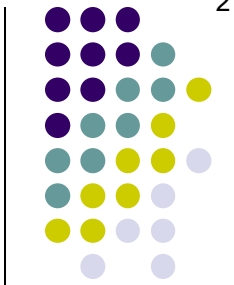
Sensory Adaptations to Strabismus

Hol up…Before we start talking about sensory adaptations to strabismus, let's review the basic principles of binocular vision

Q

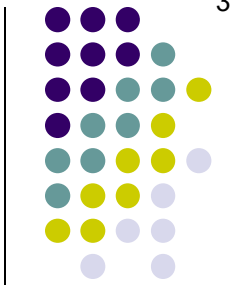
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between *visual confusion* and *diplopia*?

Q

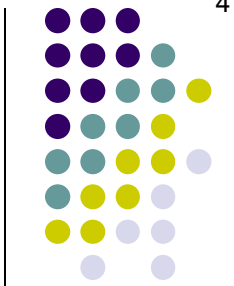
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between ***visual confusion*** and *diplopia*?
  - *Confusion* occurs when…

A

Sensory Adaptations to Strabismus

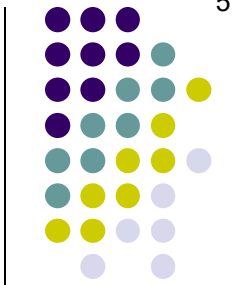


- With respect to abnormalities of binocular vision: What is the difference between ***visual confusion*** and *diplopia*?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas

(We'll unpack the notion of 'corresponding retinal areas' shortly)

Q

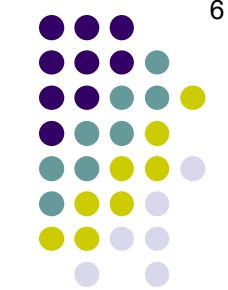
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between ***visual confusion*** and *diplopia*?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of…

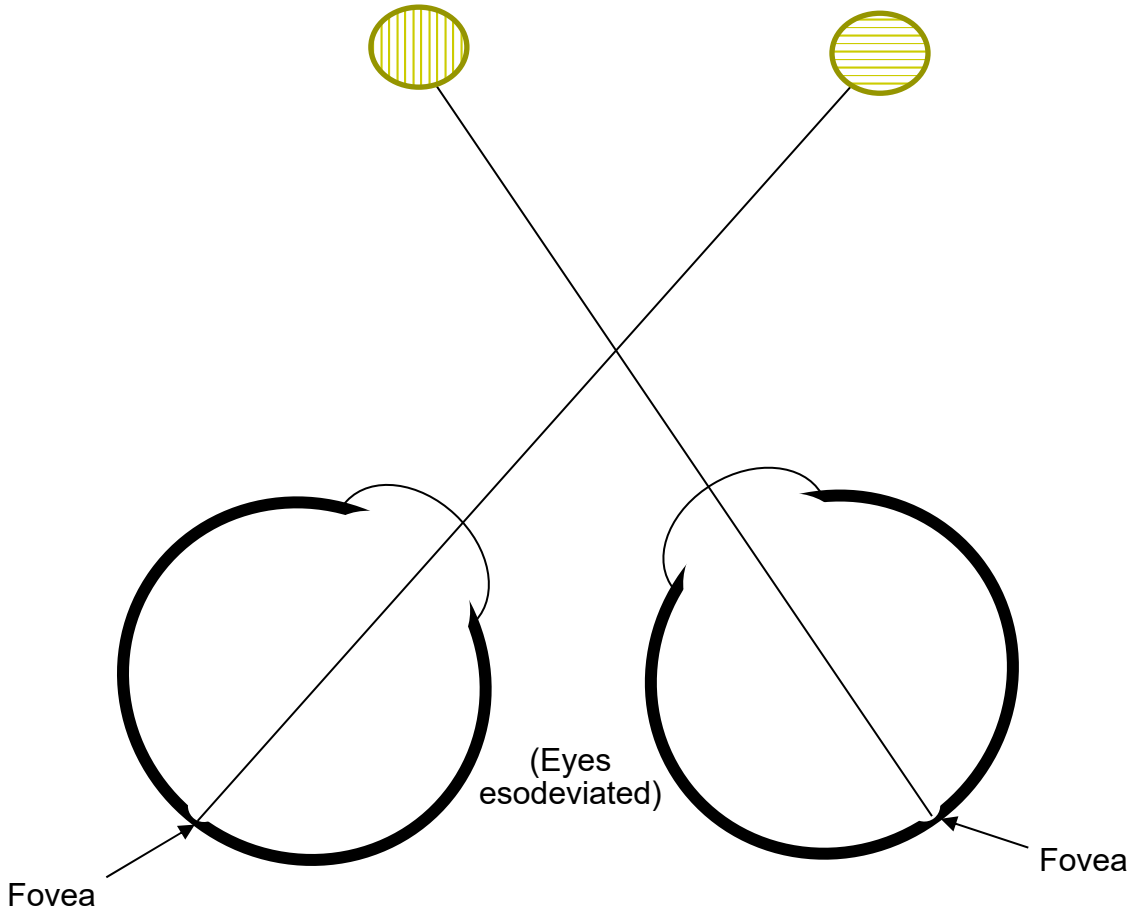
A

Sensory Adaptations to Strabismus



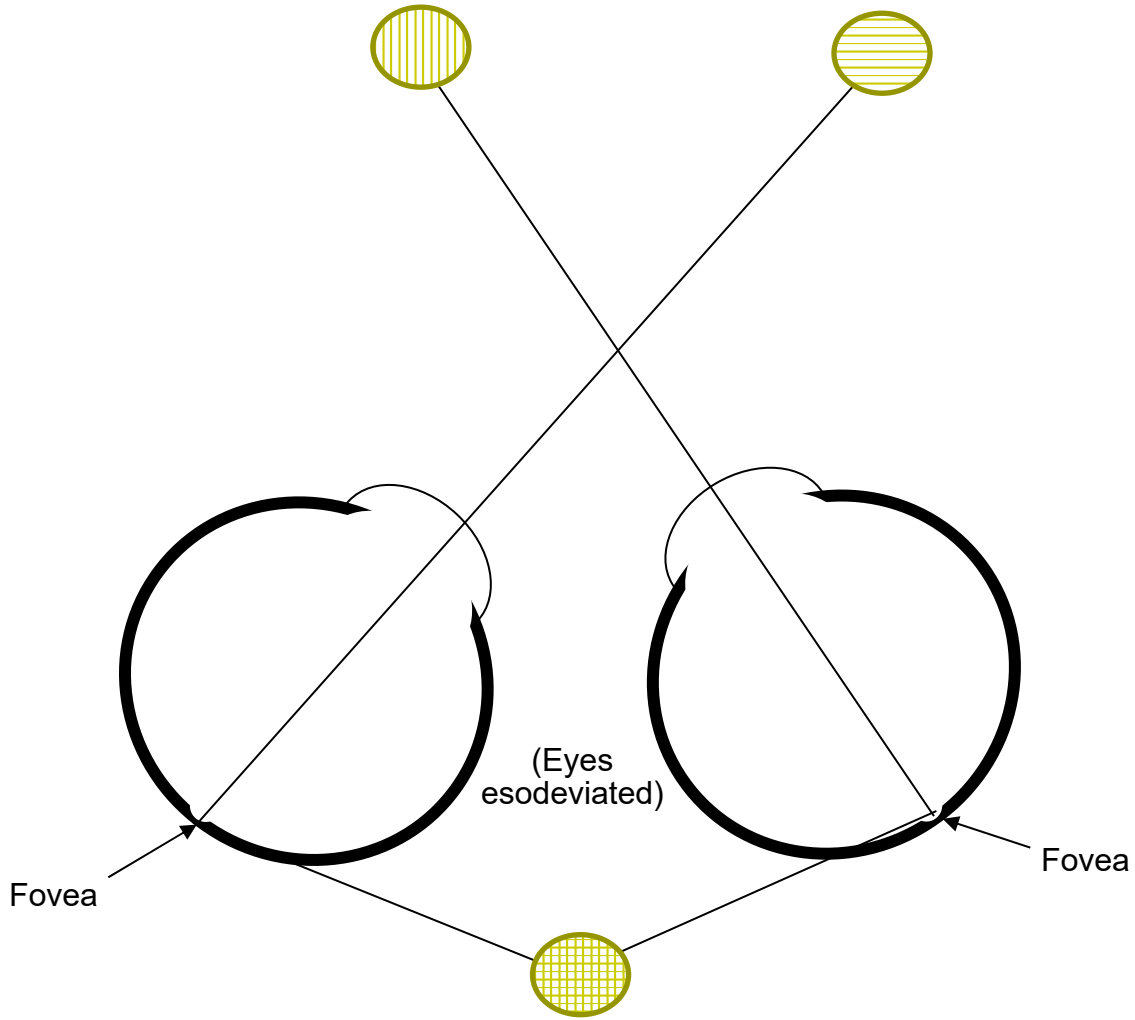
- With respect to abnormalities of binocular vision: What is the difference between ***visual confusion*** and *diplopia*?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of… *two* objects occupying a ***single*** location in visual space

Sensory Adaptations to Strabismus



These misaligned eyes are foveating different objects, and thus each is projecting a different image to the visual cortex as being the object of regard.

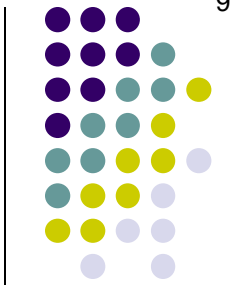
Sensory Adaptations to Strabismus



These misaligned eyes are foveating different objects, and thus each is projecting a different image to the visual cortex as being the object of regard. If the brain deal with this conundrum by creating a percept of the two objects occupying the same space, this would constitute visual confusion.

Q

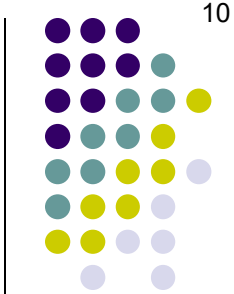
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between *visual confusion* and ***diplopia***?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of… *two* objects occupying a ***single*** location in visual space
  - *Diplopia* occurs when…

A

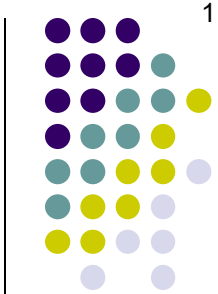
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between *visual confusion* and ***diplopia***?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of… *two* objects occupying a ***single*** location in visual space
  - *Diplopia* occurs when…a *single* image is projected onto ***noncorresponding*** retinal areas

Q

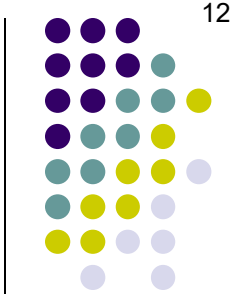
Sensory Adaptations to Strabismus



- With respect to abnormalities of binocular vision: What is the difference between *visual confusion* and ***diplopia***?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of… *two* objects occupying a ***single*** location in visual space
  - *Diplopia* occurs when…a *single* image is projected onto ***noncorresponding*** retinal areas
    - Diplopia produces the visual impression of…

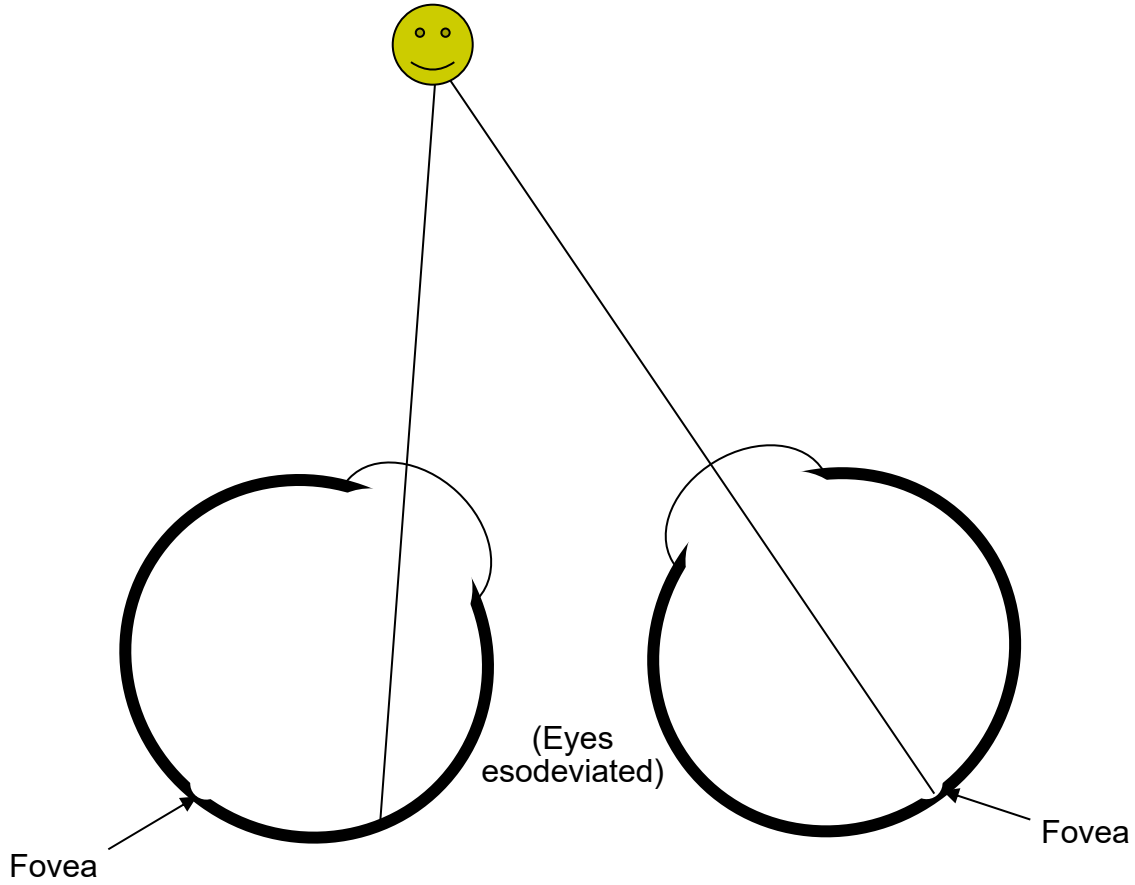
A

Sensory Adaptations to Strabismus



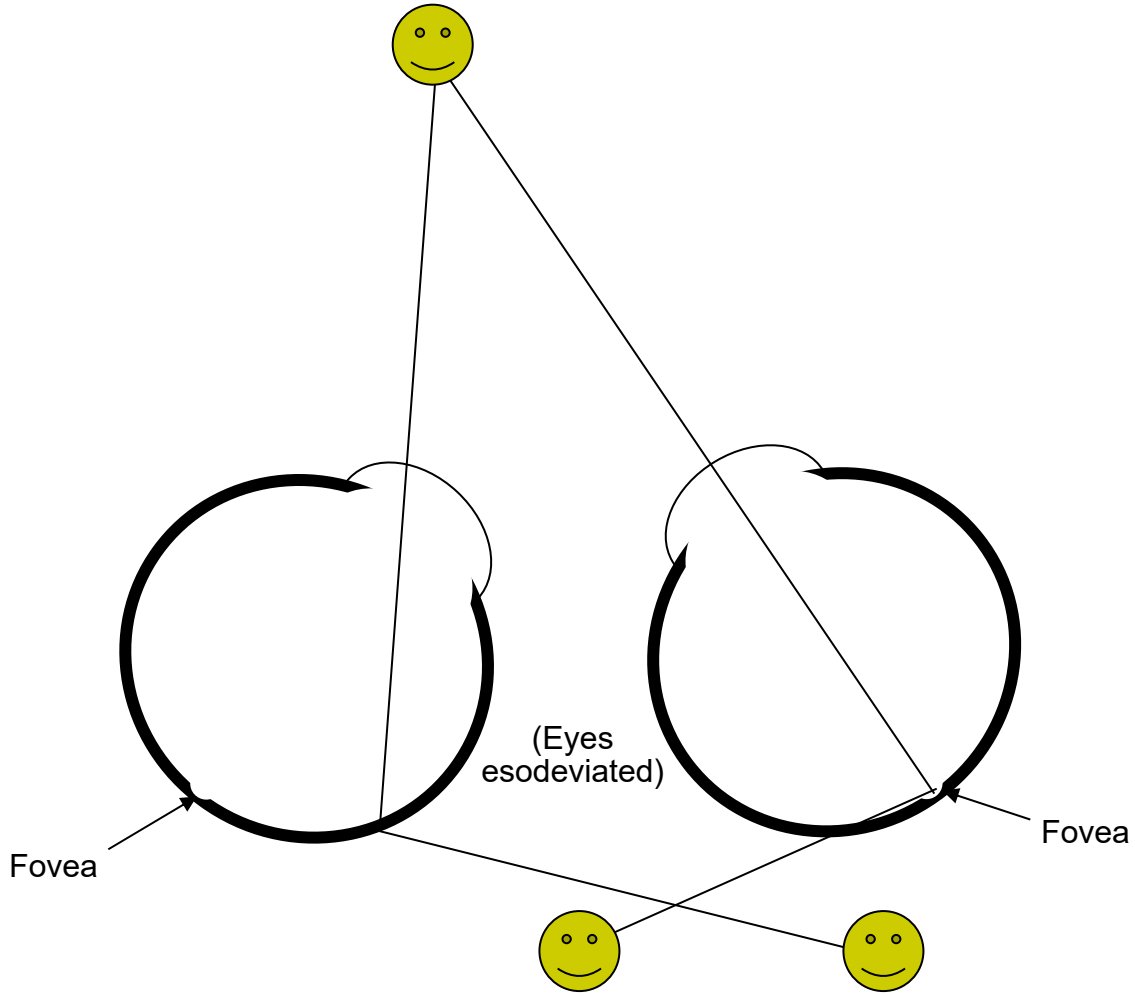
- With respect to abnormalities of binocular vision: What is the difference between *visual confusion* and ***diplopia***?
  - *Confusion* occurs when…*different* images are projected onto ***corresponding*** retinal areas
    - Visual confusion produces the visual impression of… *two* objects occupying a ***single*** location in visual space
  - *Diplopia* occurs when…a *single* image is projected onto ***noncorresponding*** retinal areas
    - Diplopia produces the visual impression of… a *single* object occupying ***two*** locations in visual space

Sensory Adaptations to Strabismus



In these misaligned eyes, the image of a single object is being projected to noncorresponding areas of the retinas.

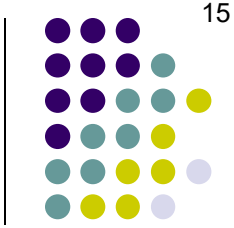
Sensory Adaptations to Strabismus



In these misaligned eyes, the image of a single object is being projected to noncorresponding areas of the retinas. If the brain interprets this situation by creating a percept of this one object occupying two separate locations in space, this would constitute diplopia.

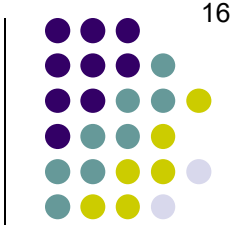
Q

Sensory Adaptations to Strabismus



- What does it mean to say retinal locations in the two eyes *correspond*?

