support points

(Comment on each piece of evidence showing how it relates to points)

Conclude section / paragraph by either showing its significance to the paper as a whole or making a link to the next section / paragraph

Adapted from Learning Development, University of Leicester 2009

Being concise – making choices

Why make your reader read 10 words when 6 will do?

Being concise – making choices

In the present work we show …

The present work shows …

The result of the ……. was…….

…… was the result of ……

The growing expectations of patients to receive treatment which is painless…

Patients' growing expectations for painless treatments…

A large increase in its demand in the world …

Considerably increased world demand …

Can you make this more concise?

This organisation is now in the midst of a major paradigm shift regarding the creation and distribution of its services. Instead of offering a wide array of discrete products, users will be able to make use of a integrated and interactive online service system (IOSS) to construct a personalised data bank of the products and services relevant to their needs, and this will be represented on individual spread sheets itemising each area of interest (Dobbin, 2002).

What are the main points?

This organisation is now in the midst of a major paradigm shift regarding the creation and distribution of its services. Instead of offering a wide array of discrete products, users will be able to make use of a integrated and interactive online service system (IOSS) to construct a personalised data bank of the products and services relevant to their needs, and this will be represented on individual spread sheets itemising each area of interest (Dobbin, 2002).

- Changes to the way services are made and distributed
- Use of interactive system
- Personalised visual representation of relevant services

Possible more concise version:

This organisation will use an integrated and interactive online service system (IOSS) to create a personalised visual representation of products and services relevant to individual users.

- Changes to the way services are made and distributed
- Use of interactive system
- Personalised visual representation of relevant services

Idea adapted from *Eloquent Science, Schultz 2009*

What about academic style?

Which of the following descriptions are (generally) true of academic writing style?

- It is formal ✓
- It is difficult to understand
- It follows certain conventions ✓
- It is standard across the disciplines
- It involves long sentences
- It involves complex grammar

Never use a complex word when a simple word will do. Bad writers consider long words more impressive than short ones, and use words like *usage* instead of *use* or *methodologies* instead of *methods* without knowing what they mean.

(John Lynch, date unknown)

http://cgi.duke.edu/web/sciwriting/index.php?action=lesson3

Too informal	Appropriate	Too formal
look into x	examine ✓	appraise
got bigger x	increased ✓	aggrandized
got smaller x	decreased ✓	diminished
got x	obtained ✓	procured
got better x	improved ✓	ameliorated
lots of x	many, a number of ✓	multifarious
huge amount x	a large amount ✓	myriad
do x	conduct,carry out✓	effectuate

Your title

A good title should: …

- Give information
- Reflect the content accurately
- Be easy to understand
- Be concise
- Catch the reader's attention

Check your work (and title) for appropriate style

Help with academic language:

- The Academic phrasebank – Manchester University

http://www.phrasebank.manchester.ac.uk/

- Academic Wordlist (Averil Coxhead, 2000, 2014)

http://www.victoria.ac.nz/lals/about/staff/averil-coxhead

- Online Concordance Tools to help identify patterns in language

- Peer Review: use your colleagues to help you by asking them to check your writing

What problems are there with academic style?

This paper is about a few of the important mechanical properties (hardness, dimensional stability, compressive and flexural strength) of an experimental version of a translucent calcium aluminate dental restorative material. All the samples that we used have been made from pre-pressed tablets, with a compaction degree of ~60%, hydrated using a 0.15 wt % Li salt solution as an accelerator. We stored them in water at 37 °C between the measurements. […] The results tell us that the calcium aluminate material has enough mechanical properties to be used as a permanent dental restorative taking as a reference the ISO 9917 and the ISO 4049 as well as the reference materials. On top of this the results indicate that the mechanical properties are controlled by the microstructure, which is pretty much determined by the grain size of the filler.

Adapted from: Loof, J., Engqvist, H., Ahnfelt, NO. et al. Journal of Materials Science: Materials in Medicine (2003) 14: 1033. https://doi.org/10.1023/B:JMSM.0000003999.52349.0d

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Not academic style.

