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Effective Use of Voice in Scientific Writing

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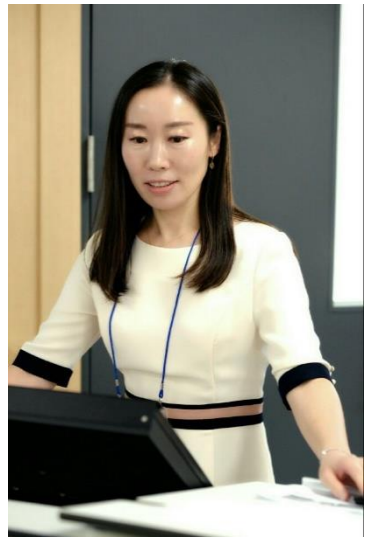

Mikyoung Lee, PhD

Education

- PhD, Educational Psychology, University of Munich, Germany
- PhD, Science of Nursing, Chonnam National University
- MA, TESOL (Teaching English to Speakers of Other Languages), Sookmyung Women's University
- BA, Science of Nursing, Yonsei University

Research & Work Experiences

- Assistant Professor, Nursing Department, Kwangju Women's University
- Guest Researcher, Educational Psychology, University of Munich, Germany
- Research Committee Chair, Korea TESOL (대한영어교육학회)
- Editorial Board member, Journal of Korea TESOL
- Academic Trainer & Consultant, Editage
- Research Project, National Research Foundation of Korea (한국연구재단)
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- Former Visiting Scholar, Educational Psychology, University of Texas (UTSA), USA
- Published papers in international & domestic venues (SCI/E, SSCI, SCOPUS, KCI)

Workshop Outline

1. Passive voice and active voice
2. Voice in the scientific manuscript
3. Uses of passive and active voice

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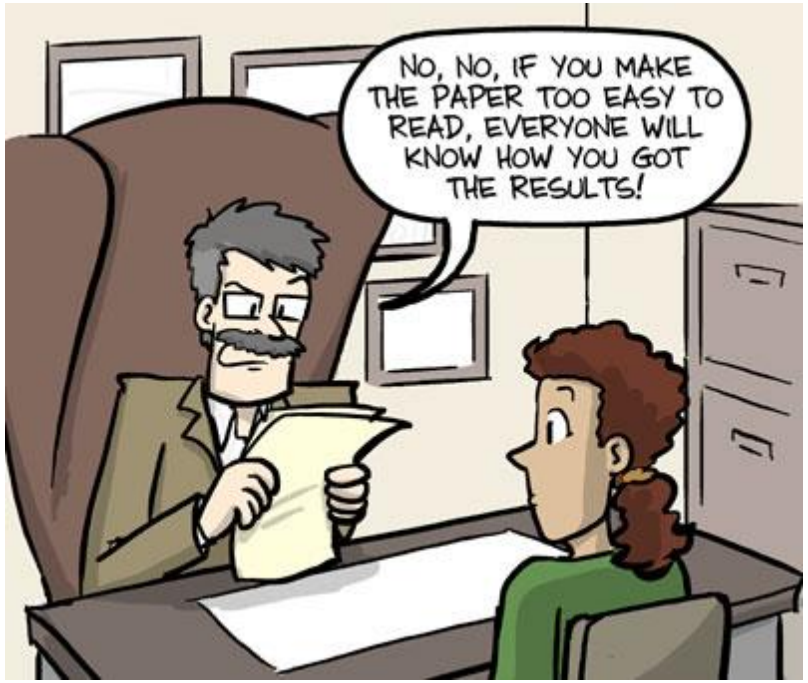
1. Passive voice and active voice

Misconceptions in scientific writing

- The passive voice is preferred over the active voice because it is the more formal style of writing.



The passive voice is inherently obscure.

"We need to clearly identify our characters and then show the reader what those characters do.

The **passive voice** makes storytelling **more difficult** because it **hides the characters** deep in the sentence—if it shows them at all."

-Jacob Brogan, 2015-

The passive voice is inherently obscure.

"The **passive voice** makes storytelling **more difficult** because it **hides the characters** deep in the sentence—if it shows them at all." -Jacob Brogan-

- Knowing who carried out the action makes things clearer.
- The passive voice is inherently ambiguous.
- The subject-verb relationship is weak in passive sentences.

The active voice is generally preferred.

"In general, **authors should use the active voice**, except in instances in which the actor is unknown or the interest focuses on what is acted on."

-AMA Manual of Style-

The active voice is generally preferred.

"Nature journals **prefer** authors to write in the **active voice** ("we performed the experiment...") as experience has shown that readers find **concepts and results to be conveyed more clearly** if written directly."