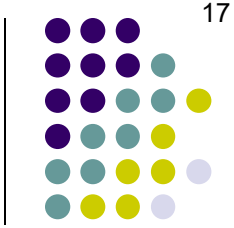
Q/A



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same words 1 and 2 of 3 word 3 of 3.

A

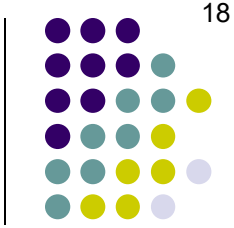
Sensory Adaptations to Strabismus



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.

Q

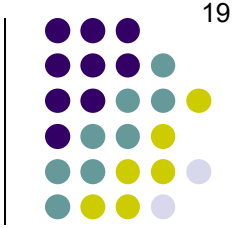
Sensory Adaptations to Strabismus



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in words 1 and 2 of 3 word 3 of 3 (abbreviation of prev 3 words).

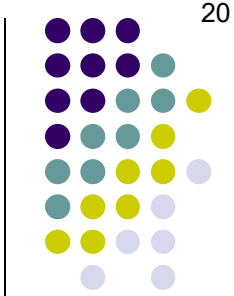
A

Sensory Adaptations to Strabismus



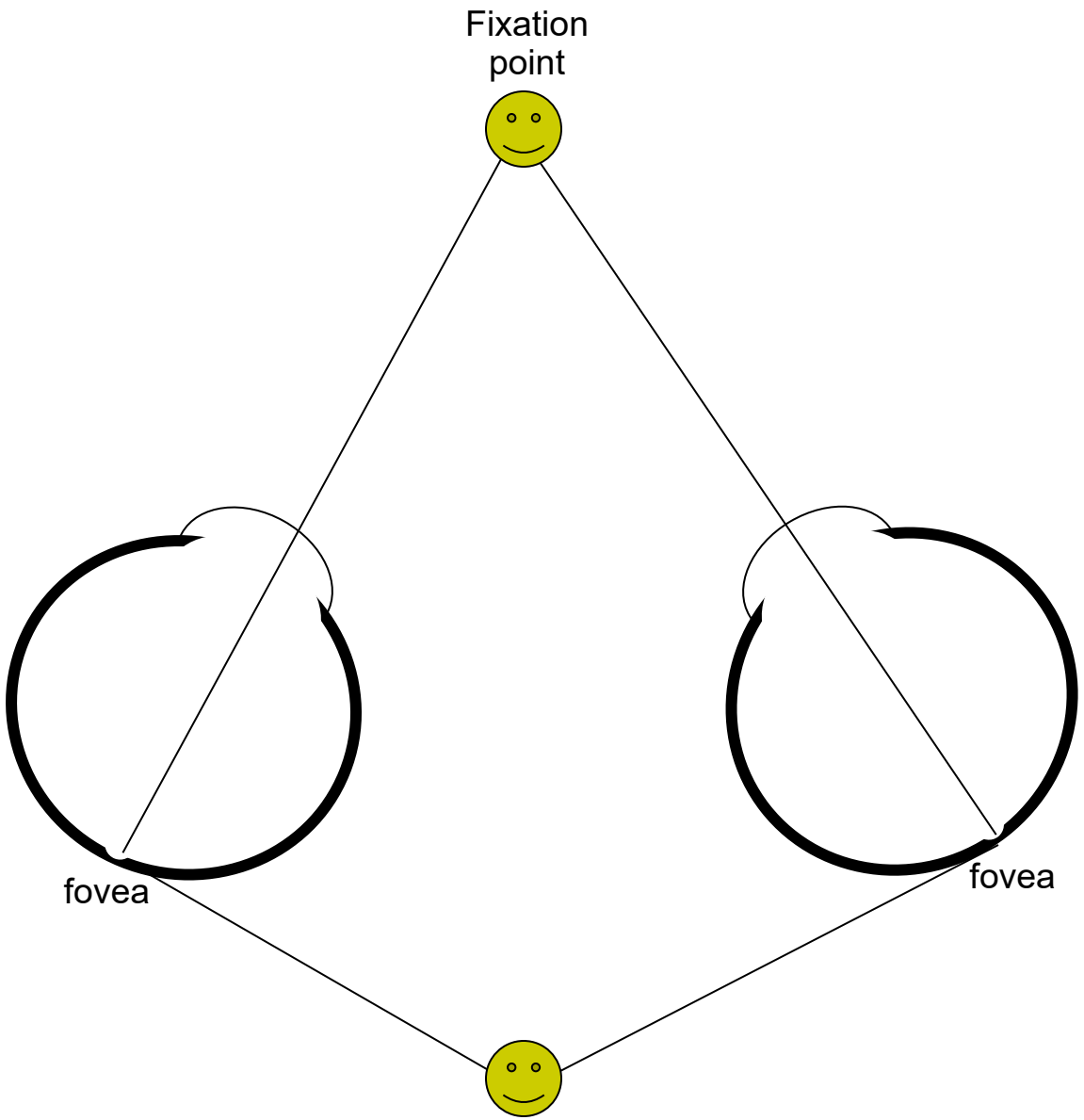
- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in *normal retinal correspondence* (NRC).

Sensory Adaptations to Strabismus

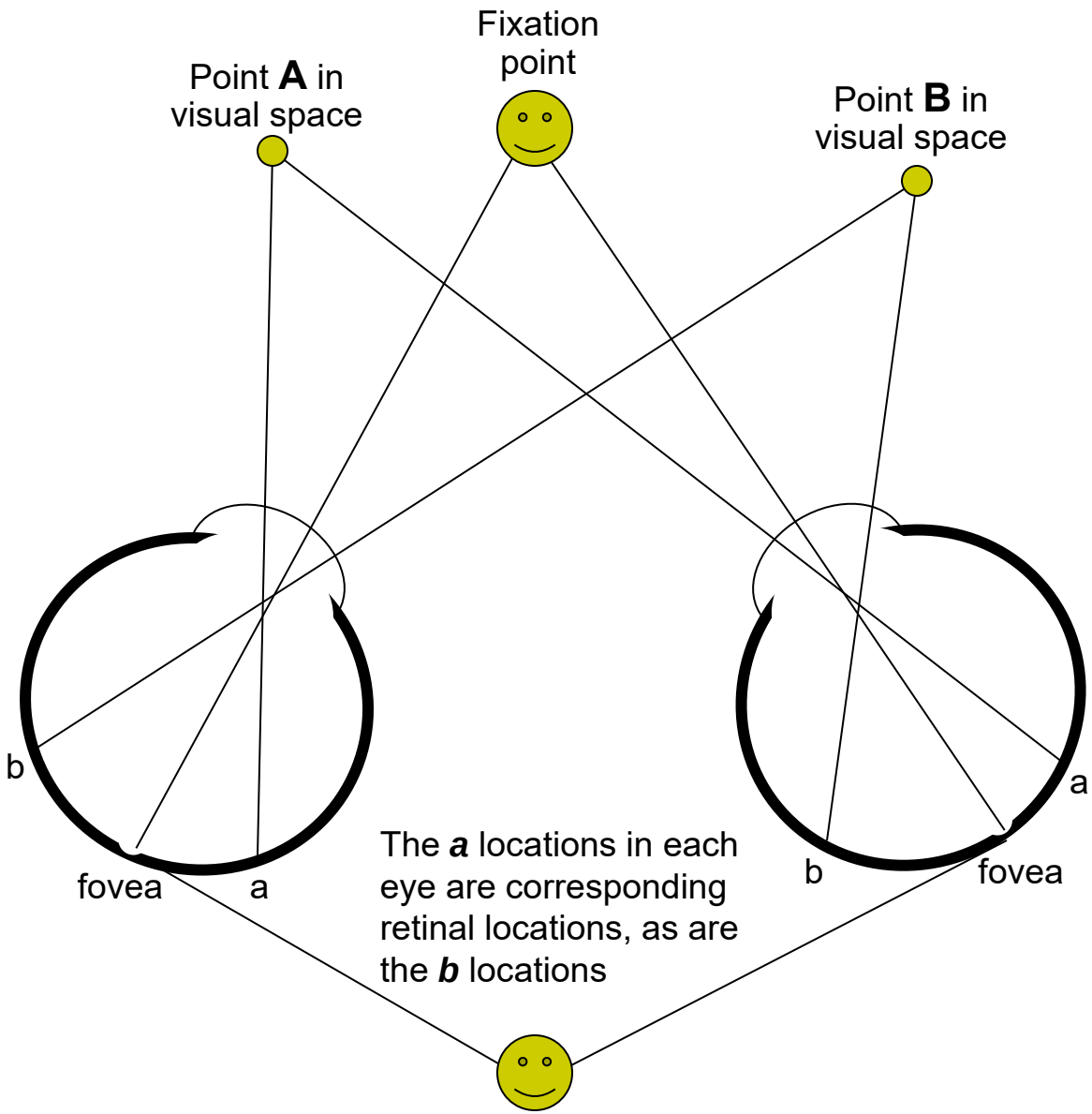


Continuing on with our review of the principles underlying binocular vision, let's look at those related to stereopsis

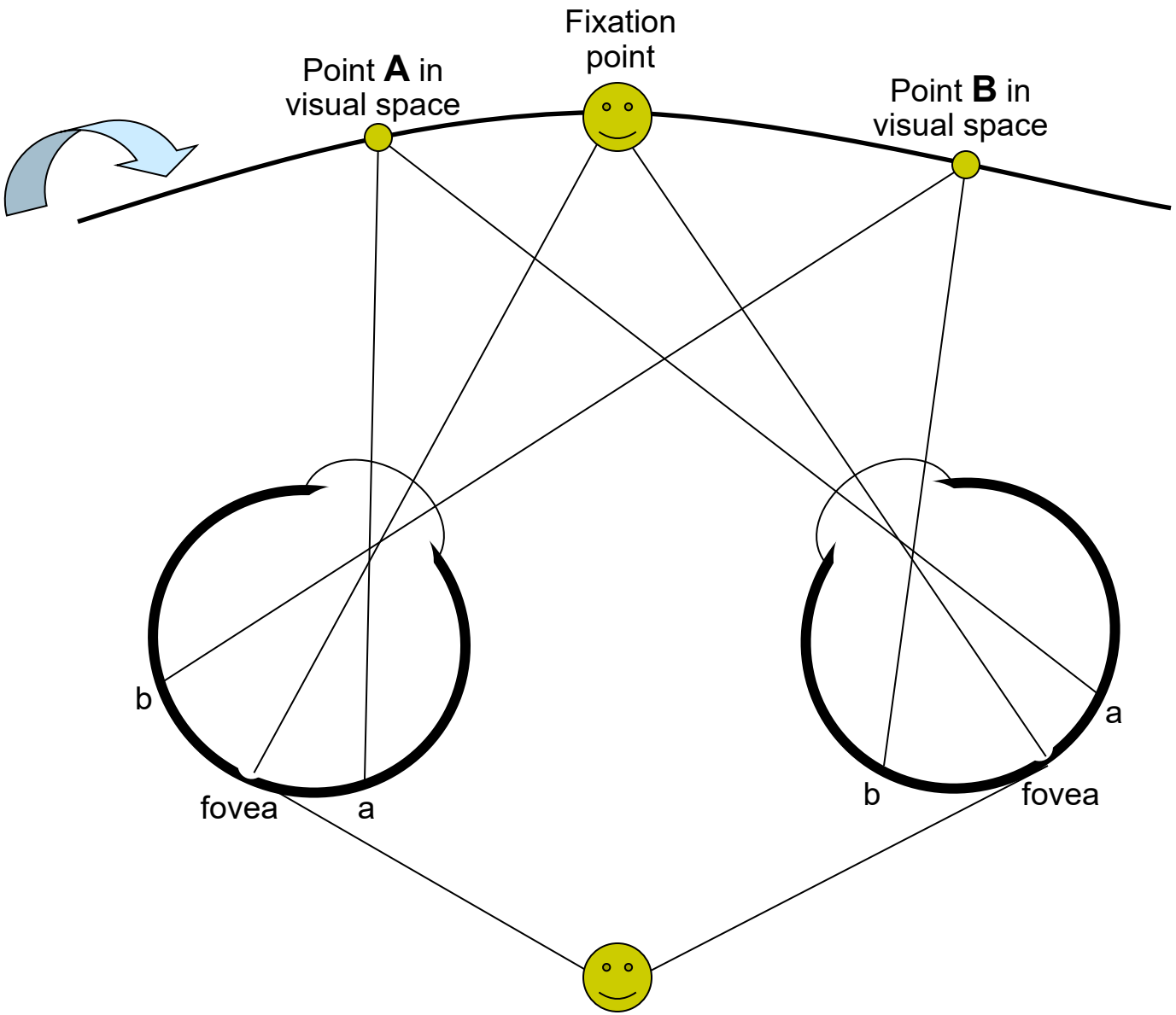
Assume this person has NRC.



Assume this person has NRC. For a given fixation point, we can identify a set of points in visual space that stimulate corresponding retinal areas.

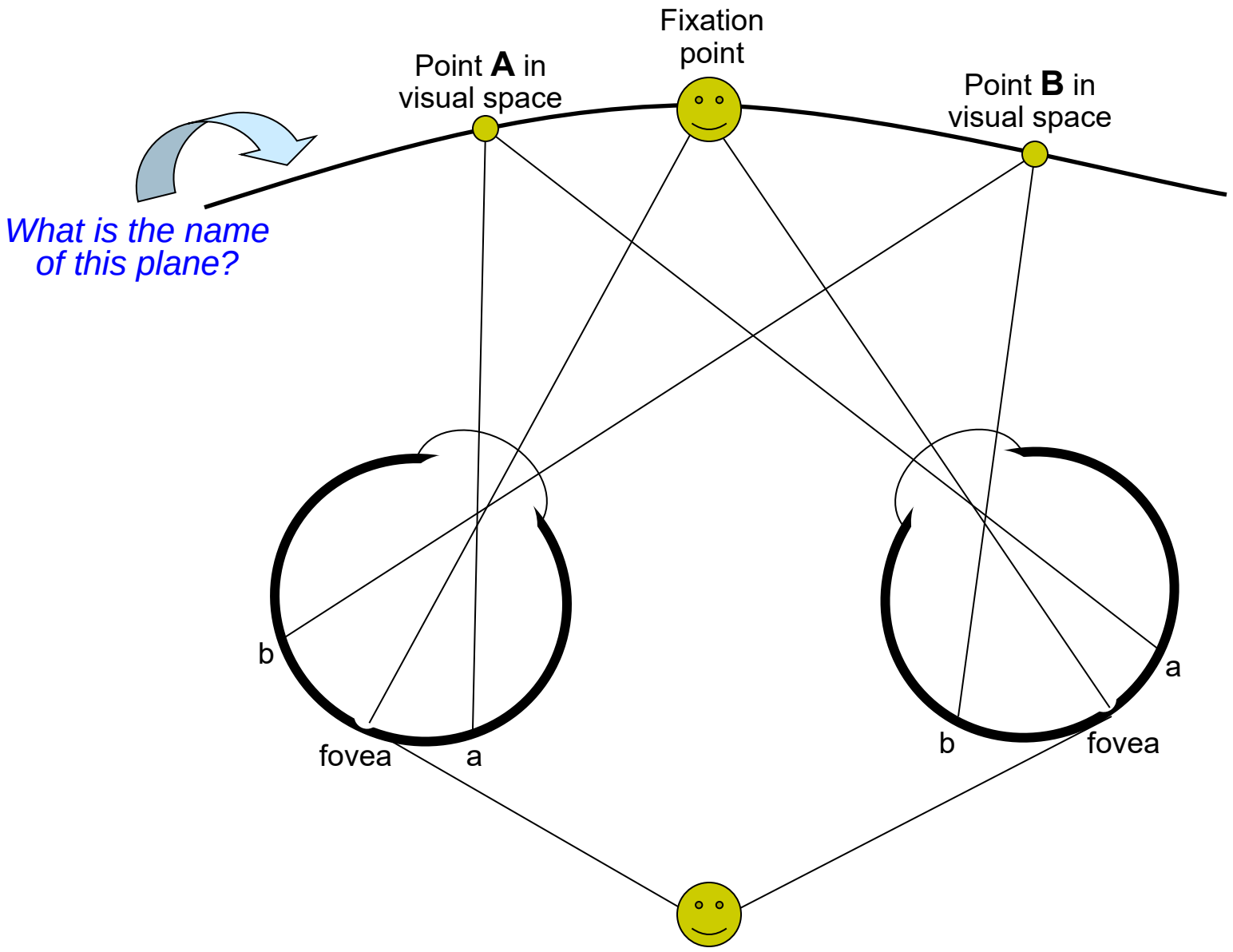


Assume this person has NRC. For a given fixation point, we can identify a set of points in visual space that stimulate corresponding retinal areas. If we mapped them out, we would find these points form a curved plane in front of the pt.