Not academic style.

Not academic style: use passive

Unclear, meaning

Not academic style

Not academic style

Punctuation missing

Not academic style

Not academic style

Not academic style

Adapted from:https://scholar.google.co.uk/scholar?start=20&q=this+paper+investigates+dental&hl=en&as_sdt=0,5

Improved version

This paper focuses on some important mechanical properties (hardness, dimensional stability, compressive and flexural strength) of an experimental version of a translucent calcium aluminate dental restorative material. All samples investigated have been made from pre-pressed tablets, with a compaction degree of ~60%, hydrated using a 0.15 wt % Li salt solution as an accelerator. Between measurements, the samples were stored in water at a temperature of 37 °C. […] The results show that the calcium aluminate material has sufficient mechanical properties to be used as a permanent dental restorative, taking as a reference the ISO 9917 and the ISO 4049, in addition to the reference materials. Furthermore, the results indicate that the mechanical properties are controlled by the microstructure, which is mainly determined by the grain size of the filler.

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The Academic phrasebank – Manchester University

http://www.phrasebank.manchester.ac.uk/

The Academic Phrasebank

Provides academic writers with examples of phrases and expressions typically found in the main sections of an academic paper or dissertation.

Phrases from the bank:

Example sentences for different categories

Category of phrase	Example phrases
1 Being critical	*The main limitation of biosynthetic incorporation, however, is …*
2 Being cautious	*Ozone tends to attack cells and break down tissues.*
3 Introducing lists	*There are two types of effect which result when a patient undergoes X. These are …*
4 Comparing and contrasting	*The corpus callosum, a part of the brain connecting the two hemispheres, may be more/less extensive in women.*
5 Defining terms	*In broad biological terms, X can be defined as any stimulus that is …*
6 Explaining causality	*The most likely causes of X are poor diet and lack of exercise.*
7 Giving examples	*For example, Smith and Jones (2004) conducted a series of semi-structured interviews …*
8 Signalling transition	*On the other hand, in spite of much new knowledge about the role of …,*

The Academic phrasebank – Manchester University

http://www.phrasebank.manchester.ac.uk/

Looks like this …

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Academic Phrasebank

Home Page

GENERAL LANGUAGE FUNCTIONS

- Being Cautious
- Being Critical
- Classifying and Listing
- Compare and Contrast
- Defining Terms
- Describing Trends
- Describing Quantities
- Explaining Causality
- Giving Examples
- Signalling Transition
- Writing about the Past

The Academic Phrasebank is a general resource for academic writers. It aims to provide you with the phraseological 'nuts and bolts' of writing organised according to the main sections of a research paper or dissertation (see the top menu). Other phrases are listed under the more general communicative functions of academic writing (see the menu on the left). The resource should be particularly useful for writers who need to report their research work.The phrases, and the headings under which they are listed, can be used simply to assist you in thinking about the content and organisation of your own writing, or the phrases can be incorporated into your writing where this is appropriate. In most cases, a certain amount of creativity and adaptation will be necessary when a phrase is used.The items in the Academic Phrasebank are mostly content neutral and generic in nature; in using them, therefore, you are not stealing other people's ideas and this does not constitute plagiarism. For some of the entries, specific content words have been included for illustrative purposes, and these should be substituted when the phrases are used.The resource was designed primarily for academic and scientific writers who are non-native speakers of English. However, native speaker writers may still find much of the material helpful. In fact, recent data suggest that the majority of users are native speakers of English. More about **Academic Phrasebank**.

This site was created by **John Morley**. If you could spare just two or three minutes of your time, I would be extremely grateful for any feedback on Academic Phrasebank: Please click **here** to access a very short questionnaire. Thank you.