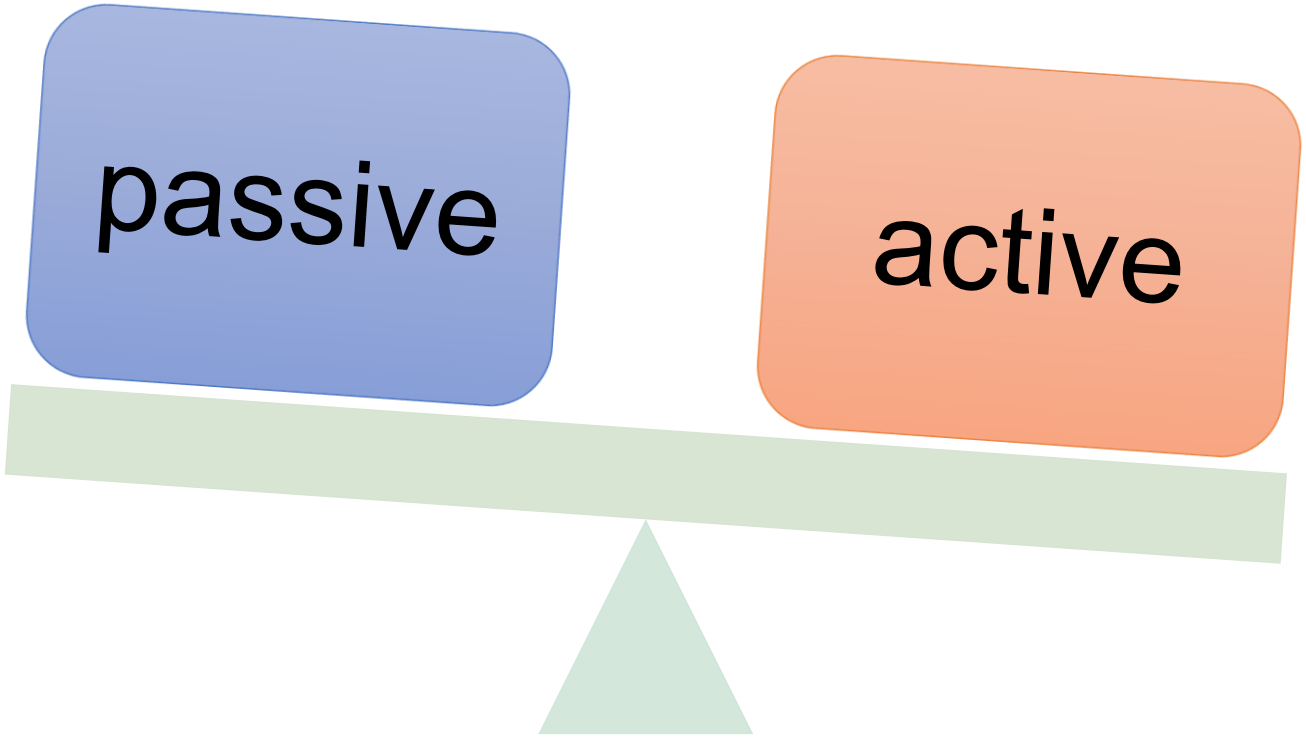
-Nature-

The passive voice is used selectively.

- The use of the passive voice should be **selective.**
- Voice should be selected on the basis of **emphasis,** that is, what needs to be emphasized or what needs to be de-emphasized.

Clarity and voice

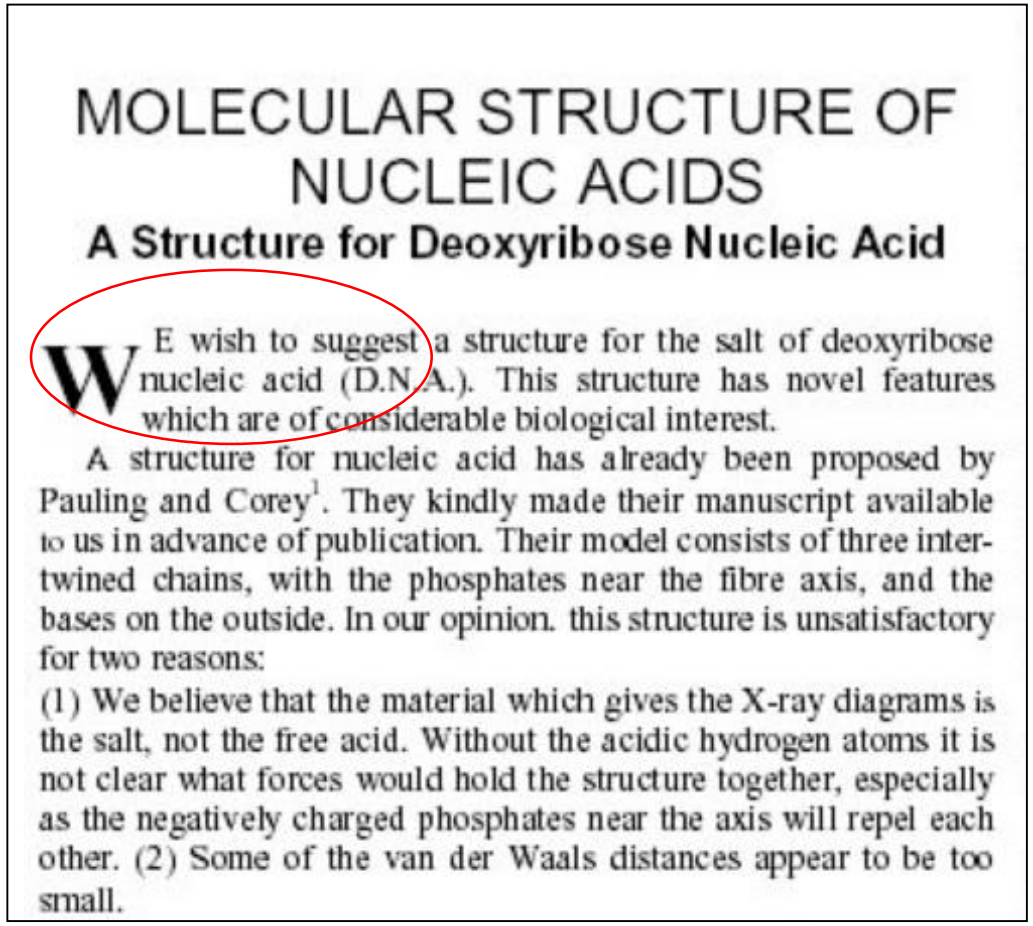
The clarity scale



A famous example

- Watson and Crick famously suggested the structure for DNA in a 1953 Nature paper.