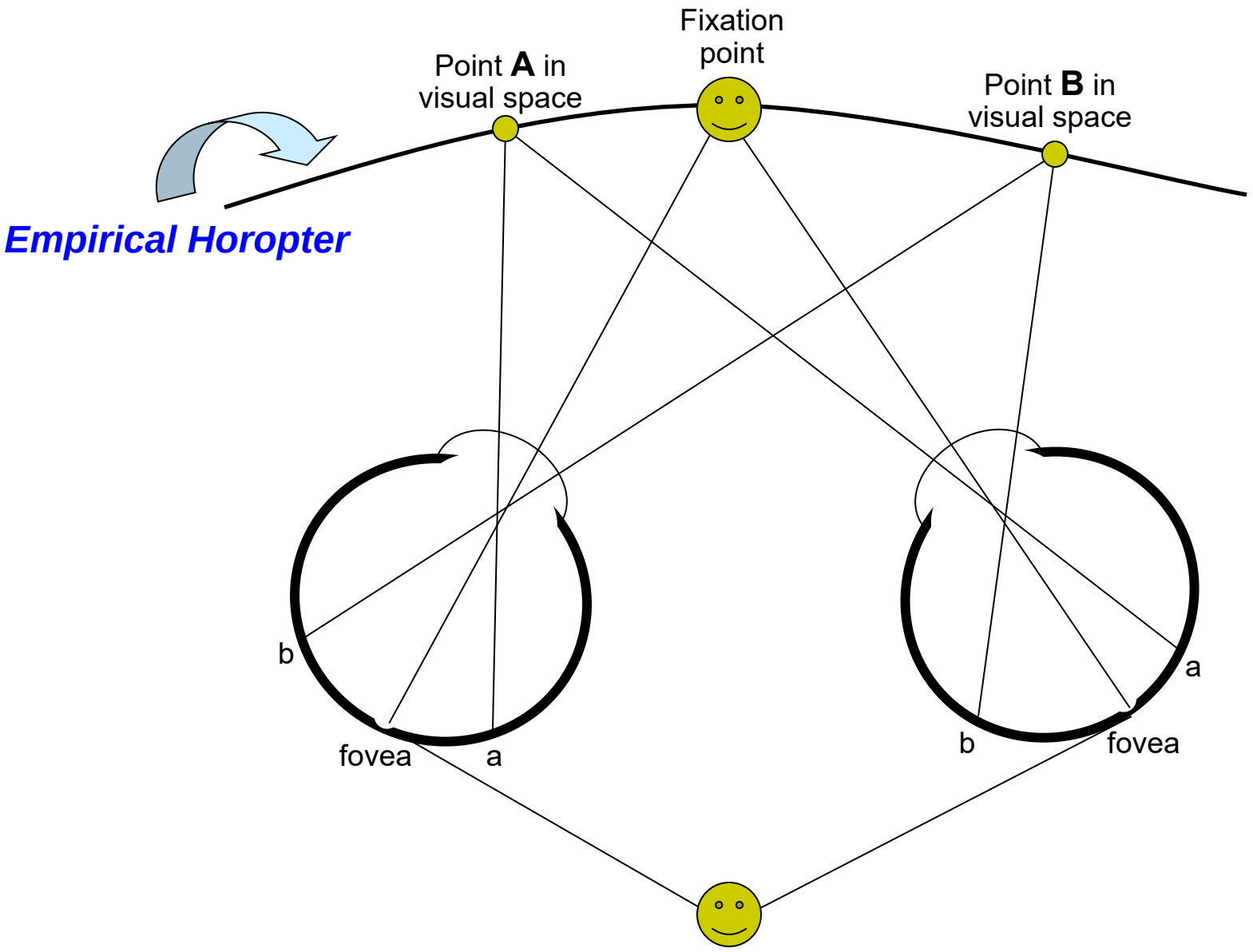
Q

Sensory Adaptations to Strabismus

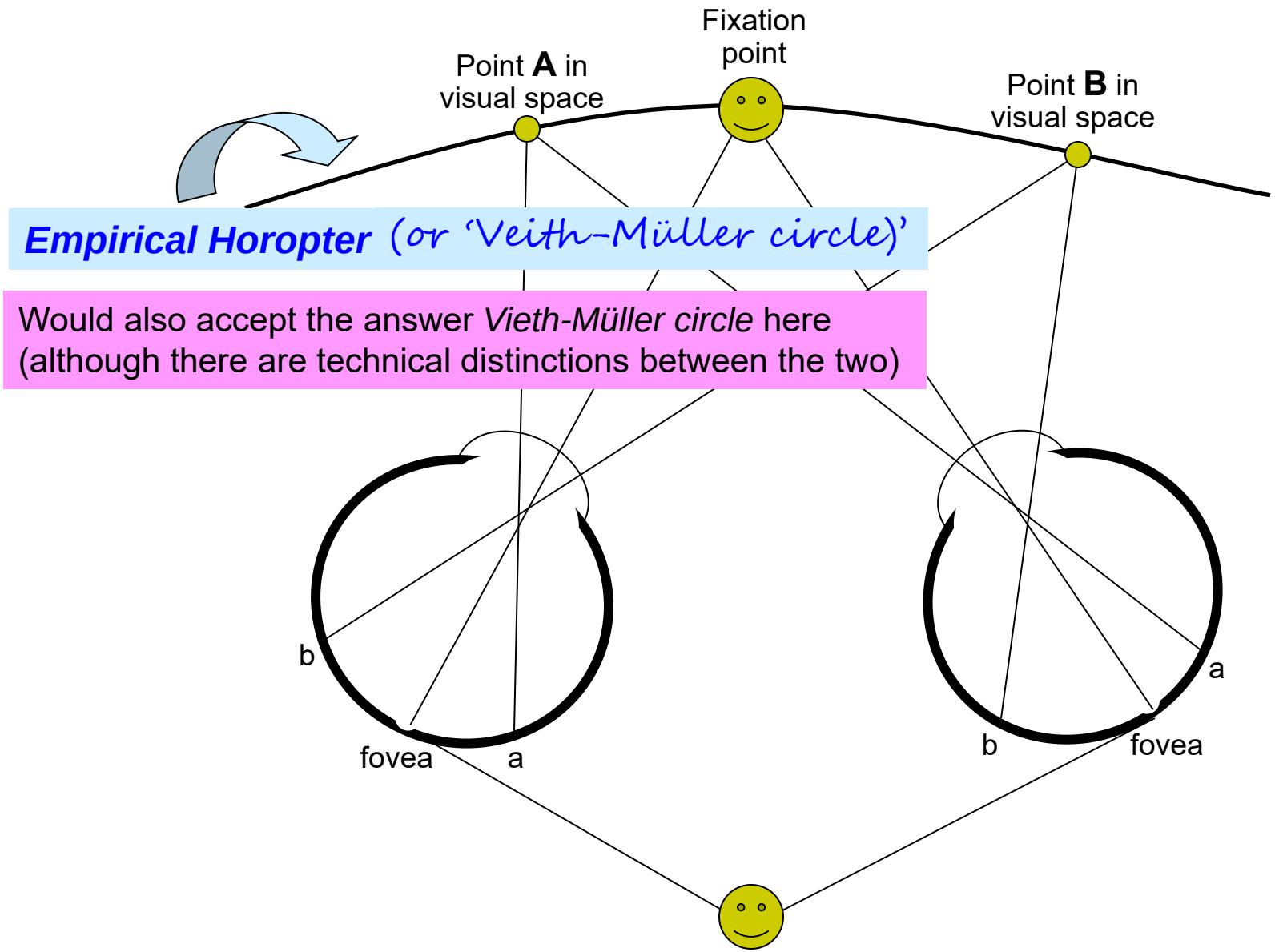


A

Sensory Adaptations to Strabismus



Sensory Adaptations to Strabismus

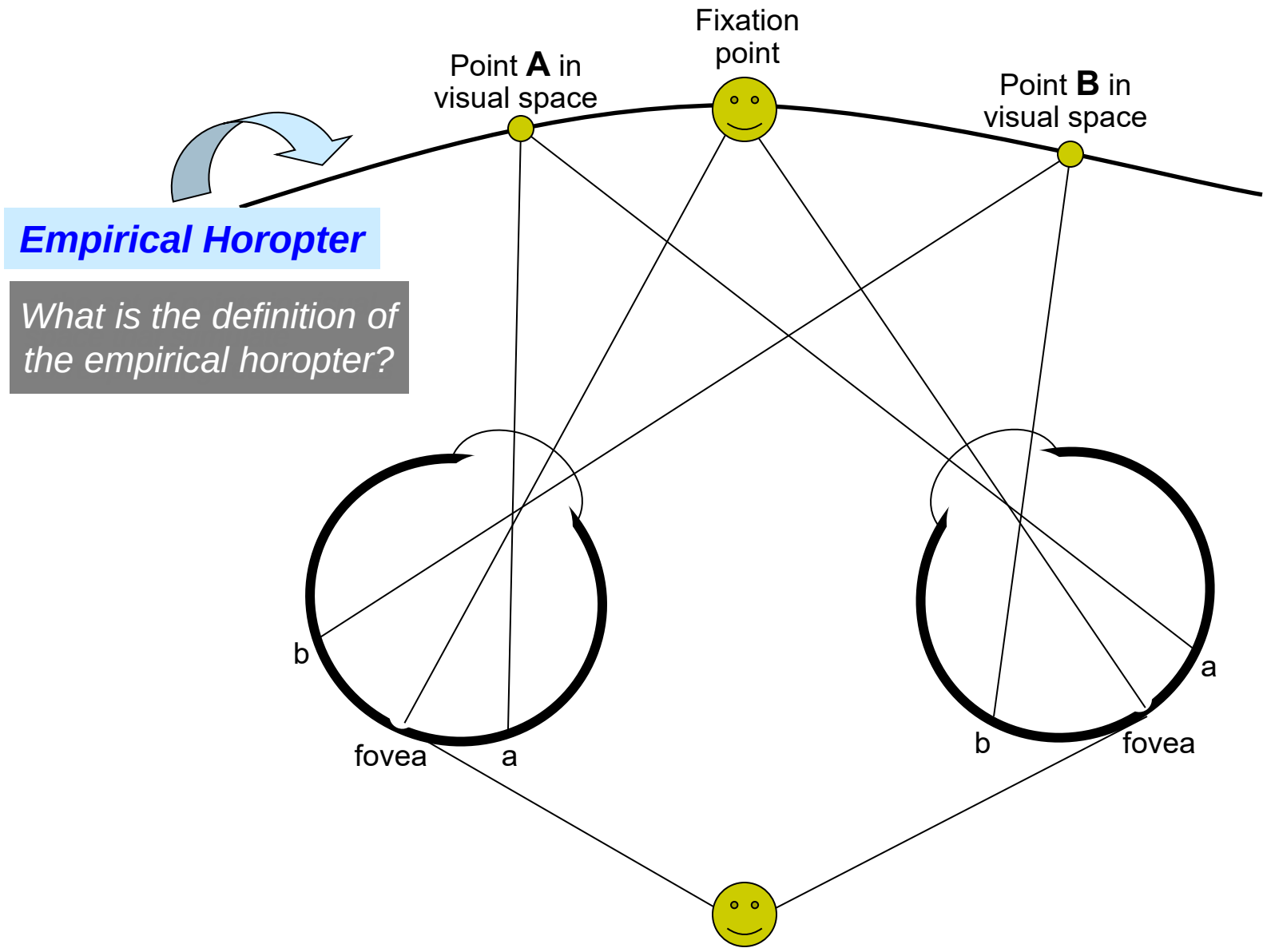


Empirical Horopter *(or 'Veith-Müller circle)'*

Would also accept the answer *Vieth-Müller circle* here (although there are technical distinctions between the two)

Q

Sensory Adaptations to Strabismus

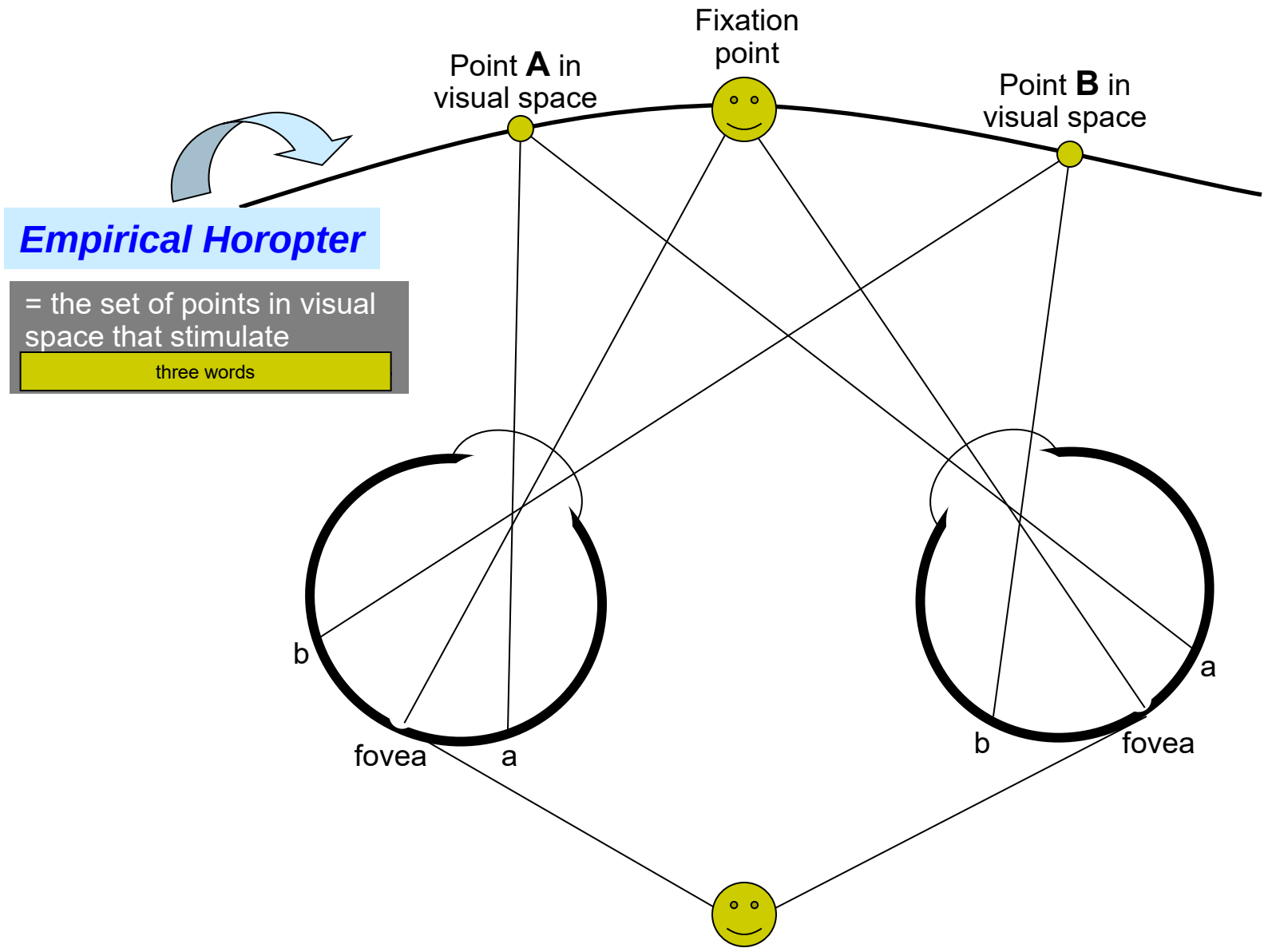


Empirical Horopter

What is the definition of the empirical horopter?