ABOUT PHRASEBANK

An enhanced and expanded version of PHRASEBANK can now be downloaded in PDF:

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GENERAL LANGUAGE FUNCTIONS

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An enhanced version of PHRASEBANK is also available as a Kindle download:

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Being Cautious

One of the most noticeable stylistic aspects of academic communication is the tendency for writers to avoid expressing absolute certainty, where there may be a small degree of uncertainty, and to avoid making over-generalisations, where a small number of exceptions might exist. This means that there are many instances where the epistemological strength (strength of knowledge) of a statement or claim is mitigated (weakened) in some way. In the field of linguistics, devices for lessening the strength of a statement or claim are known as hedging devices.Analysis of research reports have shown that discussion sections tend to be particularly rich in hedging devices, particularly where writers are offering explanations for findings.

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Academic Phrasebank

Introducing Work | Referring to Sources | Describing Methods | Reporting Results | Discussing Findings | Writing Conclusions

GENERAL LANGUAGE FUNCTIONS

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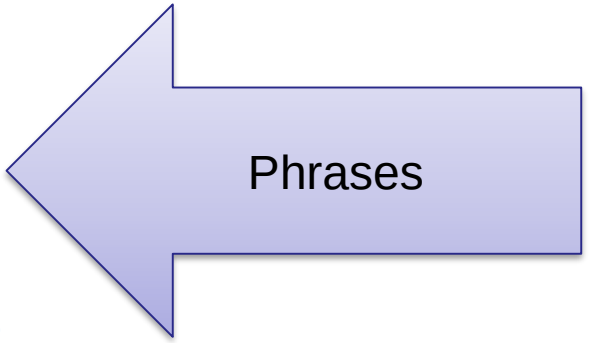
Devices that distance the author from a proposition

Being cautious when giving explanations

Being cautious when explaining results - close

This inconsistency may be due to ...
This discrepancy could be attributed to ...
A possible explanation for this might be that ...
This rather contradictory result may be due to ...
It seems possible that these results are due to ...
The observed increase in X could be attributed to ...
The possible interference of X cannot be ruled out ...
There are several possible explanations for this result.
There are two likely causes for the differences between ...
A possible explanation for these results may be the lack of adequate ...
Since this difference has not been found elsewhere it is probably not due to ...



Being cautious when explaining results

This inconsistency may be due to …
This discrepancy could be attributed to …
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It seems possible that these results are due to …
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There are two likely causes for the differences between …
A possible explanation for these results may be the lack of adequate …
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Use online **Concordance** Tools to help identify patterns in language