"We wish to suggest a structure…"



MOLECULAR STRUCTURE OF NUCLEIC ACIDS

A Structure for Deoxyribose Nucleic Acid

WE wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey[1]. They kindly made their manuscript available to us in advance of publication. Their model consists of three inter-twined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion. this structure is unsatisfactory for two reasons:

(1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear to be too small.

2. Voice in the scientific manuscript

The active voice

1. Attributes the work to the authors and gives due credit to the authors.

“We wish to put forward a radically different structure…”

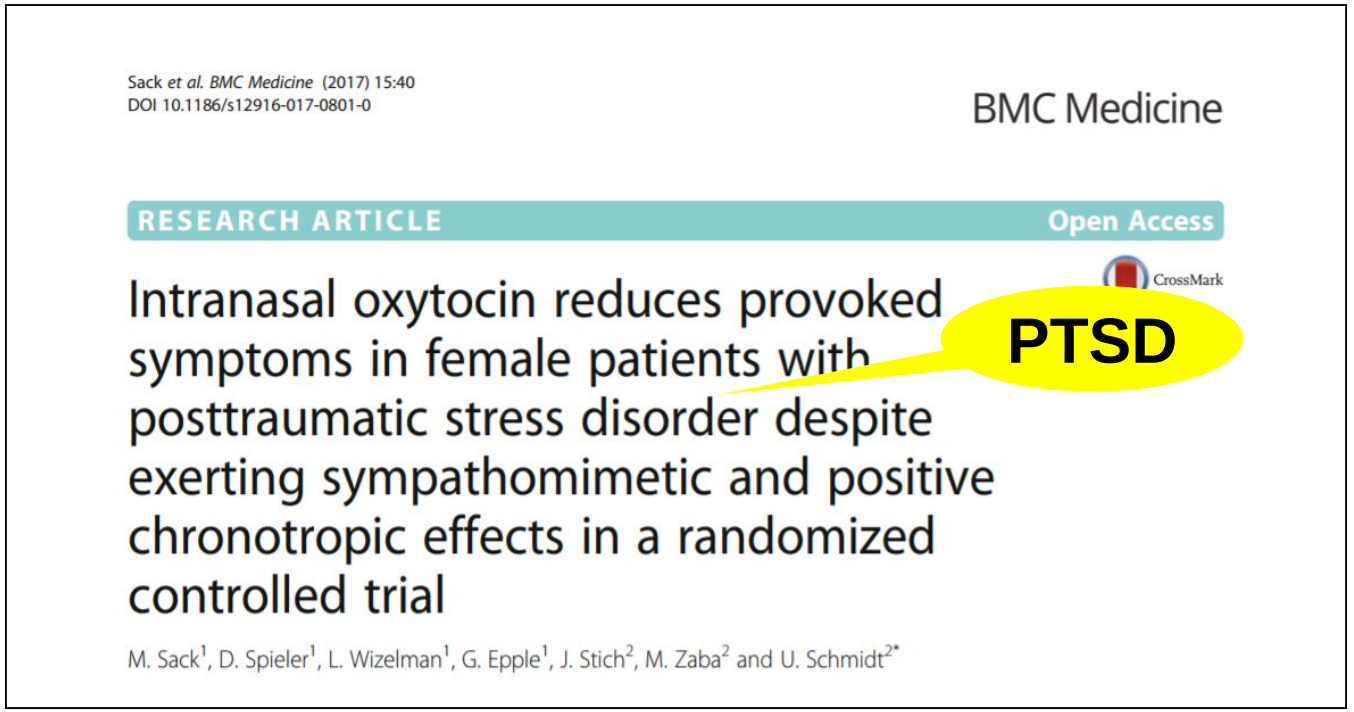
The active voice

2. Confers responsibility on authors.

> “It has not escaped our notice that specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.”

Appear throughout the paper

- The passive and active voice can be used in every section of the paper



Introduction

Active voice

Acheson and colleagues **demonstrated** that intranasal oxytocin facilitated fear extinction in healthy human subjects.

Passive voice

For decades, oxytocin **has been used** for the induction of labor and prevention of postpartum hemorrhage.

Methods

Active voice

Here, we **assessed** oxytocin serum levels at baseline and immediately after exposure to a standardized social stress experiment.

Passive voice

Patients treated with cardiovascular active drugs **were excluded** from the study.

Results

Active voice

We **did not observe** any other unintended effect or harm of treatment.

Passive voice

Demographic and clinical characteristics of this patient cohort **are summarized** in Table 1.

Discussion

Active voice

Thus, our study **contributes** significantly to our understanding of the therapeutic potential of oxytocin in PTSD.

Passive voice

Our finding of a positive chronotropic effect of oxytocin **is supported** by the positive correlation of endogenous oxytocin levels.

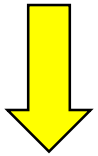
Tense of verbs

The active and passive voice can be used in different tenses.