Q/A

Sensory Adaptations to Strabismus



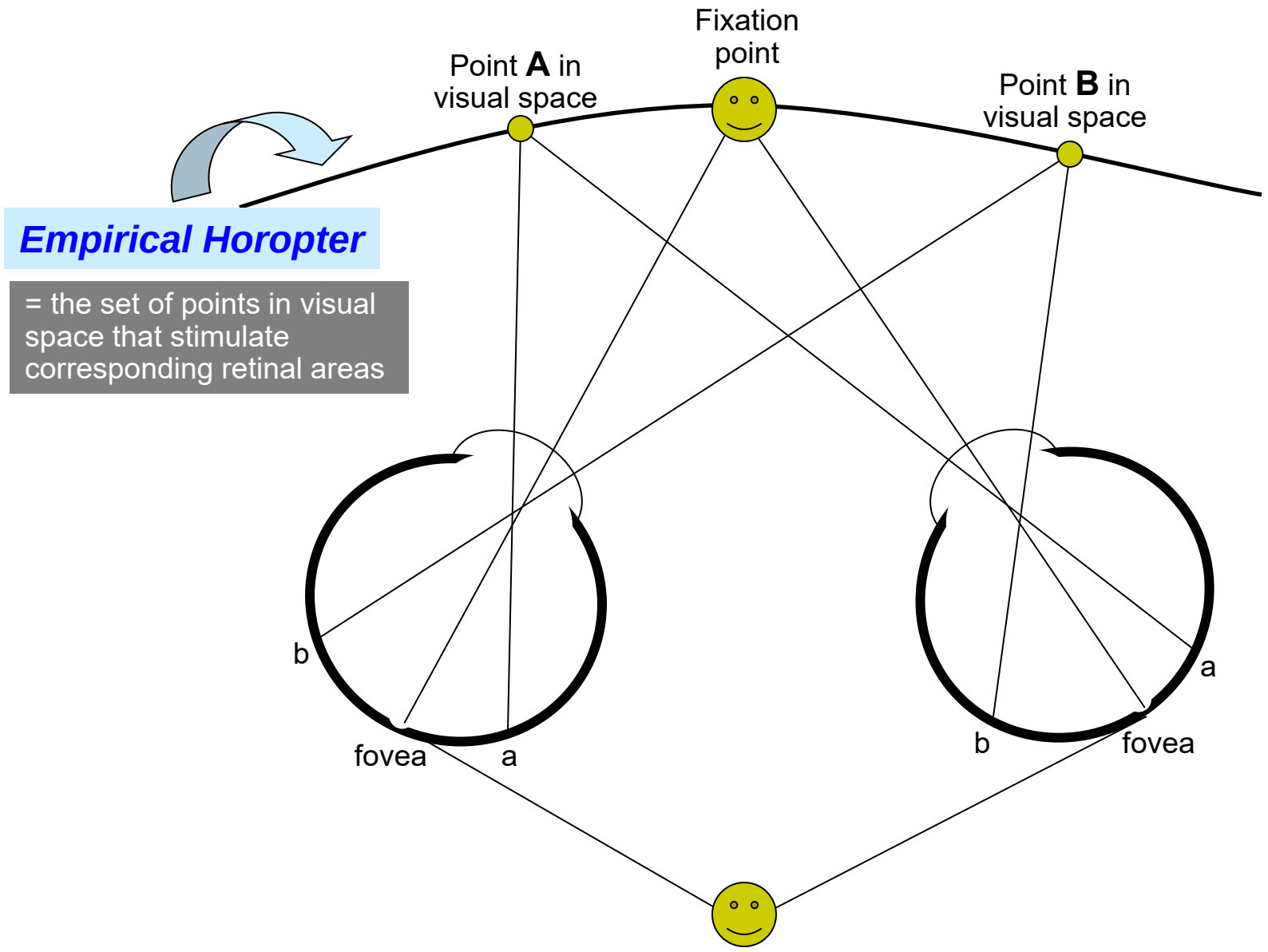
Empirical Horopter

= the set of points in visual space that stimulate

three words

A

Sensory Adaptations to Strabismus

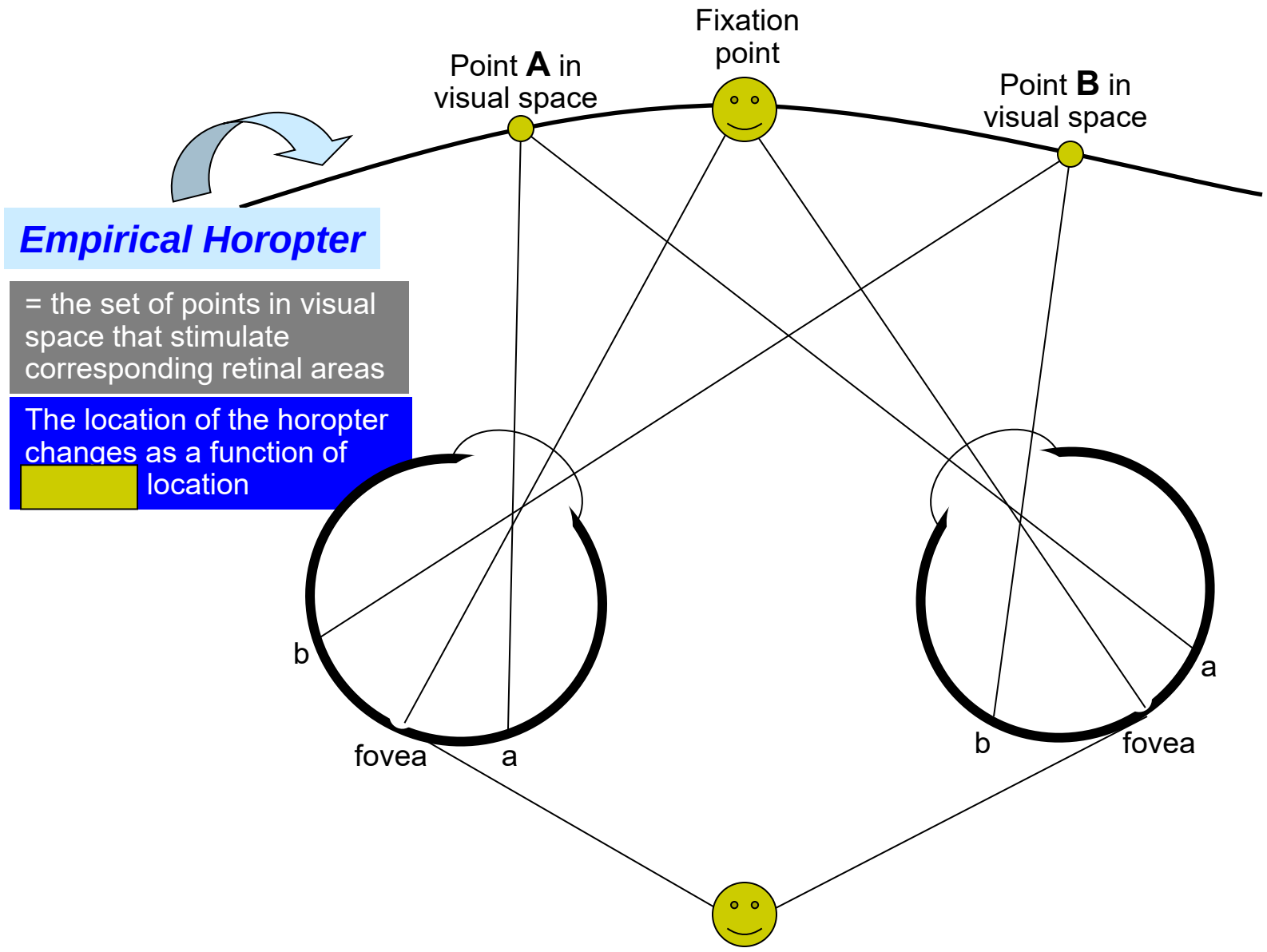


Empirical Horopter

= the set of points in visual space that stimulate corresponding retinal areas

Q

Sensory Adaptations to Strabismus



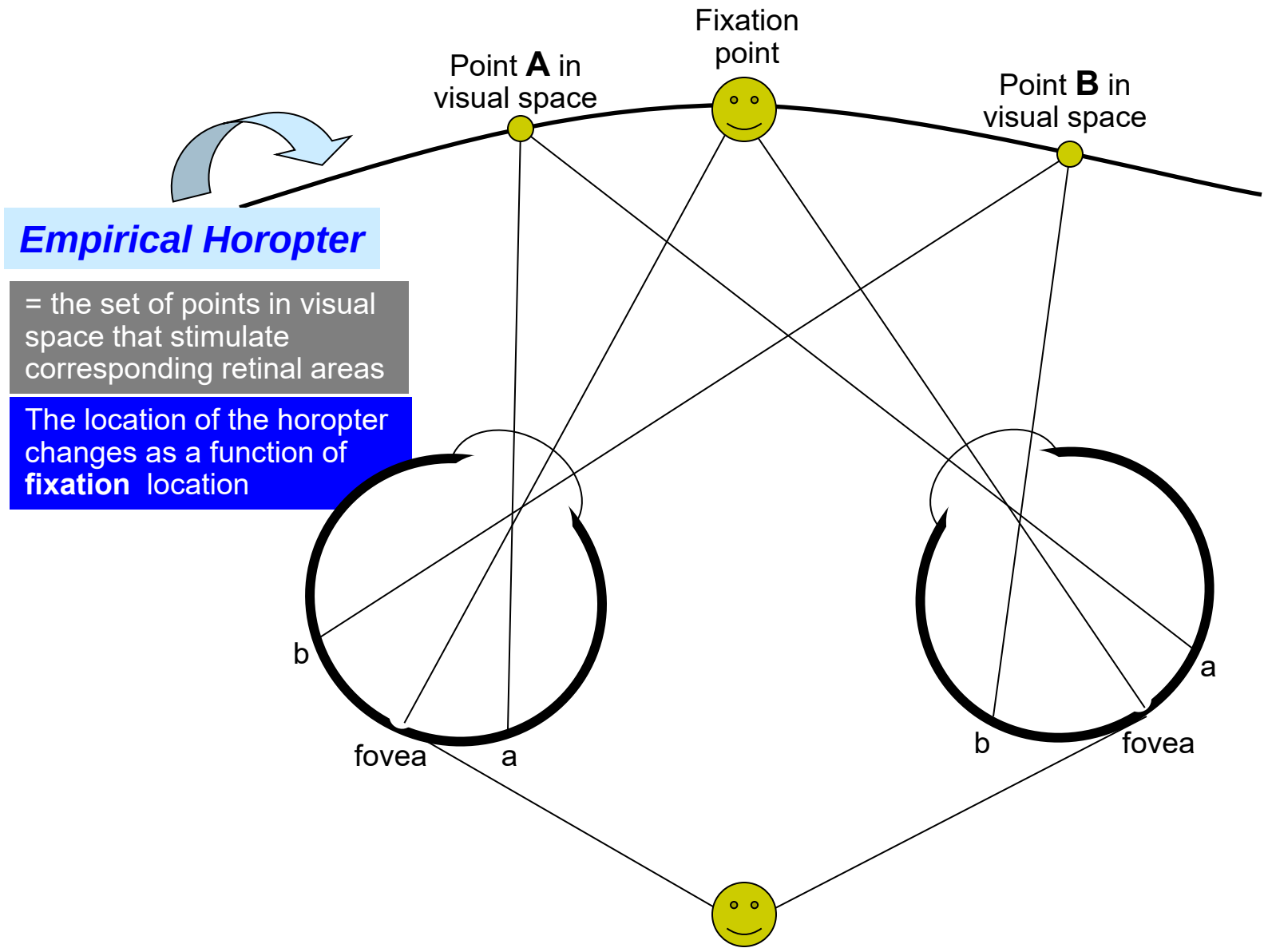
Empirical Horopter

= the set of points in visual space that stimulate corresponding retinal areas

The location of the horopter changes as a function of [redacted] location

A

Sensory Adaptations to Strabismus



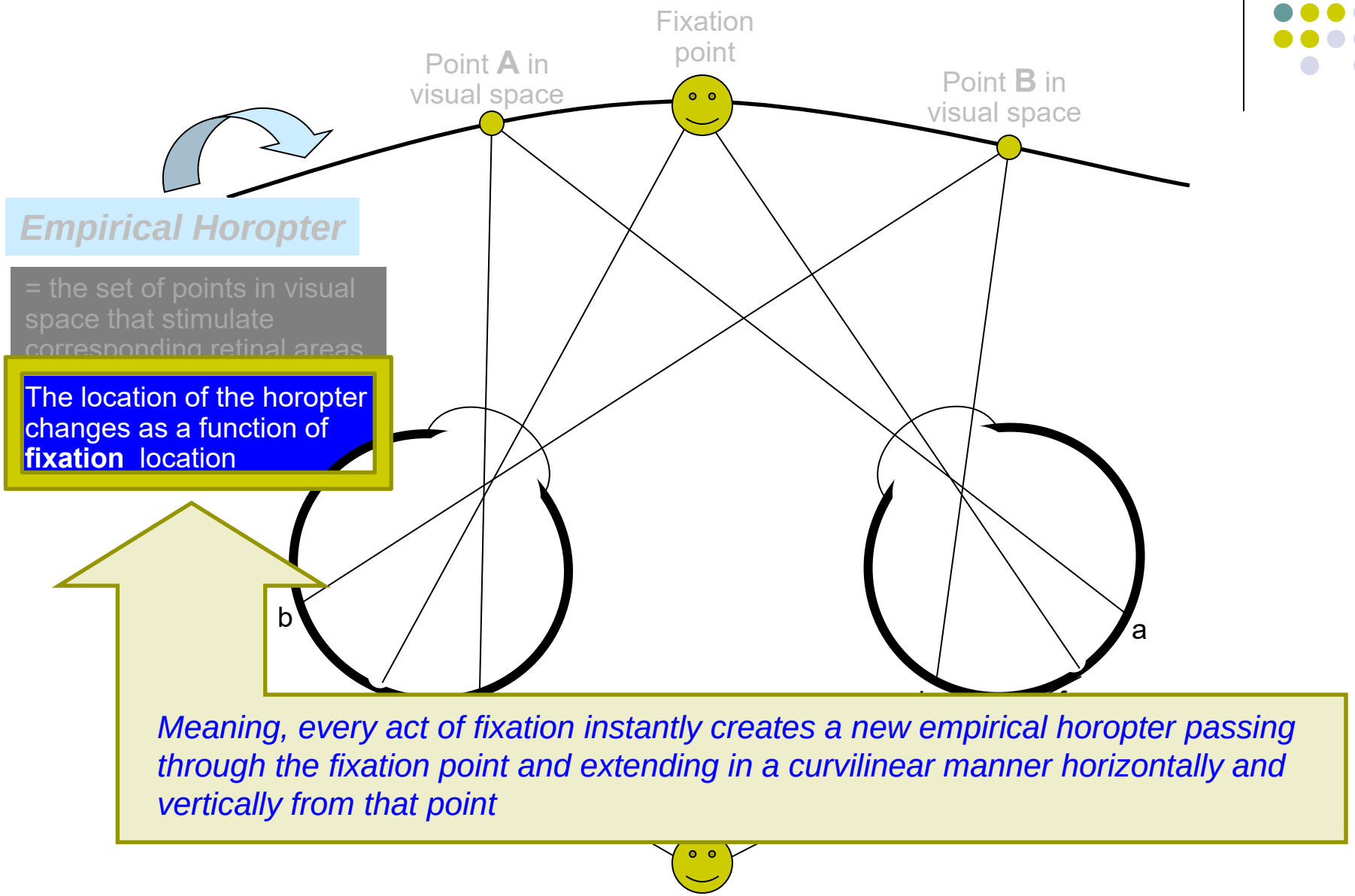
Empirical Horopter

= the set of points in visual space that stimulate corresponding retinal areas

The location of the horopter changes as a function of **fixation** location

A

Sensory Adaptations to Strabismus



Empirical Horopter

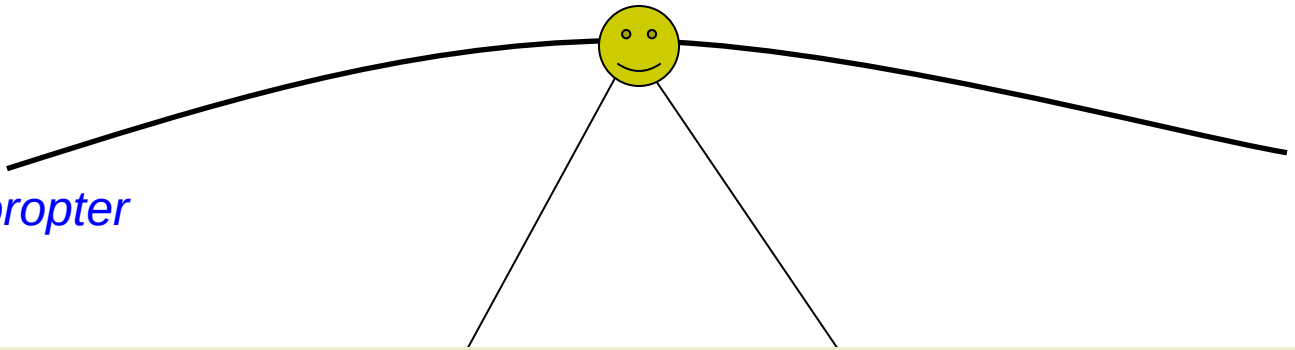
= the set of points in visual space that stimulate corresponding retinal areas

The location of the horopter changes as a function of **fixation** location

Meaning, every act of fixation instantly creates a new empirical horopter passing through the fixation point and extending in a curvilinear manner horizontally and vertically from that point

Q

Sensory Adaptations to Strabismus

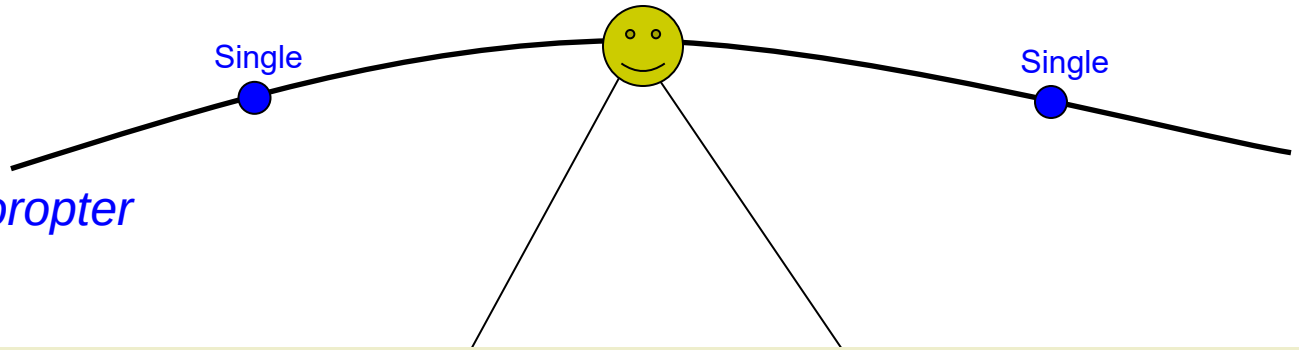


Empirical Horopter

What is the significance of the empirical horopter?

A

Sensory Adaptations to Strabismus



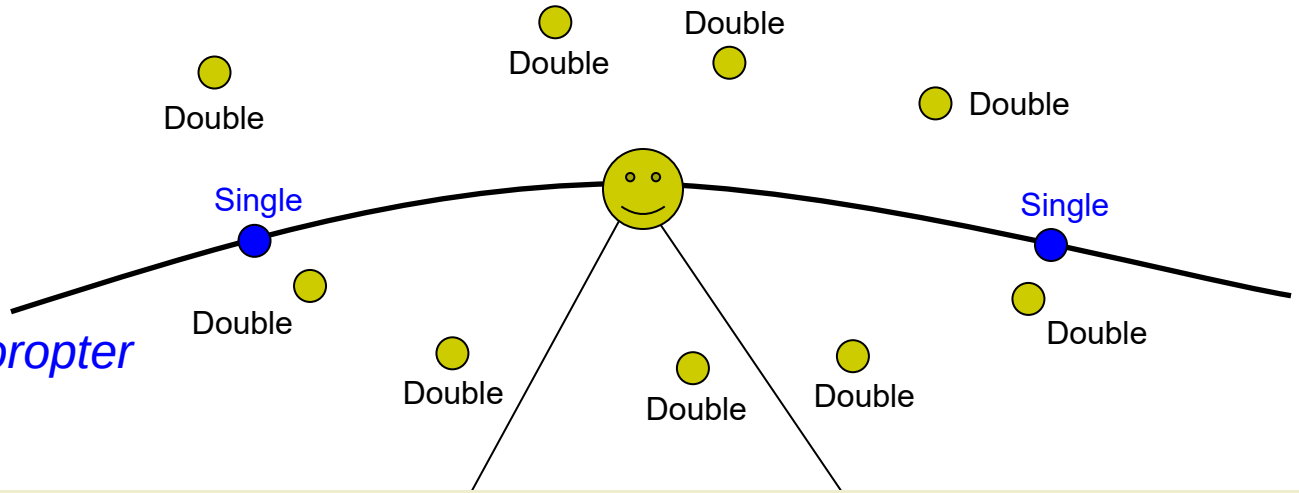
Empirical Horopter

What is the significance of the empirical horopter?

In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space.

A

Sensory Adaptations to Strabismus

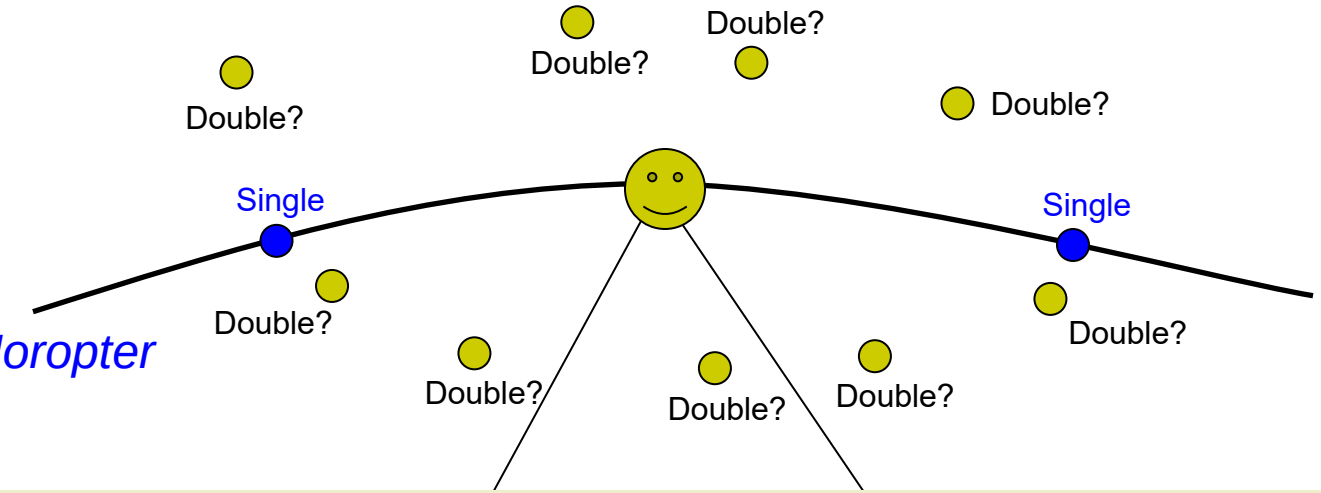


What is the significance of the empirical horopter?

In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

A

Sensory Adaptations to Strabismus



Empirical Horopter

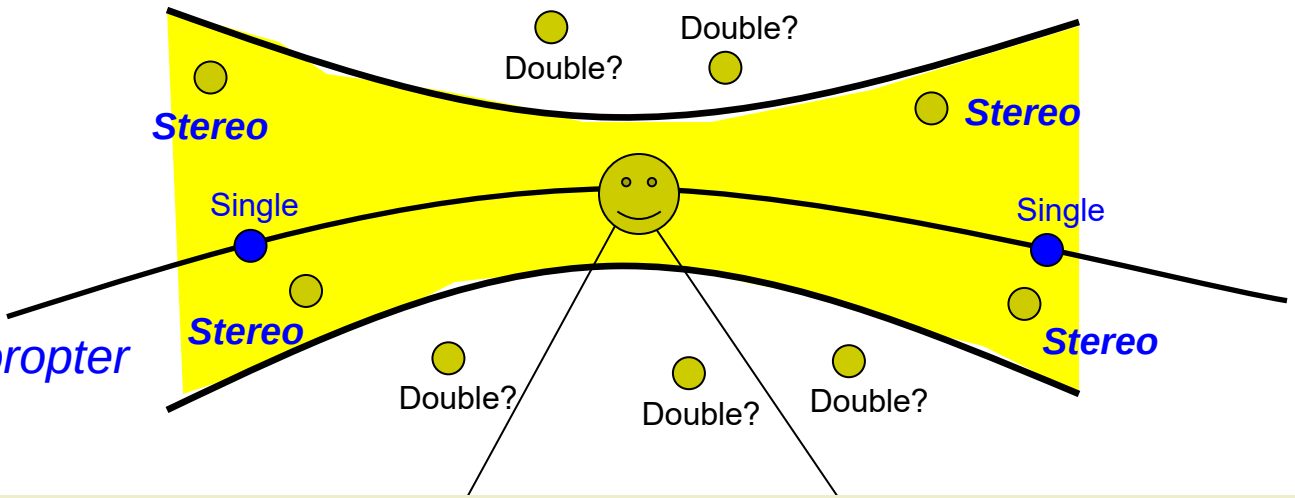
What is the significance of the empirical horopter?