Wordsmith Tools

http://www.lexically.net/wordsmith/

Compleat Lexical Tutor

http://www.lextutor.ca/

British Academic Written English

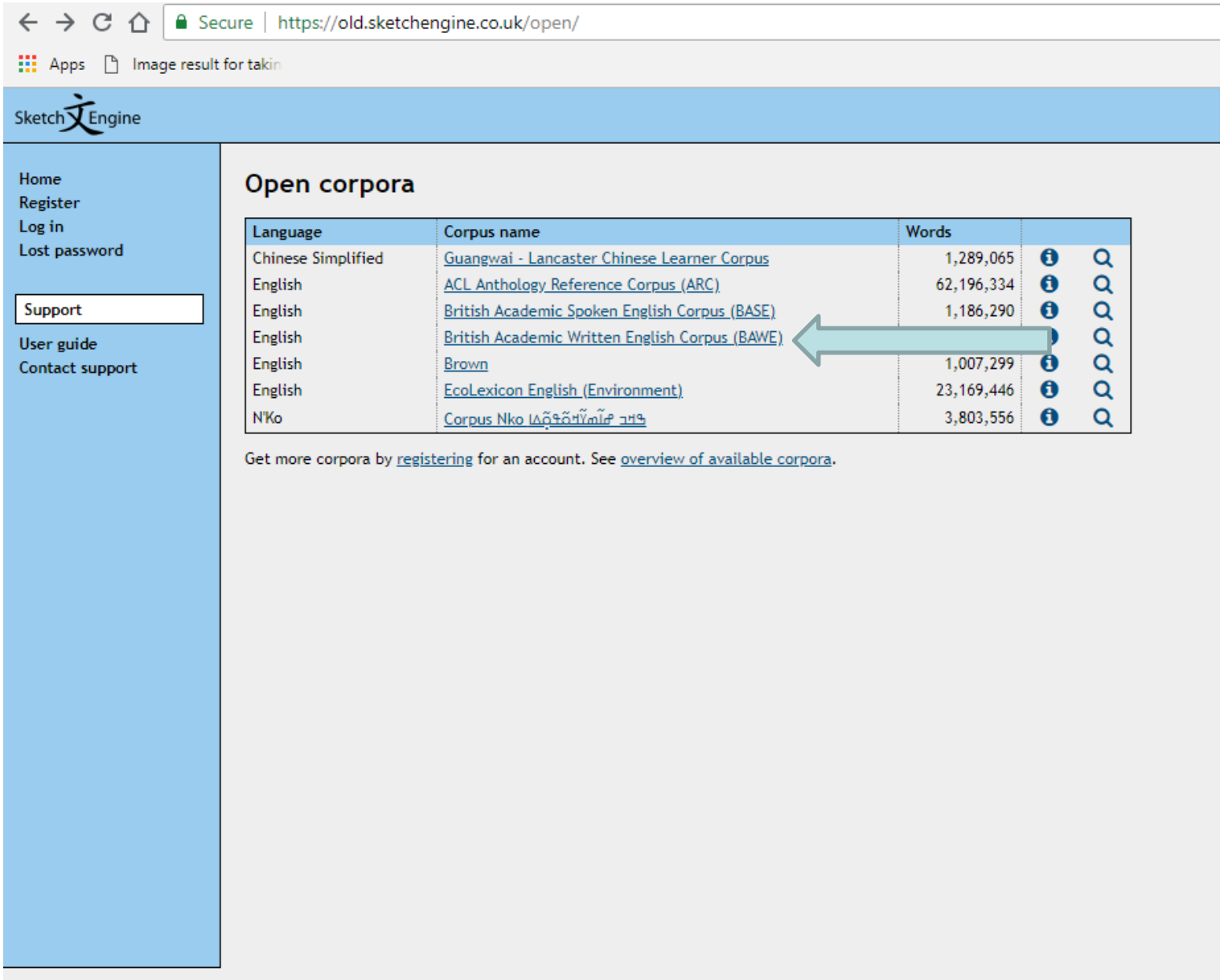
https://ca.sketchengine.co.uk/open/

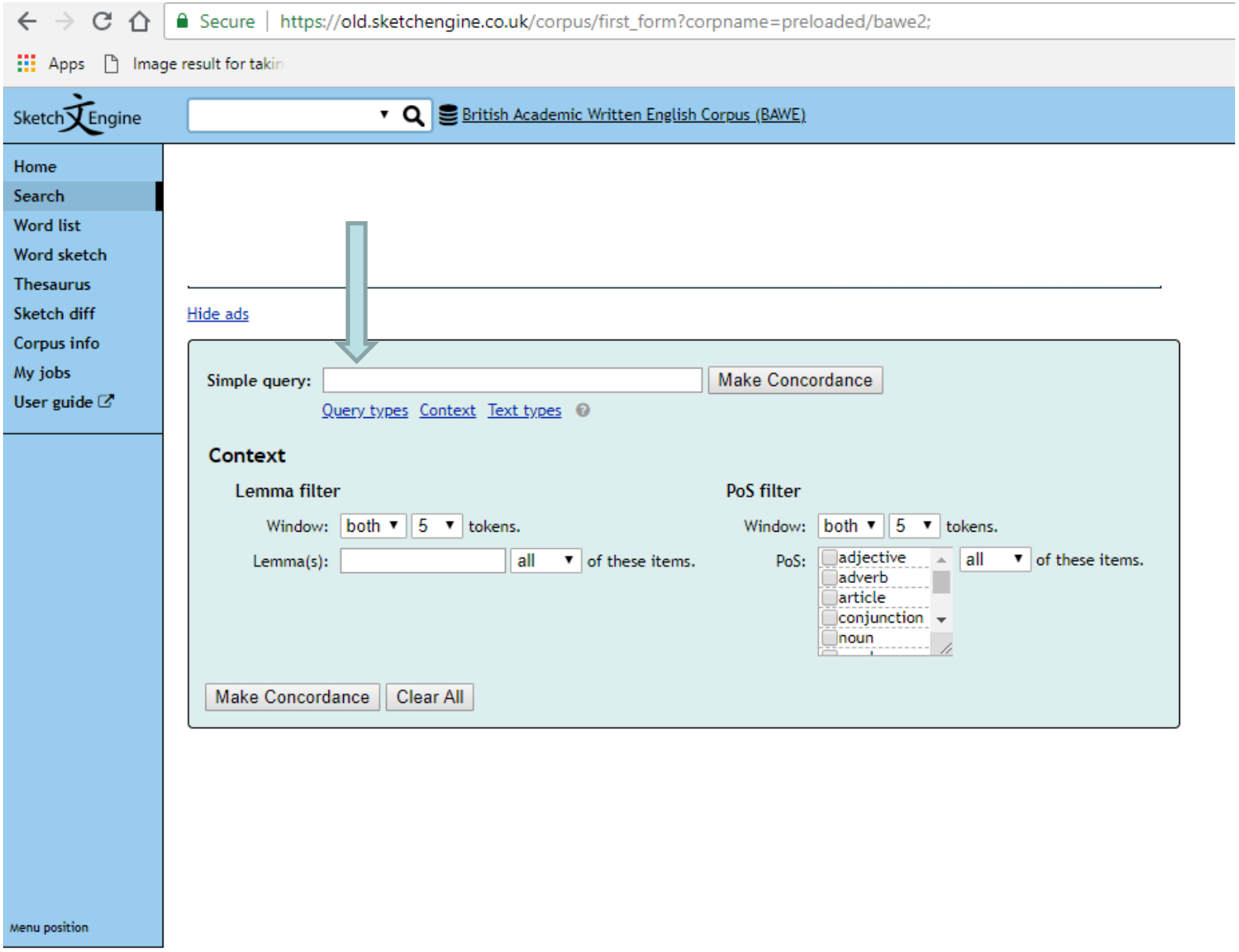
Intellitext

http://corpus.leeds.ac.uk/it/

Antconc

http://www.antlab.sci.waseda.ac.jp/software.html


Secure | https://old.sketchengine.co.uk/open/
Apps
Image result for taki
Sketch Engine
Home
Register
Log in
Lost password
Support
User guide
Contact support
Open corpora
Language
Corpus name
Words
Chinese Simplified
Guangwai - Lancaster Chinese Learner Corpus
1,289,065
English
ACL Anthology Reference Corpus (ARC)
62,196,334
English
British Academic Spoken English Corpus (BASE)
1,186,290
English
British Academic Written English Corpus (BAWE)
English
Brown
1,007,299
English
EcoLexicon English (Environment)
23,169,446
N'Ko
Corpus Nko
3,803,556
Get more corpora by registering for an account. See overview of available corpora.