The present tense

Active voice

H. pylori **uses** a type IV secretion system (T4SS) to inject effector proteins into the cytoplasm of host cells.



Passive voice

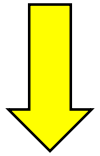
A type IV secretion system (T4SS) **is used** by H. pylori to inject effector proteins into the cytoplasm of host cells.

Irene Vacca (2017) Nature Reviews Microbiology

The present perfect tense

Active voice

In vitro studies using nonpolarized cells **have shown** that the T4SS interacts with host cell integrins.



Passive voice

The interaction between T4SS and host cell integrins **has been shown** by in vitro studies using nonpolarized cells.

Irene Vacca (2017) Nature Reviews Microbiology

The past tense

Active voice

We **found** bacteria at the apical and basolateral surfaces of the polarized epithelium.

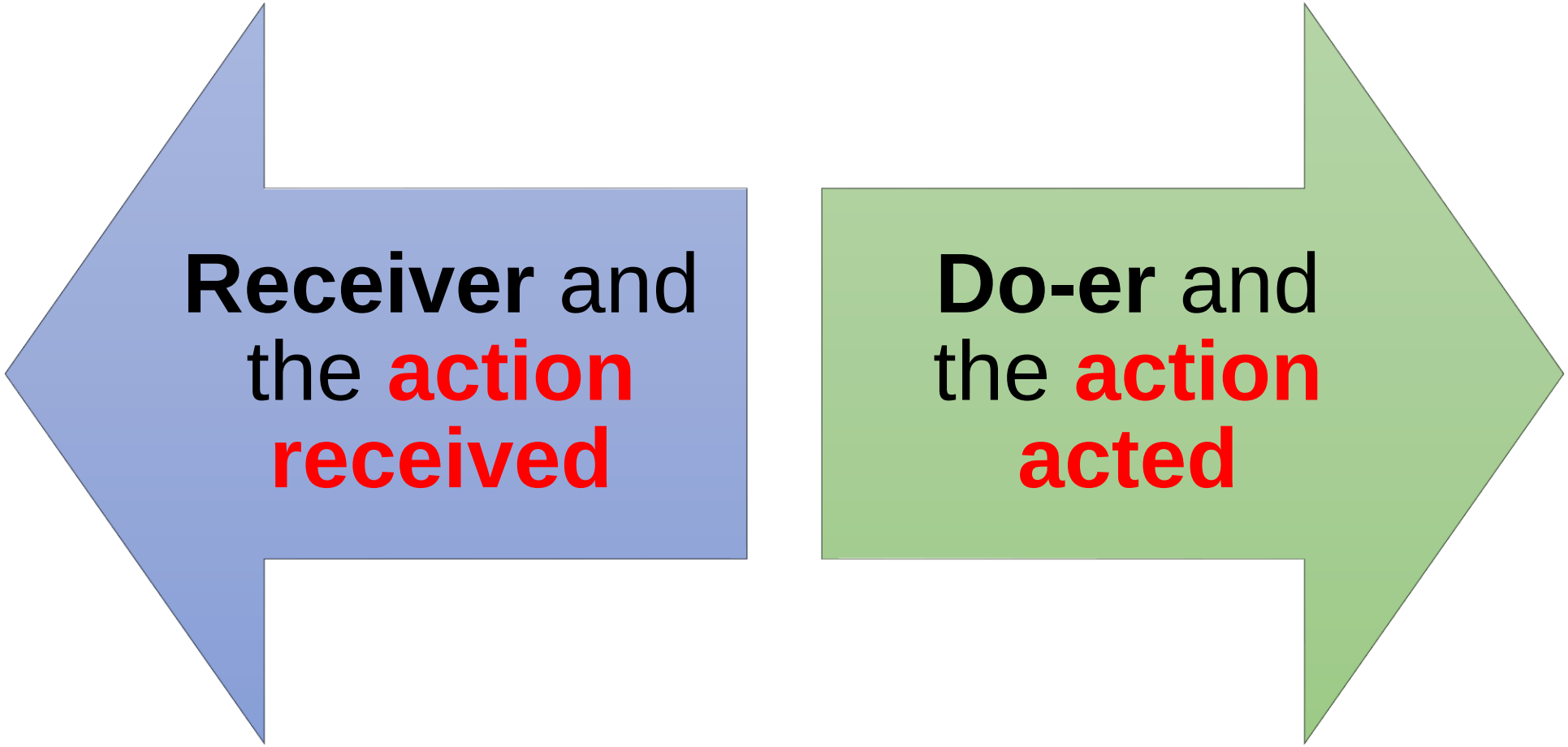
Passive voice

Bacteria **were found** both at the apical and basolateral surfaces of the polarized epithelium.