In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

A

Sensory Adaptations to Strabismus



Empirical Horopter

What is the significance of the empirical horopter?

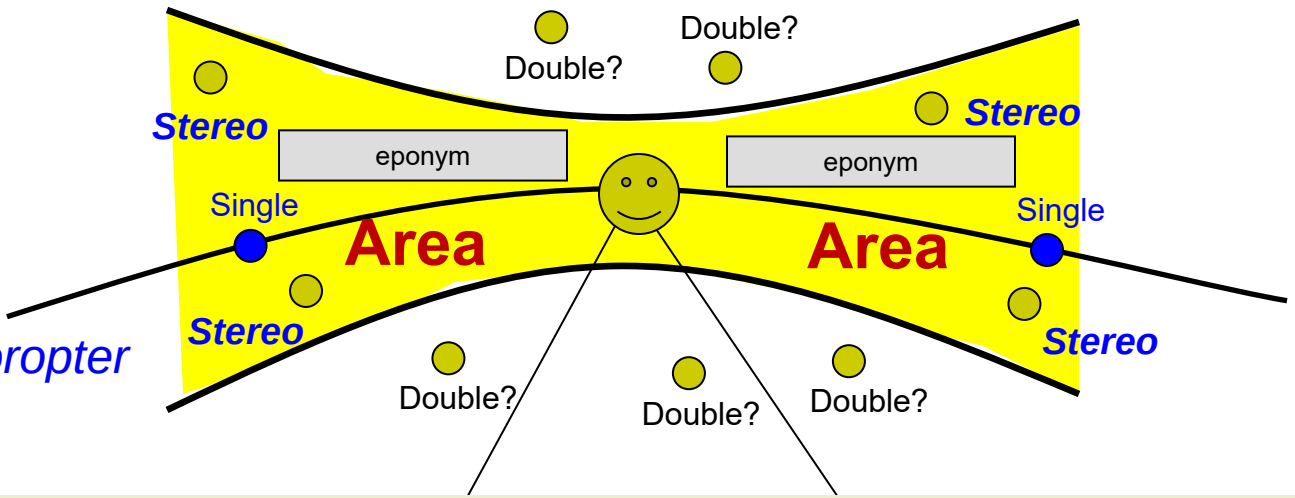
In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

There is a set of points around the horopter for which the *slight* retinal noncorrespondence they produce results not in diplopia, but rather an impression of three-dimensionality--that is, **stereopsis**.

Q

Sensory Adaptations to Strabismus



Empirical Horopter

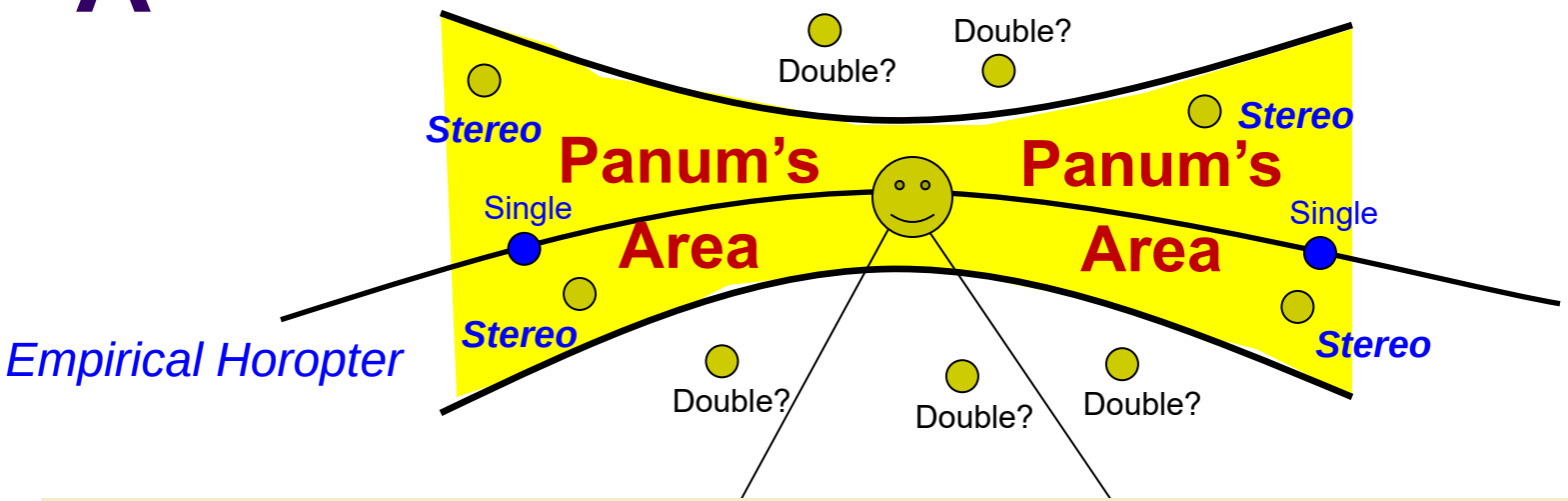
What is the significance of the empirical horopter?
In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

There is a set of points around the horopter for which the *slight* retinal noncorrespondence they produce results not in diplopia, but rather an impression of three-dimensionality--that is, **stereopsis**. *Taken together, this set of points comprise a space called* eponym **area**.

A

Sensory Adaptations to Strabismus



What is the significance of the empirical horopter?

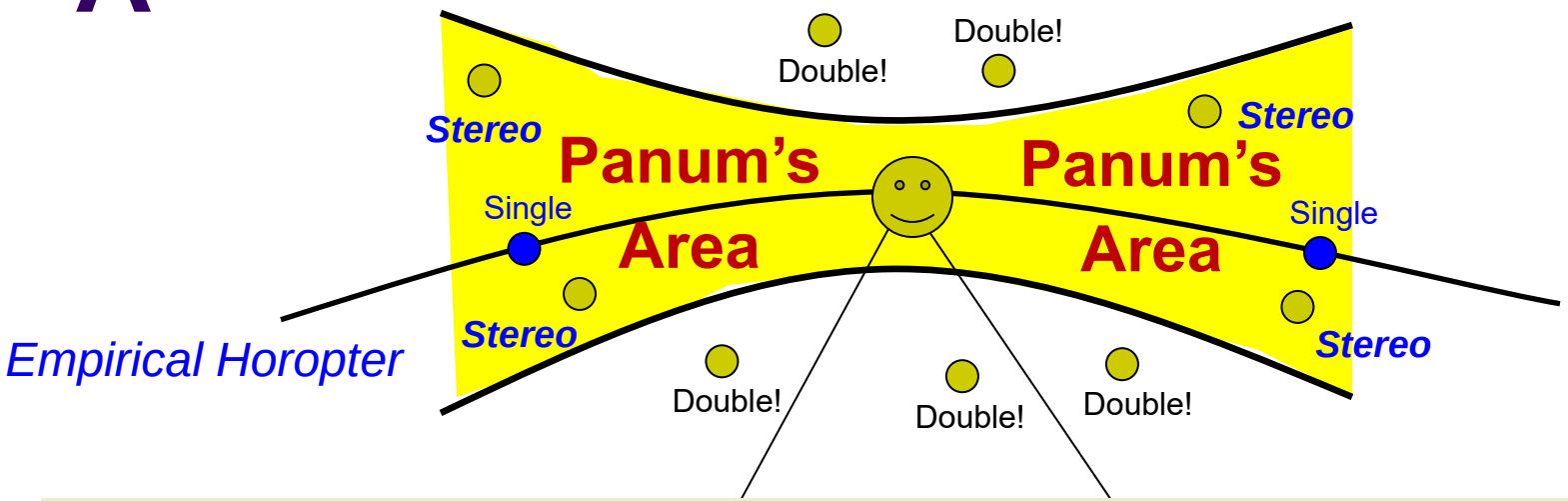
In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

There is a set of points around the horopter for which the *slight* retinal noncorrespondence they produce results not in diplopia, but rather an impression of three-dimensionality--that is, **stereopsis**. *Taken together, this set of points comprise a space called* **Panum's area**.

A

Sensory Adaptations to Strabismus



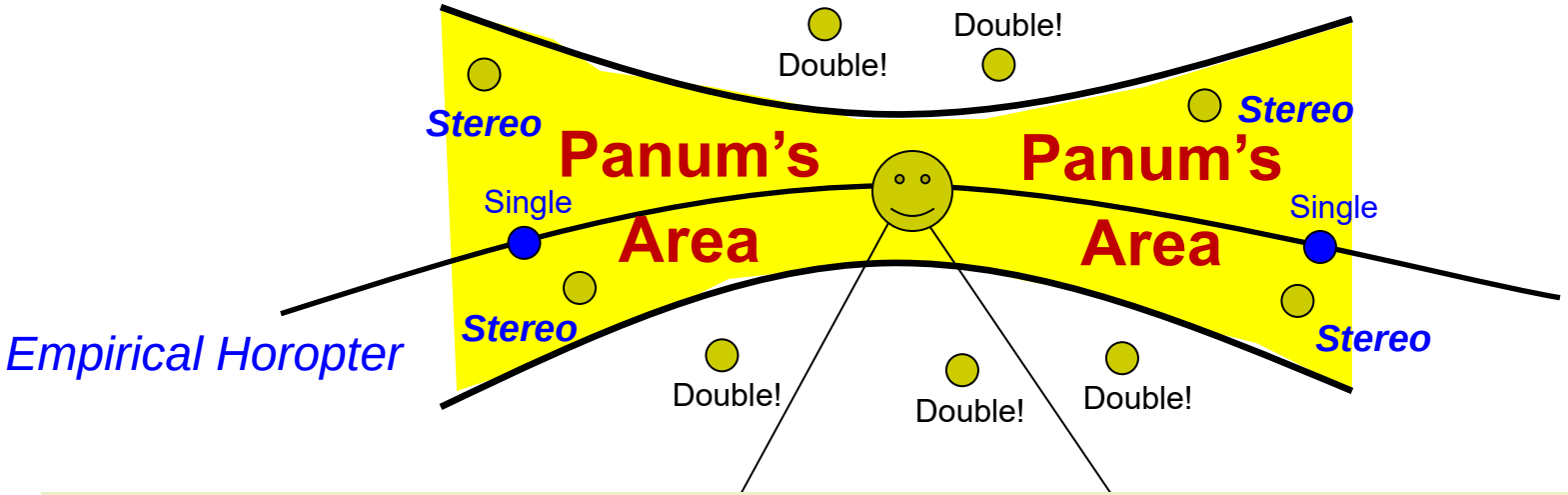
Empirical Horopter

What is the significance of the empirical horopter?
In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

There is a set of points around the horopter for which the *slight* retinal noncorrespondence they produce results not in diplopia, but rather an impression of three-dimensionality--that is, **stereopsis**. *Taken together, this set of points comprise a space called* **Panum's area**. Locations in visual space outside of Panum's produce a perceptual experience of *diplopia*, not stereopsis.

Sensory Adaptations to Strabismus

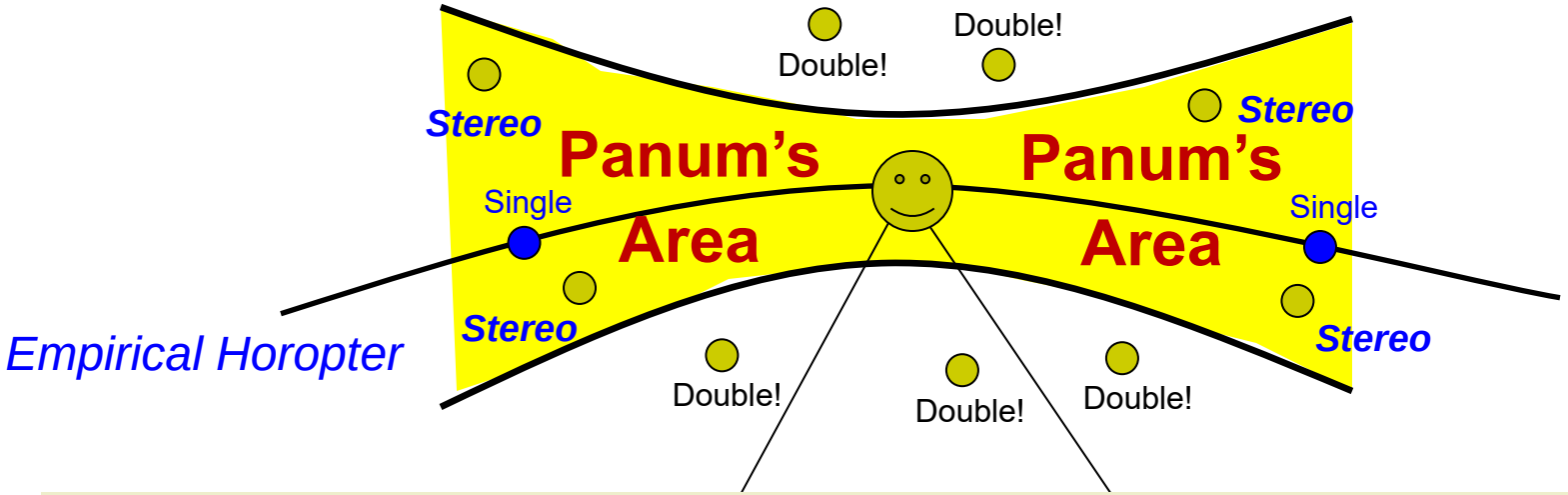


What is the significance of the empirical horopter?
In order to project to corresponding locations on the two retinas, points in visual space must lie on the empirical horopter. Because rays from these points stimulate corresponding retinal locations, the perceptual experience they produce is of a single object at a single location in visual space. Likewise, points that do **not** lie on the horopter stimulate **non**corresponding retinal locations, and therefore are expected to give rise to diplopia.

This does ***not*** occur for all off-horopter locations, however!

There is a set of points around the horopter for which the *slight* retinal noncorrespondence they produce results not in diplopia, but rather an impression of three-dimensionality--that is, **stereopsis**. *Taken together, this set of points comprise a space called* **Panum's area** . Locations in visual space outside of Panum's produce a perceptual experience of *diplopia*, not stereopsis.
TLDR Points in visual space that lie within Panum's area produce an impression of stereopsis; point that lie outside of Panum's area produce diplopia.

Sensory Adaptations to Strabismus



Empirical Horopter

What is the significance of the empirical horopter?

In order to project to corresponding locations on the two retinas, points in visual space must lie on the e… …ns, the p… …e. Likew… and t…

This …

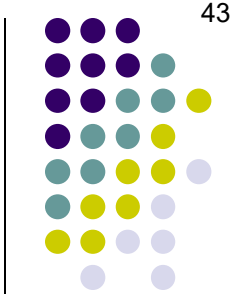
There … y produ… …opsis. *Taken together, this set of points comprise a space called* **Panum's area**. Locations in visual space outside of Panum's produce a perceptual experience of *diplopia*, not stereopsis.

Visualizing Panum's area

Through careful observation, you can demonstrate the existence of Panum's area to yourself. Place yourself in a fairly cluttered environment, ie, give yourself lots of potential visual targets. Pick an object to look at—something 2-3 feet away. While doing so, direct your awareness—not your *eyes*, your *awareness*—to an object a foot or so closer or farther away, and just off to the side. If you can do this (it's trickier than it sounds), you will find that your visual experience of this not-in-Panum's-area object is diplopic.

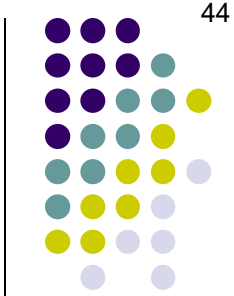
TLDR Points in visual space that lie within Panum's area produce an impression of stereopsis; point that lie outside of Panum's area produce diplopia.

Sensory Adaptations to Strabismus



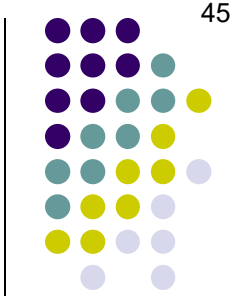
Both visual confusion and diplopia are highly maladaptive if they reach conscious awareness. Unfortunately, ocular misalignment (ie, strabismus) is going to produce both if an individual has NRC and fully-engaged foveas bilaterally.

Sensory Adaptations to Strabismus



Both visual confusion and diplopia are highly maladaptive if they reach conscious awareness. Unfortunately, ocular misalignment (ie, strabismus) is going to produce both if an individual has NRC and fully-engaged foveas bilaterally. Fortunately, the visual system has evolved mechanisms for mitigating the visual confusion and diplopia that result from ocular misalignment.

Sensory Adaptations to Strabismus

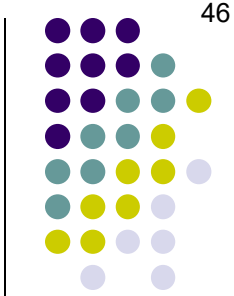


Both visual confusion and diplopia are highly maladaptive if they reach conscious awareness. Unfortunately, ocular misalignment (ie, strabismus) is going to produce both if an individual has NRC and fully-engaged foveas bilaterally. Fortunately, the visual system has evolved mechanisms for mitigating the visual confusion and diplopia that result from ocular misalignment.

At last, we are ready to review these *sensory adaptations to strabismus*.