Secure | https://old.sketchengine.co.uk/corpus/first_form?corpname=preloaded/bawe2;
Apps
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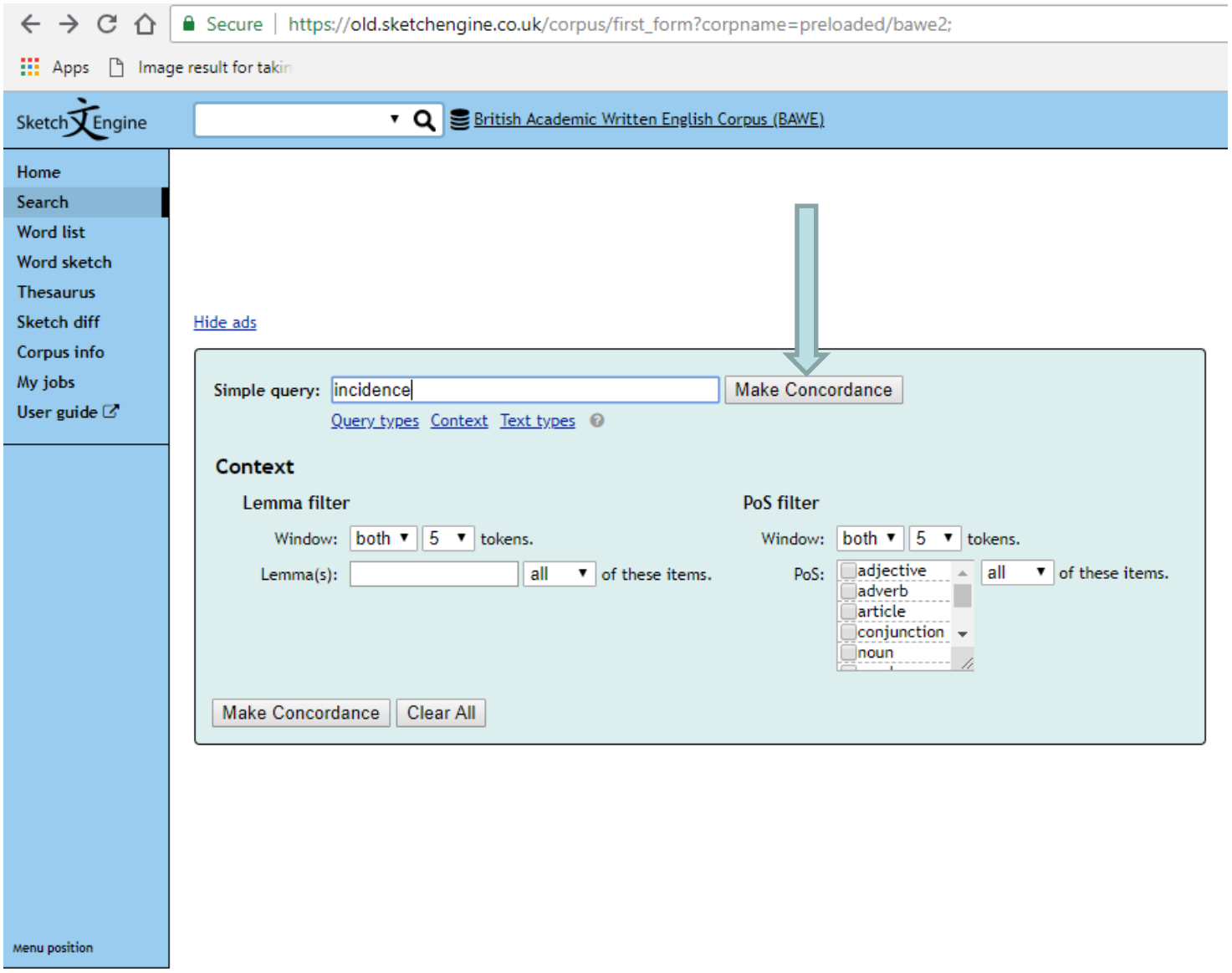
British Academic Written English Corpus (BAWE)
Home
Search
Word list
Word sketch
Thesaurus
Sketch diff
Corpus info
My jobs
User guide
Menu position
Hide ads
Simple query:
Make Concordance
Query types
Context
Text types
Context
Lemma filter
Window: both 5 tokens.
Lemma(s): all of these items.
PoS filter
Window: both 5 tokens.
PoS: adjective adverb article conjunction noun all of these items.
Make Concordance
Clear All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My jobs
User guide
Menu position
Hide ads
Simple query:
incidence
Make Concordance
Query types
Context
Text types
Context
Lemma filter
Window:
both
5
tokens.
Lemma(s):
all
of these items.
PoS filter
Window:
both
5
tokens.
PoS:
adjective
adverb
article
conjunction
noun
all
of these items.
Make Concordance
Clear All