Irene Vacca (2017) Nature Reviews Microbiology

3. Uses of passive and active voice

※ Main differences: Passive vs. Active



※ Main differences: Passive vs. Active

Receiver and the **action received**

Emphasis

-The object

-What *received* the action

-Weaker subject-verb

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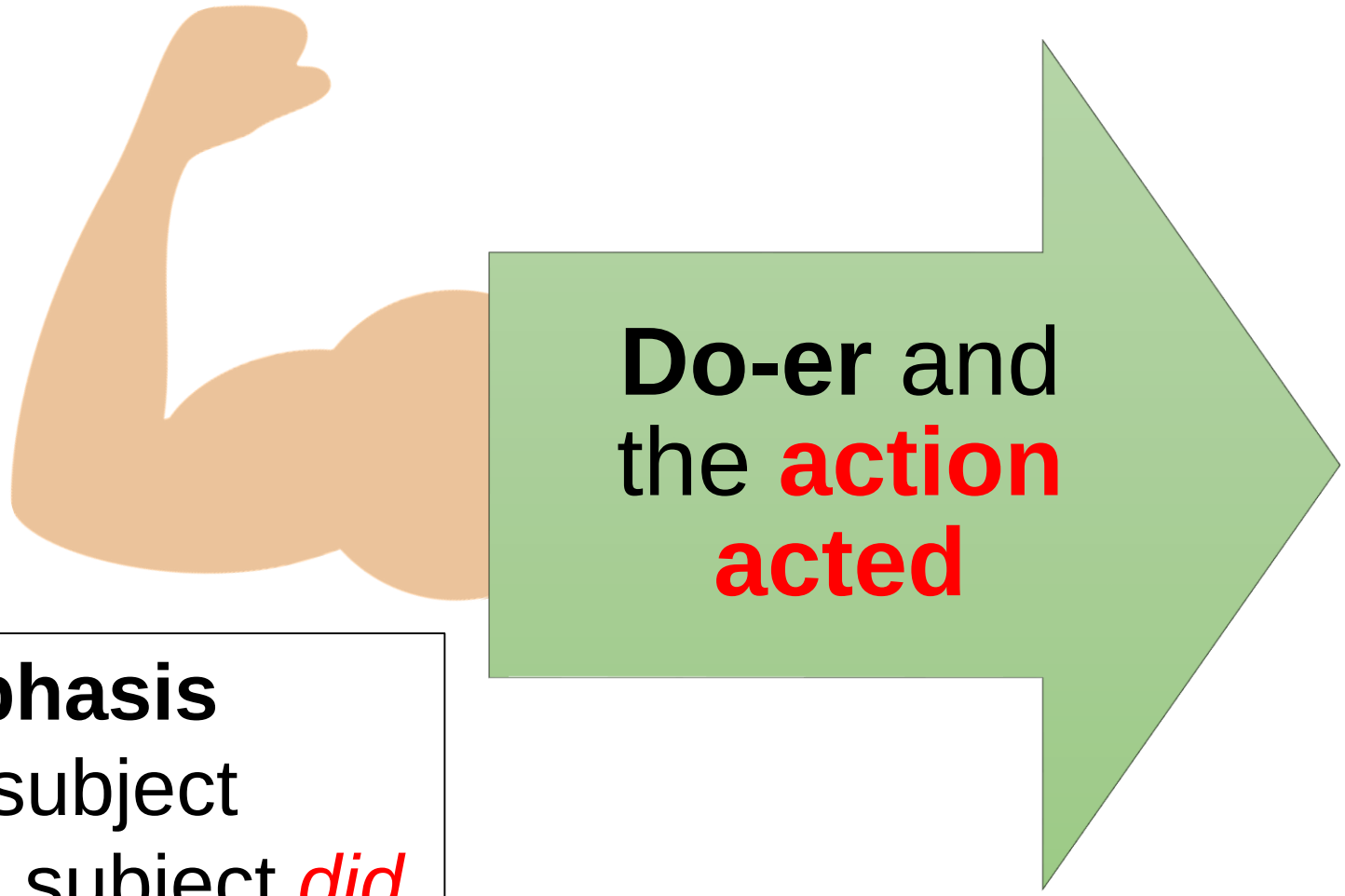
※ Main differences: Passive vs. Active



Emphasis

-The subject

-What the subject *did*

-Stronger subject-verb

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Useful when you want to hide who is responsible for the action!

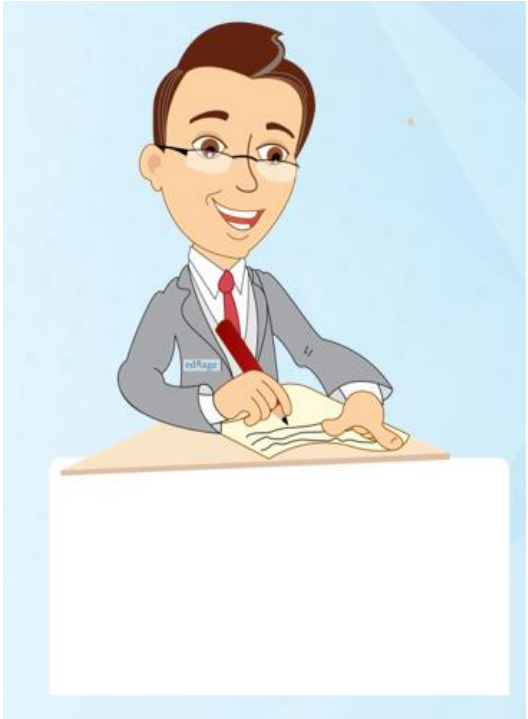
Considerations for voice use

1. When the subject (do-er) is…
    1) Unknown
    2) Unimportant
    3) Obvious

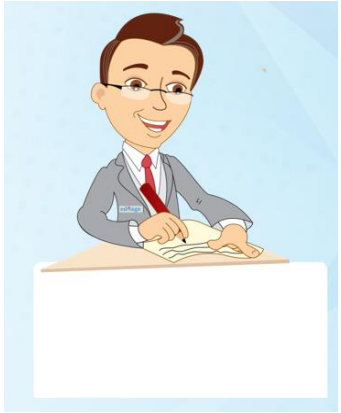
Passive voice

2. Clarity and emphasis

3. Storyline: dynamic vs. static



1. When the subject (do-er) is unknown, unimportant, or obvious



Passive voice

1) The subject (do-er) is unknown

Oxytocin **is released** from the posterior pituitary into the bloodstream.