Q

Sensory Adaptations to Strabismus

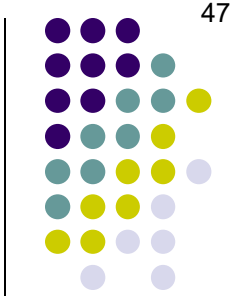


- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  -
  -
  -

Mnemonic is…

A

Sensory Adaptations to Strabismus

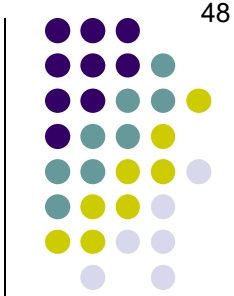


- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **S**
  - **A**
  - **M**

*Mnemonic is…***SAM**

A

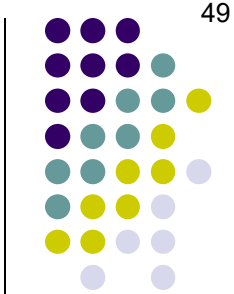
Sensory Adaptations to Strabismus



- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **Suppression**
  - **Anomalous retinal correspondence (ARC)**
  - **Monofixation syndrome**

*Mnemonic is…***SAM**

Sensory Adaptations to Strabismus



- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **Suppression**
  - **Anomalous retinal correspondence (ARC)**
  - **Monofixation syndrome**

Let's drill down on each adaptation in detail, starting with suppression

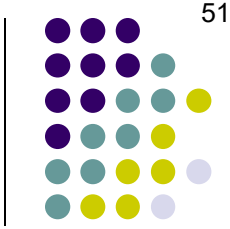
Q

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…

A

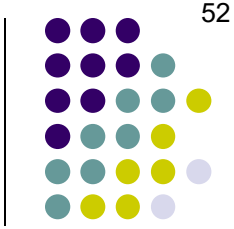
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness

Q

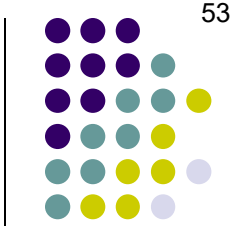
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: _____ and _____

A

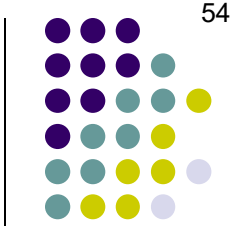
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and *peripheral*

Q

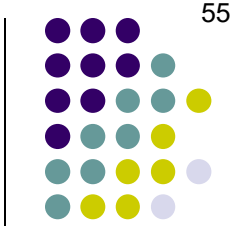
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the foveal vs nonfoveal image in the deviating vs nondeviating eye

A

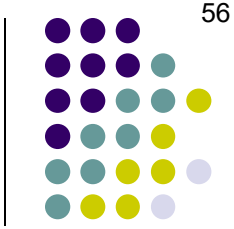
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the *foveal* image in the *deviating* eye

Q

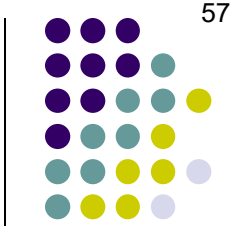
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the *foveal* image in the *deviating* eye
    - Prevents abnormal visual experience

A

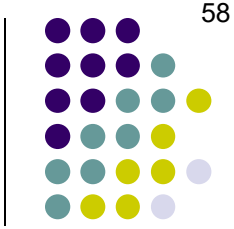
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the *foveal* image in the *deviating* eye
    - Prevents visual confusion

Q

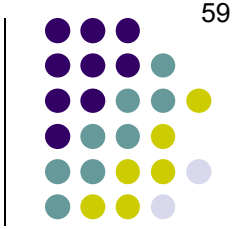
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the *foveal* image in the *deviating* eye
    - Prevents visual confusion
    - Occurs in adult-onset strabismus (or if you cross your eyes); therefore, is considered _____ (aka _____) suppression

A

Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: ***Central*** and *peripheral*
  - *Central* suppression: prevents conscious awareness of the *foveal* image in the *deviating* eye
    - Prevents visual confusion
    - Occurs in adult-onset strabismus (or if you cross your eyes); therefore, is considered *normal* (aka *physiologic*) suppression

Sensory Adaptations to Strabismus: **Suppression**

Central *Suppression*

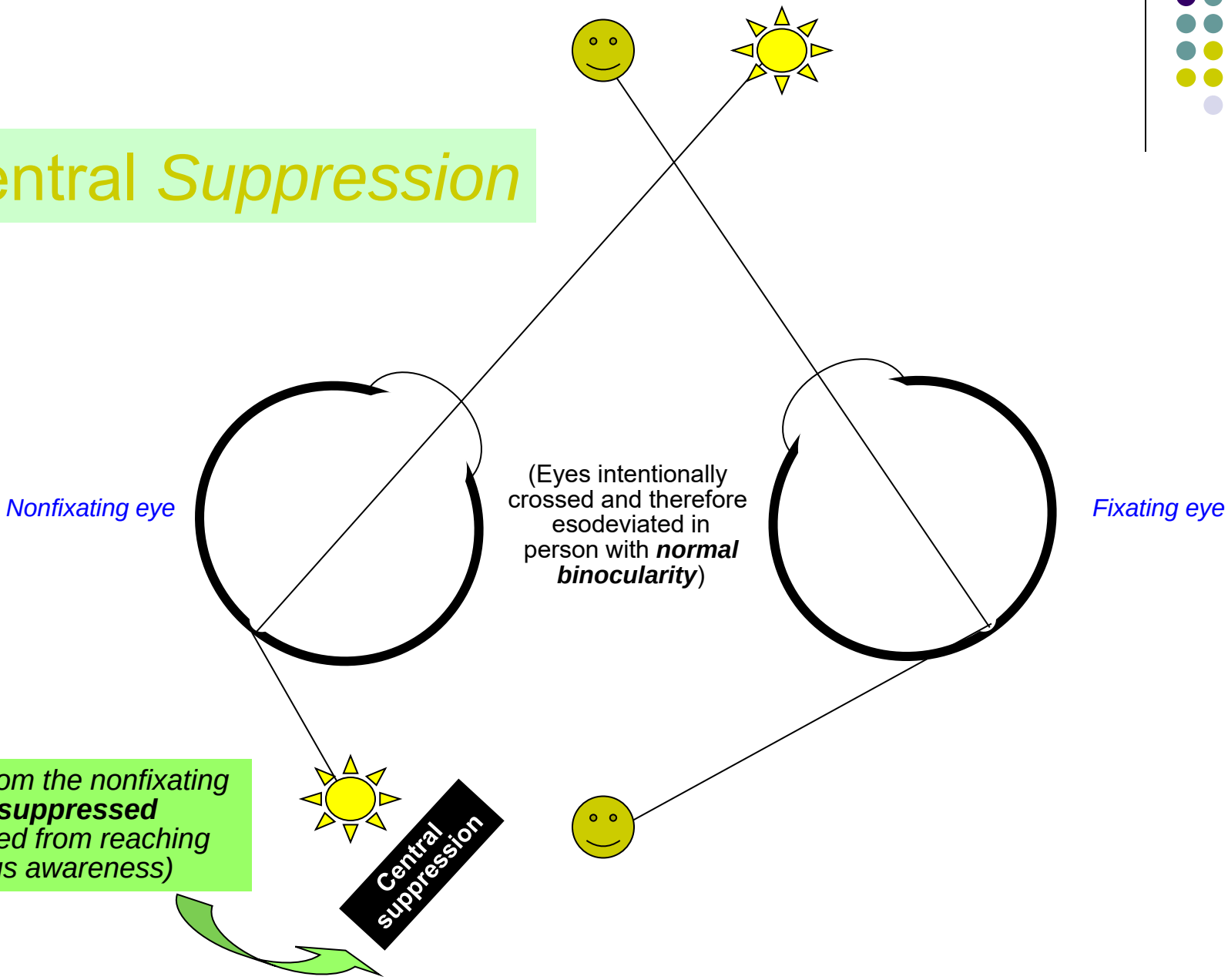


*Image from the nonfixating fovea is **suppressed** (prevented from reaching conscious awareness)*

Sensory Adaptations to Strabismus: **Suppression**

Central *Suppression*

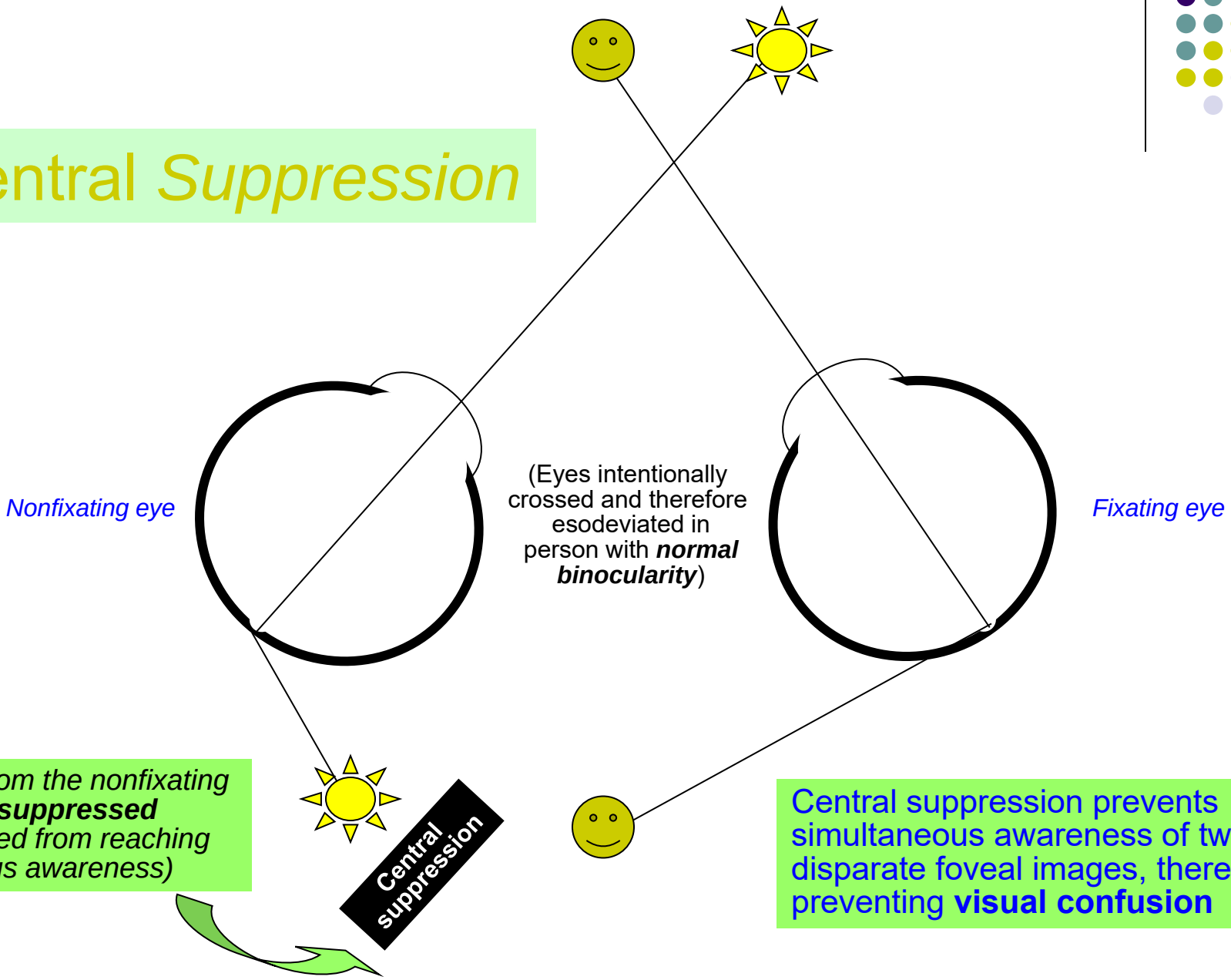
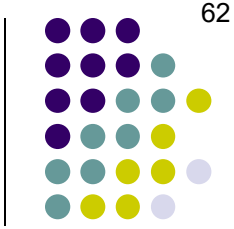


*Image from the nonfixating fovea is **suppressed** (prevented from reaching conscious awareness)*

Central suppression prevents simultaneous awareness of two disparate foveal images, thereby preventing **visual confusion**

Q *Sensory Adaptations to Strabismus:* **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the foveal vs nonfoveal image in the deviating vs nondeviating eye that corresponds to the foveal image in the fixating vs nonfixating eye

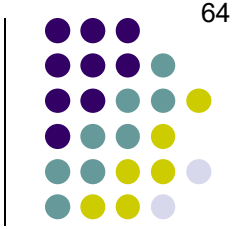
A

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye

Q

Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents abnormal visual experience

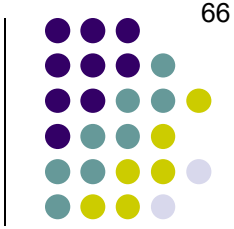
A

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia

Q

Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia
    - Only develops in immature visual system; therefore, is considered Hint: not physiologic suppression

A

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia
    - Only develops in immature visual system; therefore, is considered *pathologic* suppression

A

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia
    - Only develops in immature visual system; therefore, is considered *pathologic* suppression
      - Explains why people with childhood strabismus do not experience diplopia, but those with adult-onset do, and why normals do when they cross their eyes (cannot suppress this peripheral area)

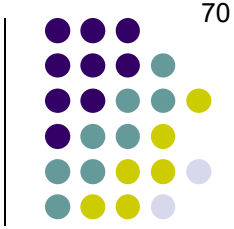
Q

Sensory Adaptations to Strabismus: **Suppression**

- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia
    - Only develops in immature visual system; therefore, is considered *pathologic* suppression
      - Explains why people with childhood strabismus do not experience diplopia, but those with adult-onset do, and why normals do when they cross their eyes (cannot suppress this peripheral area)
    - Can be _____ (suppression active only when the eye is deviated) or _____ (suppression active at all times)

A

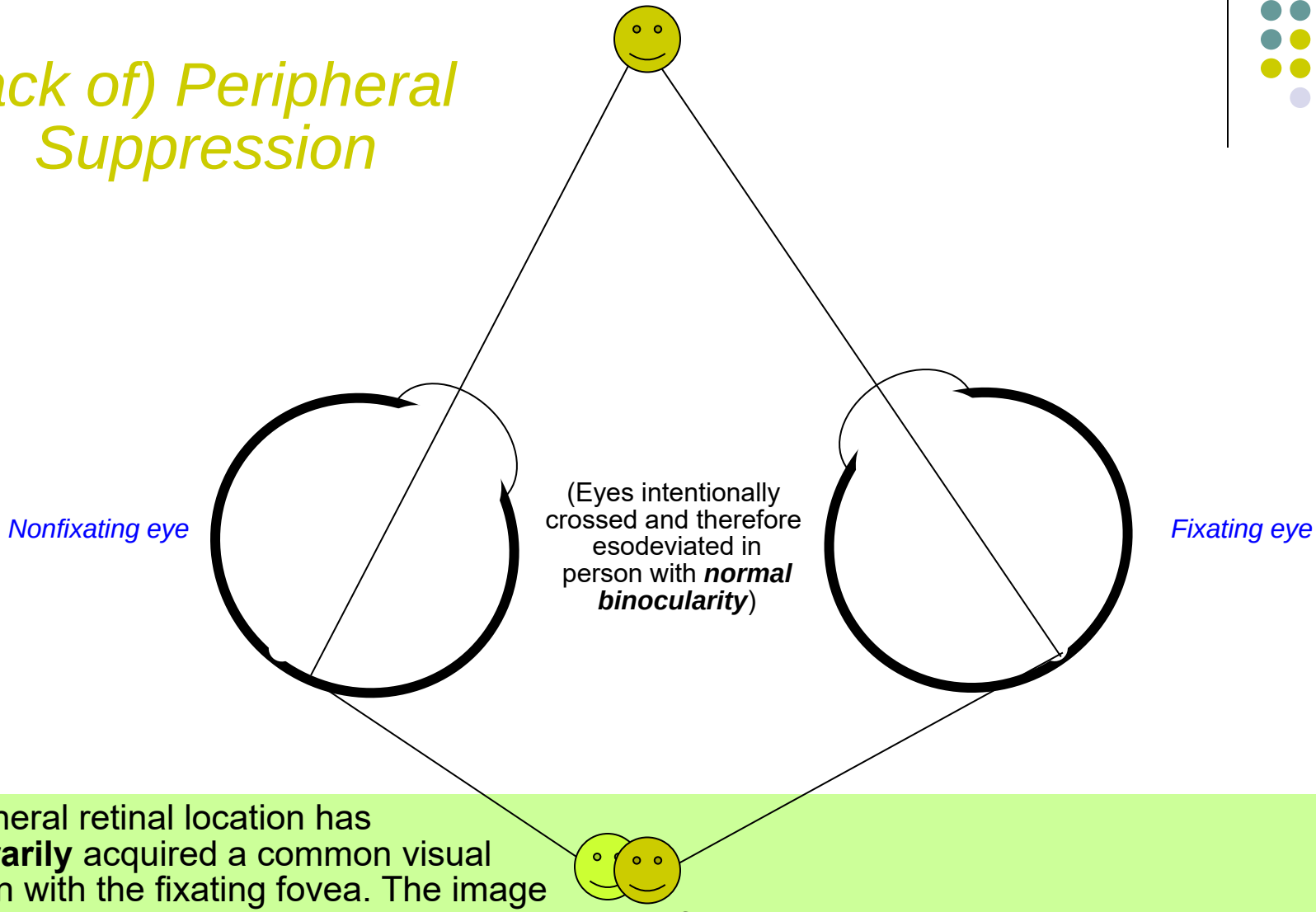
Sensory Adaptations to Strabismus: **Suppression**



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is…prevention of an image in one eye from reaching conscious awareness
- There are two types: *Central* and ***peripheral***
  - *Peripheral* suppression: Prevents conscious awareness of the *nonfoveal* image in the deviating eye that corresponds to the foveal image in the fixating eye
    - Prevents diplopia
    - Only develops in immature visual system; therefore, is considered *pathologic* suppression
      - Explains why people with childhood strabismus do not experience diplopia, but those with adult-onset do, and why normals do when they cross their eyes (cannot suppress this peripheral area)
    - Can be *facultative* (suppression active only when the eye is deviated) or *constant* (suppression active at all times)

Sensory Adaptations to Strabismus: **Suppression**

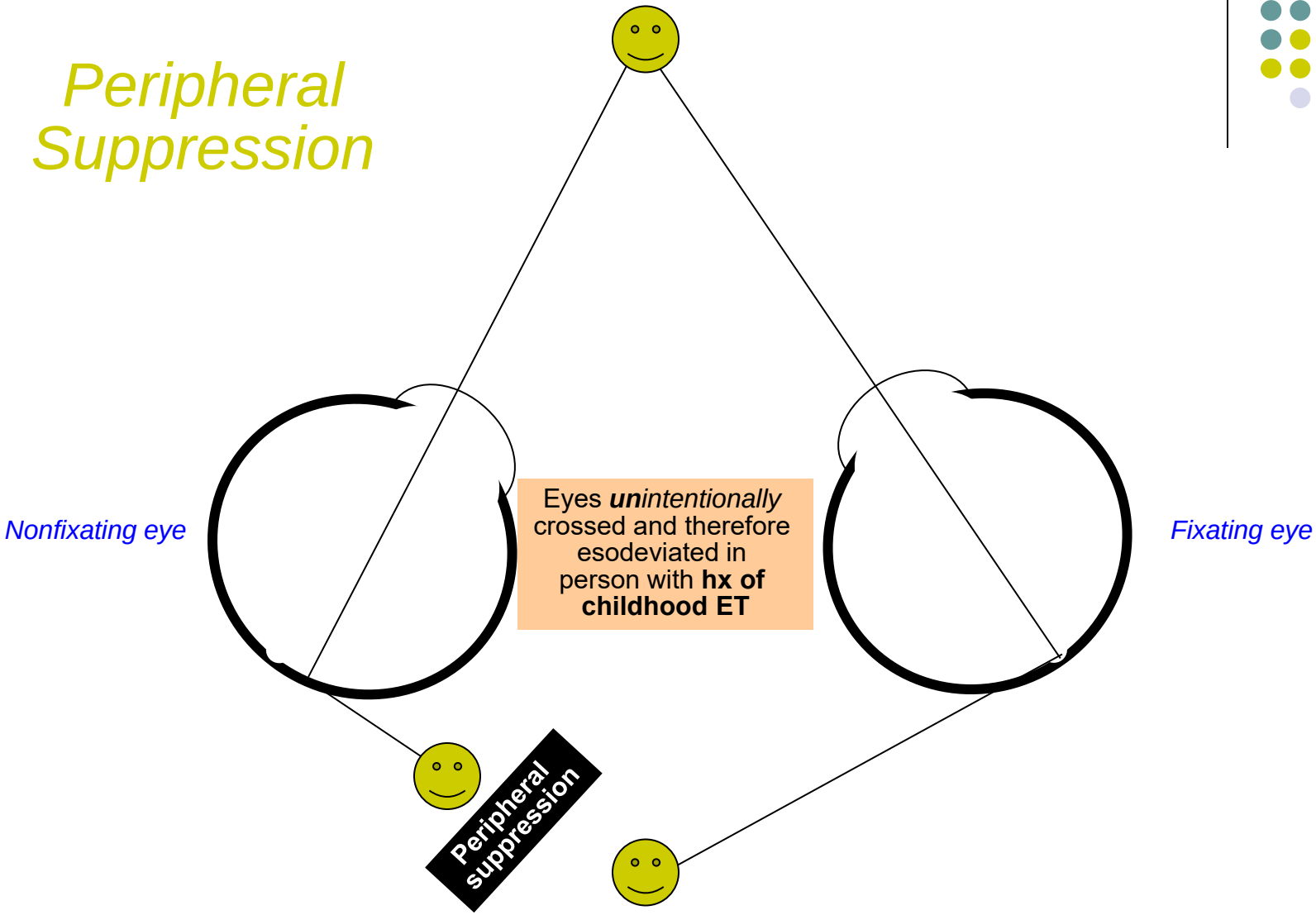
(lack of) Peripheral Suppression



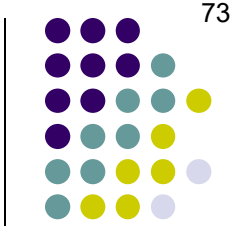
A peripheral retinal location has **temporarily** acquired a common visual direction with the fixating fovea. The image from this location can **not** be suppressed and therefore **does** reach conscious awareness, producing a visual experience of the same object being located at two points in visual space simultaneously (i.e., a visual experience of **diplopia**)

Sensory Adaptations to Strabismus: **Suppression**

Peripheral Suppression



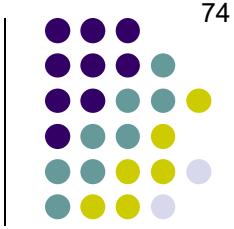
However, in a person with a history of childhood strabismus, **peripheral suppression** prevents conscious awareness of the image from the deviated retina



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is … prevention of an
- s

Visualizing Suppression

Think about what you see when you cross your eyes. (In fact, go ahead and try it—look at something across the room, then cross your eyes.) The image of regard immediately becomes doubled (and blurred from induced accommodation, but that's a topic for another day). But note what you **don't** see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at *something*; so why don't you see it?