BAWE-1.txt	combat such an infection. In recent years the	**incidence**	of Legionnaires' disease has increased.
BAWE-1.txt	in macrophages, but in fact increase the	**incidence**	of the organism and the rate at which complications
BAWE-1.txt	Summary of phenotypes that could increase both	**incidence**	and complication of disease in humans: <*p*>
BAWE-1.txt	<*p*> The most obvious way to prevent further	**incidence**	of Legionnaires' disease would be to eradicate
BAWE-1.txt	processes. </*p*> Conclusion <*p*> The increased	**incidence**	of Legionnaires' disease in recent years
BAWE-1.txt	to remain in aquatic systems at a higher	**incidence**	than if the bacteria were just free-living
BAWE-1.txt	political situation. Further causes of the 1905	**incidence**	included the modernisation and democratisation
BAWE-1.txt	population trends. 'From a period in which the	**incidence**	of marriage was dominant to one in which
BAWE-1.txt	varied, nevertheless they did exist. The	**incidence**	of famine whether long or short term affected
BAWE-1.txt	Bjornstrom and Gotestom, 2004). It is likely the	**incidence**	rate for eating disorders is higher than
BAWE-1.txt	be more reliable, and found a far higher	**incidence**	rate of tetrachromacy. Jameson et al, (
BAWE-1.txt	such as enforced celibacy increased the	**incidence**	of breaches in moral standards that served
BAWE-1.txt	normal to its surface, and is mean angle	**incidence**	modifier which accounts for changes in
BAWE-1.txt	litres/dayNormal optical efficiency, = 0.7Mean	**incidence**	angle modifier, = 0.95Latitude = 51.47deg
BAWE-1.txt	investigation by Coren (1989) reported a higher	**incidence**	of injury requiring medical attention amongst
BAWE-1.txt	attention amongst left-handers and also a higher	**incidence**	of driving accidents amongst left-handed
BAWE-1.txt	, cervix or peritoneum (5). </*p*><*p*> The UK	**incidence**	is about 1:100 and is rising (6). There
BAWE-1.txt	quite surprising given the high rates of	**incidence**	, and therefore decided to use this opportunity
BAWE-1.txt	PATHOLOGY AND HISTOLOGY <*p*> Given the high	**incidence**	rates, it is not surprising that there
BAWE-1.txt	presented with a concerned male patient. The	**incidence**	of breast carcinoma, as with most other

How could you use this?

Use online Concordance Tools to help identify patterns in language

Don’t forget the editing process

What’s the problem with this title?

Mathematical modelling of the influence of heat shock protiens on cancer invasion

Oops!

Proof read!

Proof reading checklist

Language accuracy

- Look for linking words like ‘However’, ‘Thus’, ‘Therefore’ and check they join *two sentences,* and are followed by a comma.
- Check your use of commas: read your work aloud - if you naturally pause, you probably need a comma.
- Avoid all contractions (don’t; can’t;, isn’t etc)

Spelling

- Use the computer spell-checker
- N.B. Spell checker will not pick up some of the ‘easily confused words’.

Proof reading checklist

Sentence organisation

- Check pronouns: is it clear and unambiguous what they refer to?
- Use pronouns / determiners *this/these/those* or *this/these/those + summary word*

Paragraph organisation

- Check your paragraphs focus on developing a single topic
- Ensure there are clear links between paragraphs to guide the reader

References

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Website

https://cgi.duke.edu/web/sciwriting/index.php?action=lesson2

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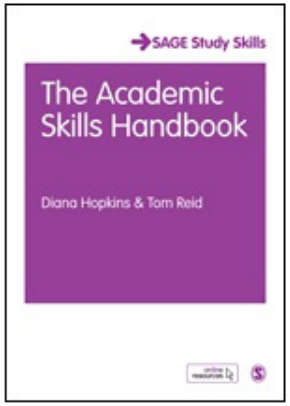

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