- An **undefined cause-effect relationship** requires the **passive voice**.

We **found** that the total RSDI score **was significantly reduced** in oxytocin-treated patients.

In scientific writing, the passive voice can be used to describe an effect.

The effect = a reduction in RSDI score

※ In the **active voice**, the **relationship** between **cause and effect** is **clear**.

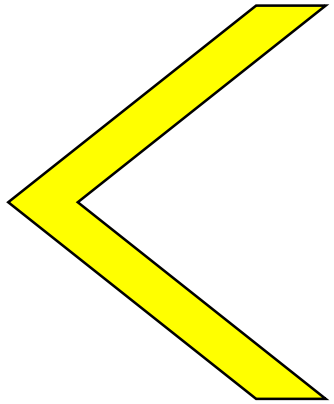
We **found** that the total RSDI score **was significantly reduced** in oxytocin-treated patients.

Thus, intranasal oxytocin treatment **significantly attenuated** PTSD symptoms triggered by trauma-script exposure.

The effect = attenuated PTSD symptoms
The cause = intranasal oxytocin treatment

2) The subject (do-er) is unimportant (Receiver is important!)

do-er
(performer)



receiver

In the majority of cases, the **disease** **can be controlled** by treatment decreasing intraocular pressure.

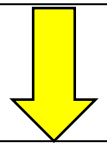
Michalczuk M et al. (2017) BMJ Paediatrics Open

For decades, **oxytocin** **has been used** for the induction of labor and prevention of postpartum hemorrhage.

Sack M et al. (2017) BMC Medicine

A common mistake

However, Grus et al., Joachim et al., Duan et al., and Knepper et al. **mainly tested** non-genetic molecular markers only in adult patients.



However, non-genetic molecular markers **were mainly tested** only in adult patients (cite!).

It is sufficient to simply cite the papers.

Tips: Reporting with passives

- Another simple way of avoiding “author et al.” subjects is to use “**it + passive verb + that-clause**”

It is reported that…	It was discovered that…
It is believed that…	It was shown that…
It is considered that…	It was suggested that…
It is regarded that…	It was revealed that….

- Example in the Background

It is regarded that impaired mitochondrial function may be a possible indicator of glaucoma and may contribute to its pathogenesis [2].

Michalczuk M et al. (2017) BMJ Paediatrics Open

- Example in the Discussion

> In contrast, it is well accepted that the SNS is overactive in PTSD [54]. Accordingly, it has been suggested that the central nervous effects of oxytocin might be a consequence of its peripheral actions [57].

Sack M et al. (2017) BMC Medicine

3) The subject (do-er) is obvious

Extensive alternative splicing transitions during postnatal skeletal muscle development **are required** for Ca^{2+} handling.

Brinegar AE et al. (2017) eLIFE

It is obvious that cells require alternative splicing during RNA transcription.

Among individuals who participated in resistance exercise (2785 [38 %]), resistance exercise **was most frequently performed** for 60 to 119 min/wk (1061 [38 %]).

Bakker EA et al. (2017) Mayo Clin Proc.

We know from the transitional element that individuals performed the exercise.

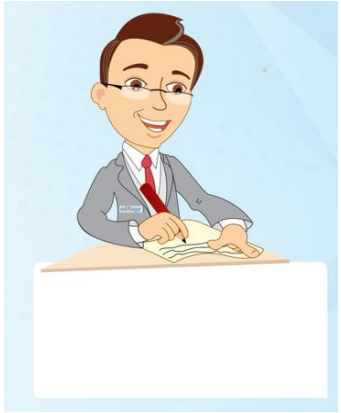
Q: Which verb has been used in the passive because the subject (do-er) is unknown?

The authors confirmed that HtrA **was secreted** in vivo and **was found** at cell-to-cell junctions and in deep intercellular clefts of the damaged gastric epithelium. In addition, they found that E-cadherin **was strongly reduced** by bacterial infection.

Irene Vacca (2017) Nature Reviews Microbiology

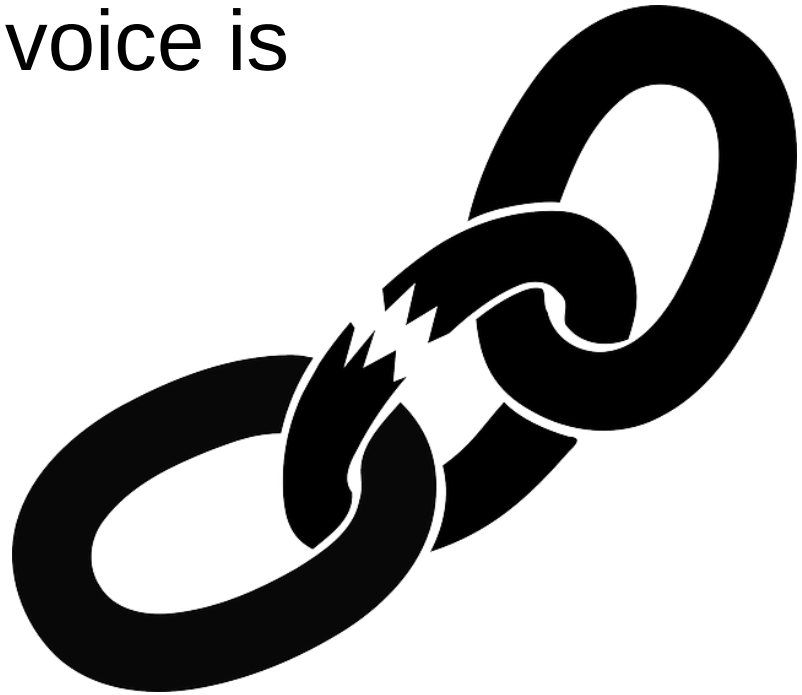
1. was secreted
2. was found
3. was strongly reduced