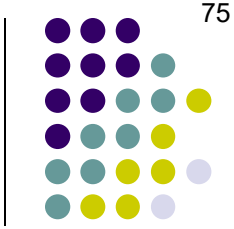


- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is … prevention of an
- s

Visualizing Suppression

Think about what you see when you cross your eyes. (In fact, go ahead and try it—look at something across the room, then cross your eyes.) The image of regard immediately becomes doubled (and blurred from induced accommodation, but that's a topic for another day). But note what you **don't** see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at *something*; so why don't you see it?

You don't see it because this foveal image is prevented from reaching consciousness by the sensory adaptation of *central suppression*. What would you see without central suppression? You would see the two foveal images-of-regard seeming to occupy the same location in visual space—the definition of *visual confusion*. You would see **two** objects in **one** location. But you don't, thanks to central suppression.



- **Sensory adaptations: *Suppression***
- In a nutshell, suppression is … prevention of an
- s

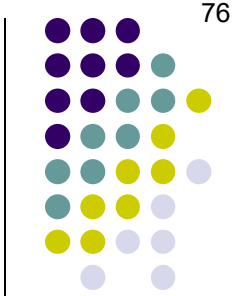
Visualizing Suppression

Think about what you see when you cross your eyes. (In fact, go ahead and try it—look at something across the room, then cross your eyes.) The image of regard immediately becomes doubled (and blurred from induced accommodation, but that's a topic for another day). But note what you **don't** see—whatever image is falling on the fovea of your nonfixating eye. The fovea of your nonfixating eye must be pointing at *something*; so why don't you see it?

You don't see it because this foveal image is prevented from reaching consciousness by the sensory adaptation of *central suppression*. What would you see without central suppression? You would see the two foveal images-of-regard seeming to occupy the same location in visual space—the definition of *visual confusion*. You would see **two** objects in **one** location. But you don't, thanks to central suppression.

On the other hand, the image of regard in the fixating eye is also falling on a peripheral retinal area in your nonfixating eye, and suppression of **this** image (*peripheral suppression*) is a sensory adaptation available only on an acquired basis in an immature visual system—it can't be 'conjured up on the fly' during volitional eye-crossing. The result is that crossing one's eyes produces *diplopia*—**one** object seen in **two** locations—but (thanks to central suppression) not visual confusion.

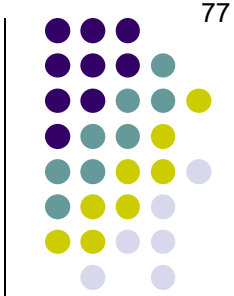
Sensory Adaptations to Strabismus: **ARC**



- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **Suppression**
  - **Anomalous retinal correspondence (ARC)**
  - **Monofixation syndrome**

Next let's look at anomalous retinal correspondence

Sensory Adaptations to Strabismus: **ARC**

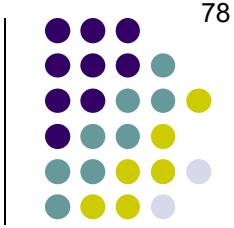


- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **Suppression**
  - **Anomalous retinal correspondence (ARC)**
  - **Monofixation syndrome**

Next let's look at anomalous retinal correspondence. *But first, we will recapitulate the slides we saw earlier concerning NRC.*

Q

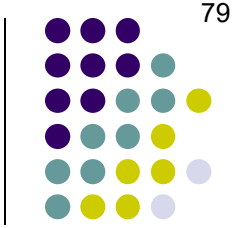
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*?

Q/A

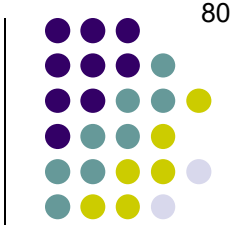
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same words 1 and 2 of 3 word 3 of 3.

A

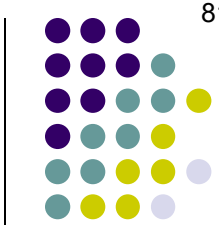
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.

Q

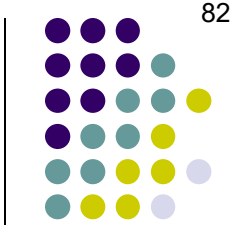
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in words 1 and 2 of 3 word 3 of 3 (abbreviation of prev 3 words).

A

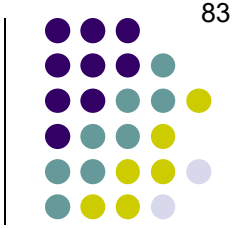
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in *normal retinal correspondence* (NRC).

Q

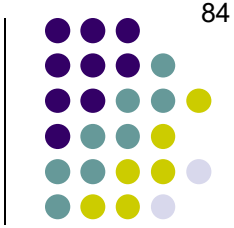
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in *normal retinal correspondence* (NRC).
  - Likewise, if a symmetrical relationship does *not* hold, the retinas are said to be in not normal *retinal correspondence* (abbreviation of prev 3 words).

A

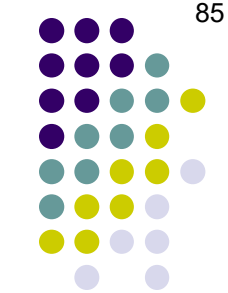
Sensory Adaptations to Strabismus: **ARC**



- What does it mean to say retinal locations in the two eyes *correspond*? It means the two locations have the same subjective visual direction.
  - If all corresponding retinal areas in the two eyes are symmetrically located (i.e., are the same retinal distances and directions from their respective foveas), the two retinas are said to be in *normal retinal correspondence* (NRC).
  - Likewise, if a symmetrical relationship does *not* hold, the retinas are said to be in *anomalous retinal correspondence* (ARC).

Q

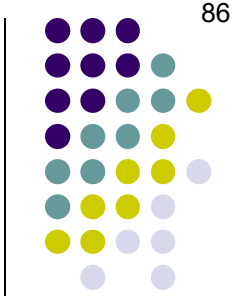
Sensory Adaptations to Strabismus: **ARC**



- **Sensory adaptations: *Anomalous retinal correspondence (ARC)***
  - ARC occurs when a [peripheral vs central] area of the deviating eye acquires a [three words] with the [fovea vs periphery] of the fixating eye

A

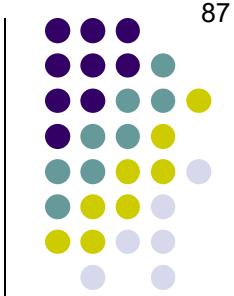
Sensory Adaptations to Strabismus: **ARC**



- **Sensory adaptations: *Anomalous retinal correspondence (ARC)***
  - ARC occurs when a peripheral area of the deviating eye acquires a common visual direction with the fovea of the fixating eye

Q

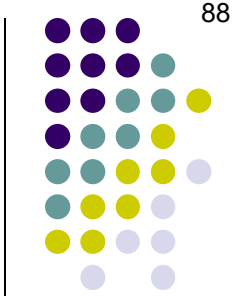
Sensory Adaptations to Strabismus: **ARC**



- **Sensory adaptations: *Anomalous retinal correspondence (ARC)***
  - ARC occurs when a peripheral area of the deviating eye acquires a common visual direction with the fovea of the fixating eye
    - Restores some sense of two words

A

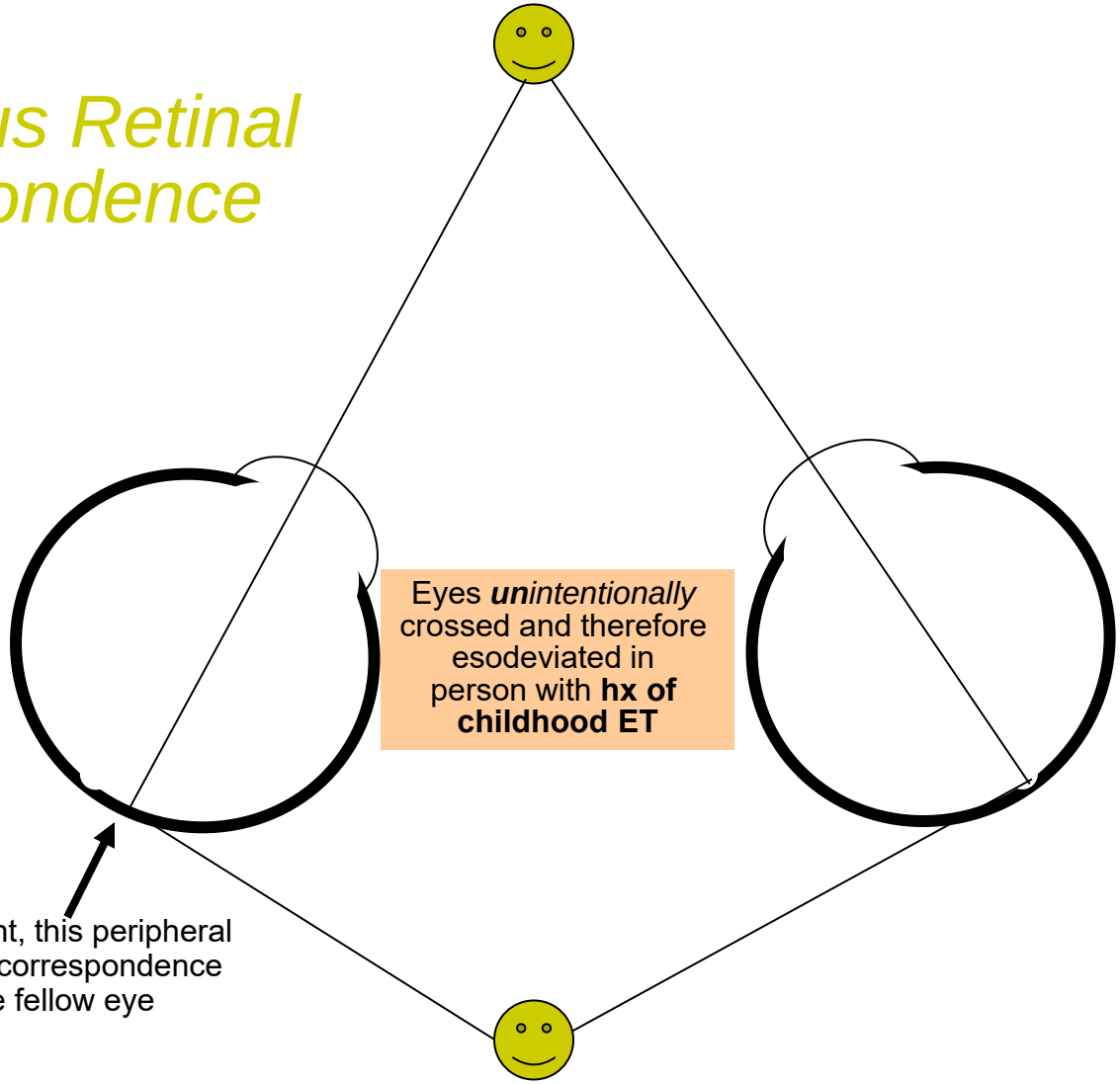
Sensory Adaptations to Strabismus: **ARC**



- **Sensory adaptations: *Anomalous retinal correspondence (ARC)***
  - ARC occurs when a peripheral area of the deviating eye acquires a common visual direction with the fovea of the fixating eye
    - Restores some sense of binocular cooperation

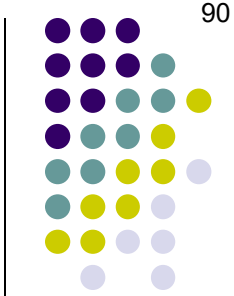
Sensory Adaptations to Strabismus: **ARC**

Anomalous Retinal Correspondence



In a person with a history of childhood strabismus, **ARC** often develops, facilitating binocular coordination by allowing fusion

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- What are the three sensory adaptations the visual system employs to avoid confusion and diplopia?
  - **Suppression**
  - **Anomalous retinal correspondence (ARC)**
  - **Monofixation syndrome**

Finally, we will take a deep dive into monofixation syndrome

Q

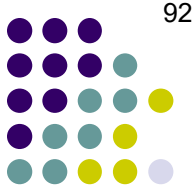
Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central

*(BTW, this section is **T/F**)*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion ***T***

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral **fusion** but no central **fusion** *T*

In the context of binocular vision, to what does the term fusion *refer?*

A

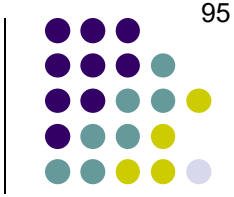
Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral **fusion** but no central **fusion** *T*

In the context of binocular vision, to what does the term fusion *refer?*
The visual cortex receives two images (one from each eye) of objects located within the binocular field of view. **Fusion** refers to the cortical process of unifying these *two* images into a percept of *one* object in visual space.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have **peripheral fusion** but no **central fusion** *T*

In the context of binocular vision, to what does the term fusion *refer?*
The visual cortex receives two images (one from each eye) of objects located within the binocular field of view. **Fusion** refers to the cortical process of unifying these *two* images into a percept of *one* object in visual space.

To what do the terms central *and* peripheral *refer in the context of fusion?*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

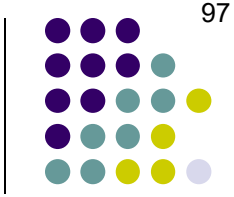
- Monofixators have **peripheral fusion** but no **central fusion** *T*

In the context of binocular vision, to what does the term fusion *refer?*
The visual cortex receives two images (one from each eye) of objects located within the binocular field of view. **Fusion** refers to the cortical process of unifying these *two* images into a percept of *one* object in visual space.

To what do the terms central *and* peripheral *refer in the context of fusion?*
Central refers to images involving the foveal region, **peripheral** to images farther removed

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have **peripheral fusion** but no **central fusion** *T*

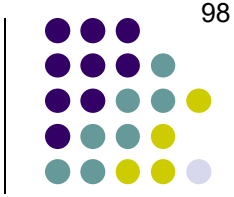
In the context of binocular vision, to what does the term fusion *refer?*
The visual cortex receives two images (one from each eye) of objects located within the binocular field of view. **Fusion** refers to the cortical process of unifying these *two* images into a percept of *one* object in visual space.

To what do the terms central *and* peripheral *refer in the context of fusion?*
Central refers to images involving the foveal region, **peripheral** to images farther removed

Do central and peripheral fusion differ in ways other than their relationship to the foveal region?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have **peripheral fusion** but no **central fusion** *T*

In the context of binocular vision, to what does the term fusion *refer?*
The visual cortex receives two images (one from each eye) of objects located within the binocular field of view. **Fusion** refers to the cortical process of unifying these *two* images into a percept of *one* object in visual space.

To what do the terms central *and* peripheral *refer in the context of fusion?*
Central refers to images involving the foveal region, **peripheral** to images farther removed

Do central and peripheral fusion differ in ways other than their relationship to the foveal region?
Indeed they do. As a general rule, the central fusional process requires that the images be highly similar in size and shape—very little disparity is tolerated in this regard. In contrast, the act of peripheral fusion is much more forgiving of dissimilarity between the images received from the respective eyes.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present OU

(Note: *Foveal suppression* is a commonly-employed synonym for *central suppression*)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*

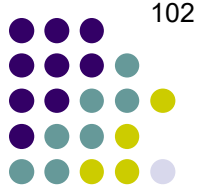
Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ *unilaterally* ***F***

This is the essence of monofixation syndrome: *Peripheral fusion in the absence of central (ie, bifoveal) fusion owing to the presence of a central suppression scotoma*

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A **small** foveal suppression scotomata is present ~~OU~~ unilaterally *F*

How big (small?) is the suppression scotoma?

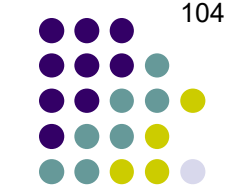
A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion *T*
- A **small** foveal suppression scotomata is present ~~OU~~ unilaterally *F*

How big (small?) is the suppression scotoma?
Usually about 1-4 degrees

Sensory Adaptations to Strabismus: **Monofixation syndrome**



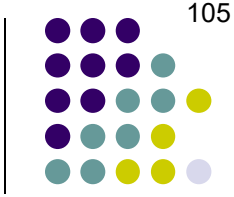
- Monofixators have peripheral fusion but no central fusion *T*
- A **small** foveal suppression scotomata is present ~~OU~~ unilaterally *F*

How big (small?) is the suppression scotoma?
Usually about 1-4 ***degrees***

Note: That's degrees, **not** *prism diopters!*

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



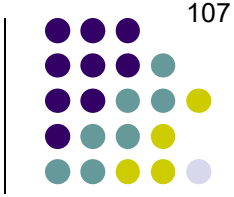
- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T***

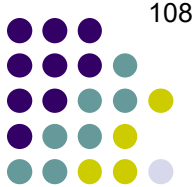
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T***

In other words: As a rule, monofixation syndrome pts do not develop NRC; instead, they develop ARC. It is a 'small angle' ARC in the sense that the noncorresponding locations in the two eyes that acquire a common visual direction (remember, that is the definition of ARC) tend to be not too far removed from the locations that would have a common visual direction in NRC.