2. Clarity and emphasis

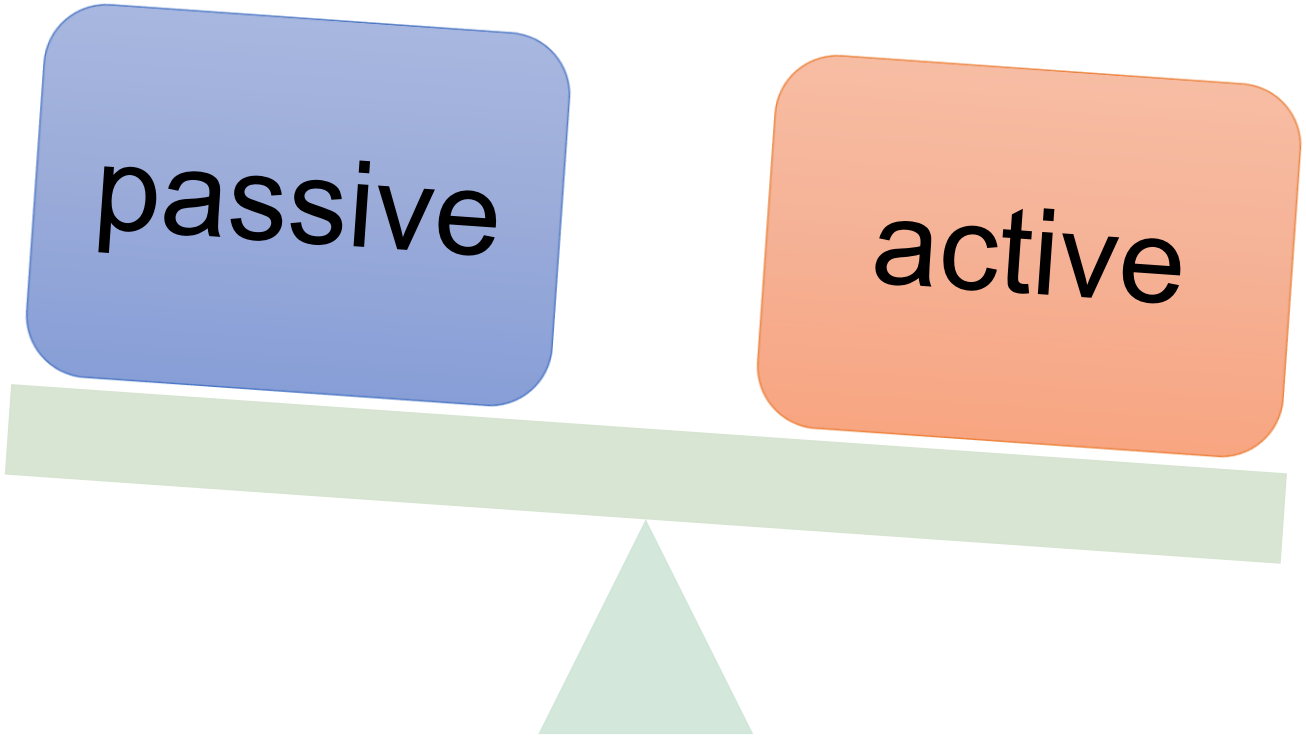


1) Clarity and voice

- Voice is connected to clarity.
- Appropriate choice of voice is important for clarity.



The clarity scale



1st sentence

The effects of oxytocin on HR **remain** unclear.

2nd sentence

Active

On the one hand, Gutkowska et al. **have reported** that oxytocin reduces HR.

3rd sentence

Passive

On the other hand, there are studies showing that HR in mice, rats, and dogs **is increased** by oxytocin.

1st sentence

The effects of oxytocin on HR **remain** unclear.

2nd sentence

Passive

On the one hand, oxytocin **has been reported** to reduce HR (cite!).

3rd sentence

Active

On the other hand, there are studies showing that oxytocin **increases** HR in mice, rats, and dogs.

2) Emphasis and voice

- Passive voice is selectively used to emphasize information (object).

Always think about where you want emphasis

We used fMRI to examine the neural response in frontal and parietal cortices.

Chao LL & Martin A (2000) NeuroImage

- Where is the emphasis in the above sentence?

We used **fMRI** to examine the **neural response** in **frontal and parietal cortices**.

Chao LL & Martin A (2000) NeuroImage

- This sentence can be re-written in different ways so that in each revision the emphasis is variably placed.
- The active and passive voice is chosen depending on which word is emphasized.

Passive voice: The emphasis is on the object.

We used fMRI to examine the neural response in frontal and parietal cortices **(*Active voice: emphasize the subject)**

fMRI was used to examine the neural response in frontal and parietal cortices.

The neural response in frontal and parietal cortices **was examined** through fMRI.

The frontal and parietal cortices were examined for the neural response through fMRI.

※ Use the **active voice** to describe **causality** (relationship between cause and effect is clear)

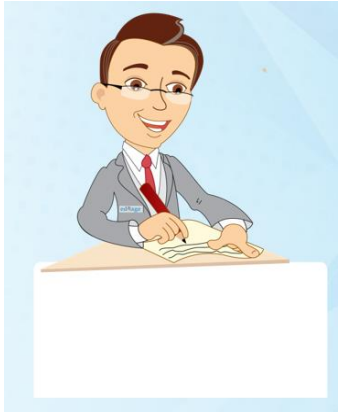
Intranasal oxytocin decreased stress-induced cortisol levels.

Intranasal treatment intensified re-experiencing symptoms.

Intranasal oxytocin treatment significantly elevated the baseline HR of PTSD patients.

TSST exposure substantially increased serum cortisol levels in healthy control subjects.

2. The storyline: dynamic vs. static



Storyline in a results section

Intranasal oxytocin reduces provoked PTSD symptoms

First, we analyzed the efficacy of oxytocin treatment on PTSD symptoms triggered by trauma-script exposure. Provoked PTSD symptoms were assessed with the RSDI questionnaire that allows quantification of avoidance, re-experiencing and dissociation symptoms provoked by exposure to an audiotaped individual trauma script [41]. We found that the total RSDI score was significantly reduced in oxytocin-treated patients (Table 2, $p = 0.012$). Thus, intranasal oxytocin treatment significantly attenuated PTSD symptoms triggered by trauma-script exposure. Analysis of the three different symptom clusters revealed that the oxytocin-mediated reduction in dissociative and re-experiencing symptoms was not significant (Table 2). However, oxytocin treatment attenuated avoidance – at least with a trend for statistical significance (Table 2, $p = 0.093$). Comparative analysis of the psychophysiological variables of the first and the second experiment revealed no adaptation effects.

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Sack M et al. (2017) BMC Medicine

Storyline in a results section

Intranasal oxytocin reduces provoked PTSD symptoms

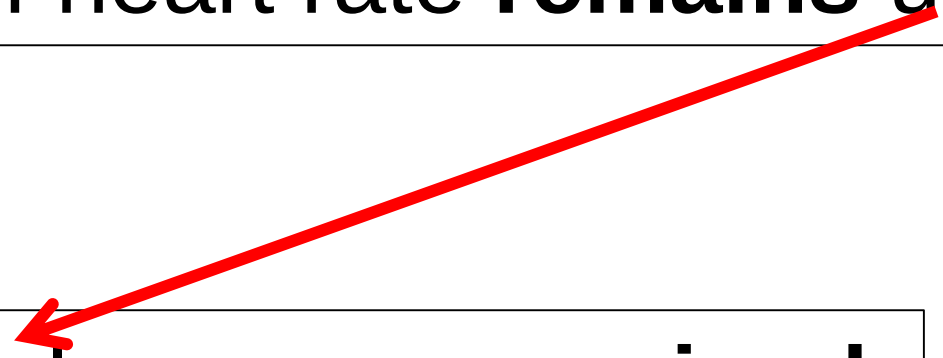
① First, we analyzed the efficacy of oxytocin treatment on PTSD symptoms triggered by trauma-script exposure.
② Provoked PTSD symptoms were assessed with the RSDI questionnaire that allows quantification of avoidance, re-experiencing and dissociation symptoms provoked by exposure to an audiotaped individual trauma script [41].
③ We found that the total RSDI score was significantly reduced in oxytocin-treated patients (Table 2, $p = 0.012$).
④ Thus, intranasal oxytocin treatment significantly attenuated PTSD symptoms triggered by trauma-script exposure.
⑤ Analysis of the three different symptom clusters revealed that the oxytocin-mediated reduction in dissociative and re-experiencing symptoms was not significant (Table 2).
⑥ However, oxytocin treatment attenuated avoidance – at least with a trend for statistical significance (Table 2, $p = 0.093$).
⑦ Comparative analysis of physiological variables of the first and second assessment revealed no adaptation effects.

Only **one** passive sentence!

Sack M et al. (2017) BMC Medicine

※ Not all verbs can be used in the passive

The effect of heart rate **remains** unclear.



Unclear **was remained**.

Nonsense!

Linking verbs

- Verbs that describe the subject.
- Verbs that say what or who that subject is.

→ Linking verbs “link” the subject and its description.

Examples of linking verbs

being	becoming	seeming
to be	to become	to appear
to remain	to grow	to look
to prove	to come	to seem
to keep	to end up	to sound

CONCLUSIONS

- The choice of passive voice and active voice should be selective.
- Choice of passive voice/active voice may not matter at times. Then choose voice consistently within paragraphs.
- Choice of voice should depend on factors such as whether the subject is known/important, emphasis, clarity, and the storyline.

Resources

- Sainani, K., Elliott, C. & Harwell, D. (2015) Active vs. passive voice in scientific writing. American Chemical Society. Webinar. Available at: https://www.acs.org/content/dam/acsorg/events/professional-development/Slides/2015-04-09-active-passive.pdf

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Thank you for your attention!

Q & A

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