Sensory Adaptations to Strabismus: **Monofixation syndrome**

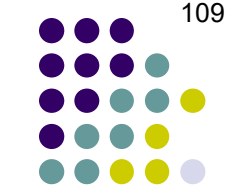


- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*
- Retinal correspondence = Small angle ARC *T*

In other words: As a rule, monofixation syndrome pts do not develop NRC; instead, they develop ARC. It is a 'small angle' ARC in the sense that the noncorresponding locations in the two eyes that acquire a common visual direction (remember, that is the definition of ARC) tend to be not too far removed from the locations that would have a common visual direction in NRC. Put another way: Retinal correspondence in monofixation syndrome is anomalous, but not by much.

Q

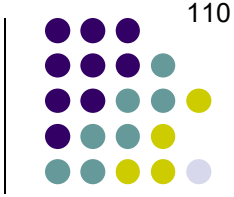
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T***
- Muscle balance is typically a micro (<8 PD) XT

A

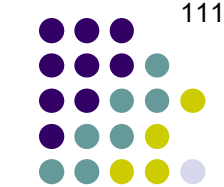
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T*** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ***F***

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

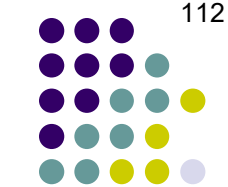


- Monofixators have peripheral fusion but no central fusion ~~T~~ unilaterally
- A small foveal suppression scotomata is present ~~OU~~ ∧ ***F***
- Retinal correspondence = Small angle ARC ***T*** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ∧ ***F***

Should this be interpreted as indicating monofixation syndrome always involves an ET?

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

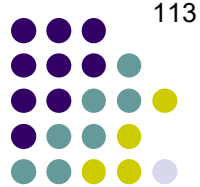


- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ∧ *F*
- Retinal correspondence = Small angle ARC *T*
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET ∧ *F*

Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or abb. .

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ∧ *F*
- Retinal correspondence = Small angle ARC *T*
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET ∧ *F*

Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or HT .

Q

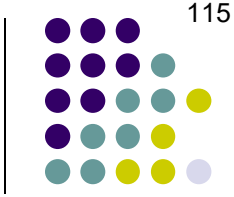
Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion ~~T~~ F
- A small foveal suppression scotomata is present ~~OU~~ unilaterally F
- Retinal correspondence = Small angle ARC ~~T~~ F
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET F

Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or HT . They can even be [redacted].

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ∧ *F*
- Retinal correspondence = Small angle ARC *T*
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET ∧ *F*

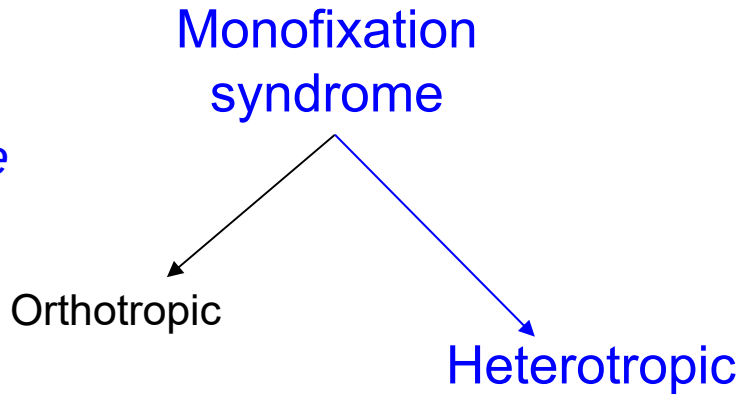
Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or HT . They can even be ortho .

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*
- Retinal correspondence = Small angle ARC *T*
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET *F*

Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or HT . They can even be ortho .

Monofixation syndrome pts can be ortho, but most *are heterotropic*

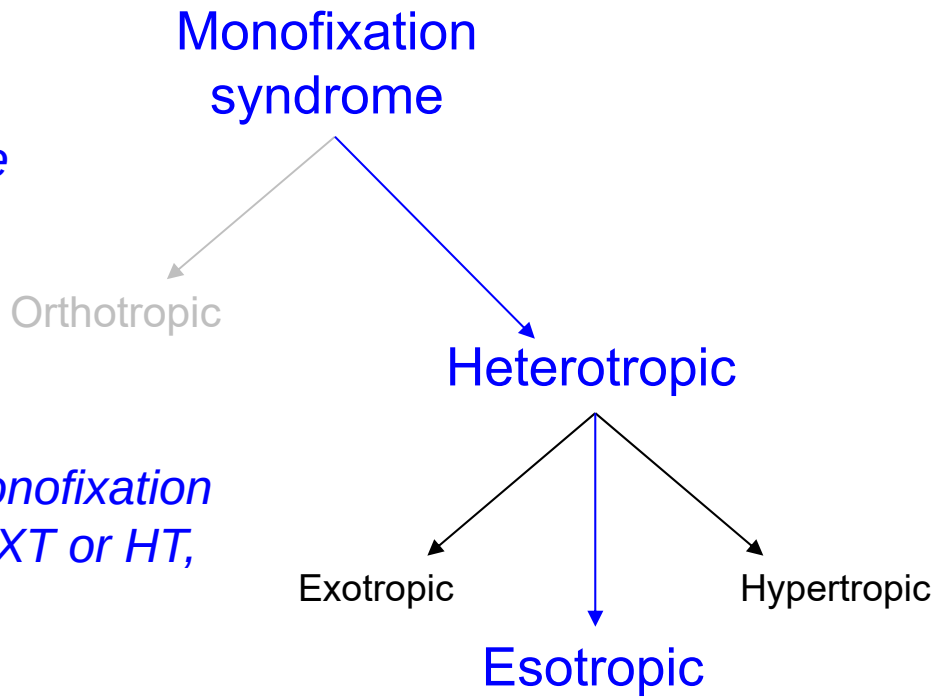


Sensory Adaptations to Strabismus: **Monofixation syndrome**

- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T***
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ET ***F***

Should this be interpreted as indicating monofixation syndrome always involves an ET?
No. Muscle balance in monofixation can be ET, XT, or HT . They can even be ortho .

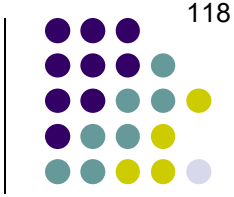
Monofixation syndrome pts can be ortho, but most *are heterotropic*



Heterotropia in monofixation syndrome can be XT or HT, but is usually *ET*

Q

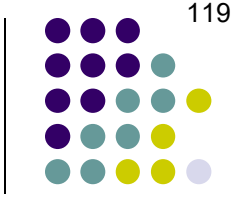
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T_{ET}**
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is uncommon

A

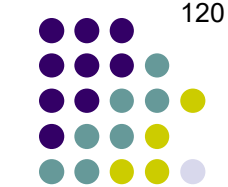
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ^ *F*
- Retinal correspondence = Small angle ARC *T* ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ^ *F*
- Amblyopia is ~~uncommon~~ common *F*

Q

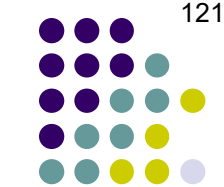
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is ~~uncommon~~ common **F**
- Is an indication for re-op if it develops after ET surgery

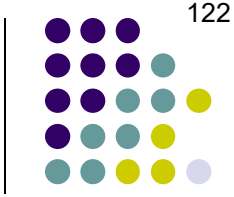
A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is ~~uncommon~~ common **F**
- Is not an indication for re-op if it develops after ET surgery **F**

Sensory Adaptations to Strabismus: **Monofixation syndrome**

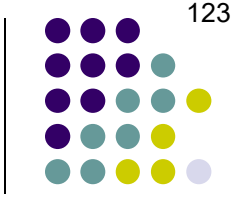


- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*
- Retinal correspondence = Small angle ARC *T* ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ^ *F*
- Amblyopia is ~~uncommon~~ common *F*
- Is ^ not an indication for re-op if it develops after ET surgery *F*

To the contrary: Monofixation syndrome is a **desirable** *outcome after ET surgery!*

Q

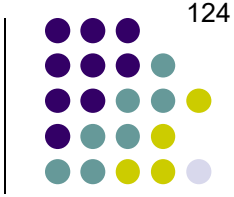
Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*
- Retinal correspondence = Small angle ARC *T* ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ *F*
- Amblyopia is ~~uncommon~~ common *F*
- Is not an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the *4Δ BO prism* test

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is ~~uncommon~~ common **F**
- Is not an indication for re-op if it develops after ET surgery **F**
- Can be diagnosed via the *4Δ BO prism* test **T**

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the 4Δ BO prism test, test for?

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a [two words] in a pt who is [ ]

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic

- I
- A
- I
- I
- A
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

A

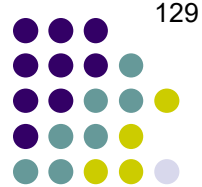
Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



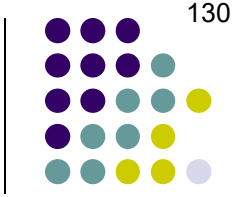
In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?

- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

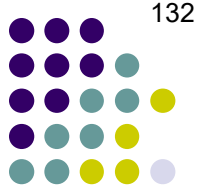
How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

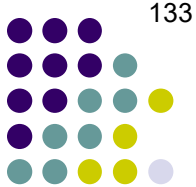
In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

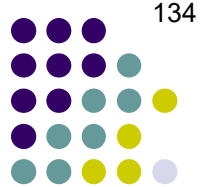
In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

The introduction of the prism yields the impression that the object of regard has suddenly moved, and the eyes turn to refixate it

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

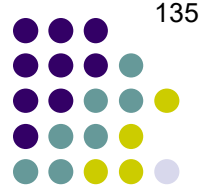
In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

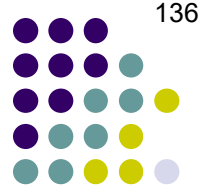
In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- I
- A
- I
- I
- A
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

The presence of the prism produces [redacted], which resolves when the fellow eye adducts

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

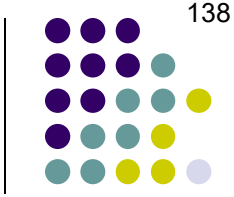
When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

The presence of the prism produces diplopia , which resolves when the fellow eye adducts

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- I
- A
- I
- I
- A
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

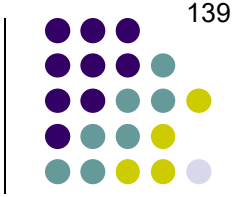
When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- I
- A
- I
- I
- A
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

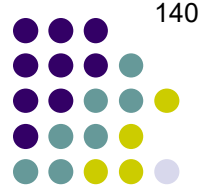
When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

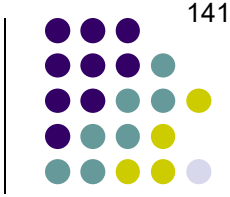
Does it matter which eye gets the prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

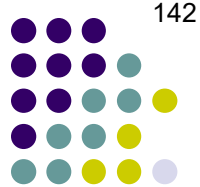
What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

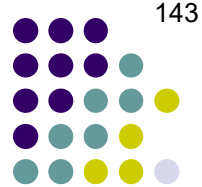
In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

Just as was the case when prism was placed before the fixating eye of a pt with bifixation (*both* eyes are the 'fixating eye' in a pt who bifixates), introduction of prism before the fixating eye of a monofixation-syndrome pt yields the impression that the object of regard has moved, and so the eyes turn to refixate it

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

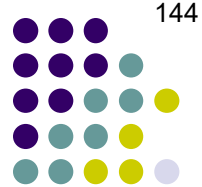
In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

What will the eyes do next?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

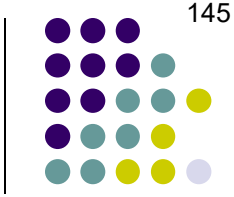
In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

What will the eyes do next?
Nothing (ie, the fellow eye will **not** turn in)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Why doesn't the fellow eye converge?

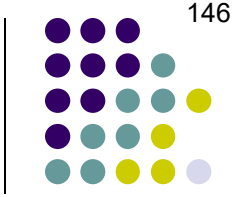
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

What will the eyes do next?
Nothing (ie, **the fellow eye will not turn in**)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Why doesn't the fellow eye converge?
Recall that in monofixation syndrome only one eye fixates (hence the name), while the other has a central suppression scotoma. In the present scenario the prism is in front of the fixating eye, meaning the fellow eye is the one with the scotoma.

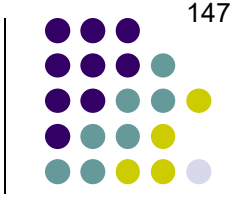
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

What will the eyes do next?
Nothing (ie, **the fellow eye will not turn in**)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Why doesn't the fellow eye converge?
Recall that in monofixation syndrome only one eye fixates (hence the name), while the other has a central suppression scotoma. In the present scenario the prism is in front of the fixating eye, meaning the fellow eye is the one with the scotoma. Recall that, in a pt with bifixation, the initial eye-turn in response to the introduced prism results in diplopia, because the image in the fellow-eye is no longer falling on its fovea. This is why the fellow adducts in bifixating pts—to resolve the diplopia produced by the prism.

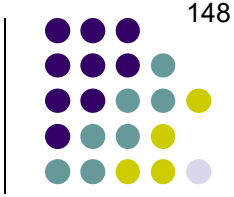
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

What will the eyes do next?
Nothing (ie, **the fellow eye will not turn in**)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the 4Δ BO prism test, test for?*
  The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

  How is it performed?
  As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Why doesn't the fellow eye converge?
Recall that in monofixation syndrome only one eye fixates (hence the name), while the other has a central suppression scotoma. In the present scenario the prism is in front of the fixating eye, meaning the fellow eye is the one with the scotoma. Recall that, in a pt with bifixation, the initial eye-turn in response to the introduced prism results in diplopia, because the image in the fellow-eye is no longer falling on its fovea. This is why the fellow adducts in bifixating pts—to resolve the diplopia produced by the prism. But in monofixation syndrome the image in the fellow eye falls within its suppression scotoma, and because 4Δ of prism doesn't displace the image much, it's *still* within the scotoma after that initial eye-turn.

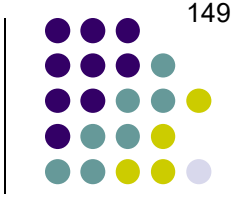
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

What will the eyes do next?
Nothing (ie, **the fellow eye will not turn in**)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

Why doesn't the fellow eye converge?
Recall that in monofixation syndrome only one eye fixates (hence the name), while the other has a central suppression scotoma. In the present scenario the prism is in front of the fixating eye, meaning the fellow eye is the one with the scotoma. Recall that, in a pt with bifixation, the initial eye-turn in response to the introduced prism results in diplopia, because the image in the fellow-eye is no longer falling on its fovea. This is why the fellow adducts in bifixating pts—to resolve the diplopia produced by the prism. But in monofixation syndrome the image in the fellow eye falls within its suppression scotoma, and because 4Δ of prism doesn't displace the image much, it's *still* within the scotoma after that initial eye-turn. This means the initial eye movement doesn't produce diplopia. And if there's no diplopia in need of resolution, there is no stimulus for the fellow eye to adduct.

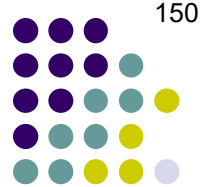
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

What will the eyes do next?
Nothing (ie, **the fellow eye will not turn in**)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

What will the eyes do next?
Nothing (ie, the fellow eye will **not** turn in)

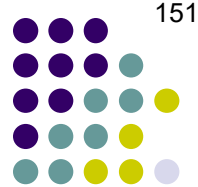
In monofixation syndrome, and the prism is over the **suppressed** eye:

When the prism is introduced, what will the eyes do first?

Next

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- I
- A
- I
- I
- A
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the eyes do next?
The eye without the prism will turn in (ie, will converge)

Does it matter which eye gets the prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

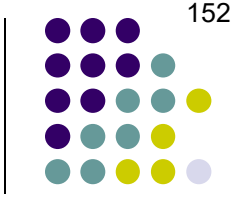
What will the eyes do next?
Nothing (ie, the fellow eye will **not** turn in)

In monofixation syndrome, and the prism is over the **suppressed** eye:

When the prism is introduced, what will the eyes do first?
Nothing—they won't move at all

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the e
The eye witho
in (ie, will con

Does it matter prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

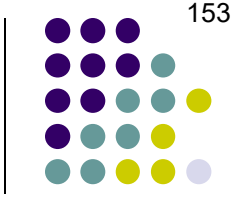
In monofixation syndrome, and the prism is over the **suppressed** eye:

When the prism is introduced, what will the eyes do first?
Nothing—**they won't move at all**

Why don't the eyes move when the prism is introduced?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- Is an indication for re-op if it develops after ET surgery *T*
- Can be diagnosed via the ***4Δ BO prism* test** *T*

In a nutshell: What does the 4Δ BO prism test, test for?
The presence of a suppression scotoma in a pt who is orthotropic (recall that some monofixation syndrome pts are ortho)

How is it performed?
As the name implies, it involves a 4Δ prism held in a 'base out' (BO) position. The prism is placed in front of either eye, and subsequent movements of the eyes are noted. (Much more below.)

In a person with **bifixation**:

When the prism is introduced, what will the eyes do first?
Both eyes will turn in the direction of the prism's apex

What will the e
The eye witho
in (ie, will con

Does it matter prism?
Nope

In monofixation syndrome, and the prism is over the **fixating** eye:

When the prism is introduced, what will the eyes do first?
Both eyes will move in the direction of the prism's apex

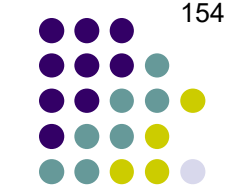
In monofixation syndrome, and the prism is over the **suppressed** eye:

When the prism is introduced, what will the eyes do first?
Nothing—**they won't move at all**

Why don't the eyes move when the prism is introduced?
Again, in monofixation syndrome one eye fixates, while the other is suppressed. In the present scenario. the prism is placed in front of the eye with the scotoma. Because this eye isn't looking at anything (so to speak), introduction of the prism doesn't produce a percept of displacement, and thus there is nothing to compel the eyes to move.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

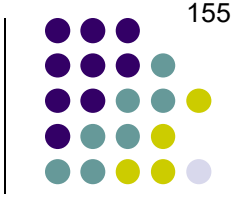


- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is ~~uncommon~~ common **F**
- Is not an indication for re-op if it develops after ET surgery **F**
- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at distance and 2 or 3 at near

Next

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T*** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ***F***
- Amblyopia is ~~uncommon~~ common ***F***
- Is ~~an~~ not an indication for re-op if it develops after ET surgery ***F***
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance ***F***

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance **F**

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

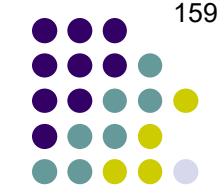
In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?

- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance **F**

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a color filter over her right eye, and a color filter over her left.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a [redacted] .

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond .

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is color at the two sides are color , and at the bottom is color .

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** .

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

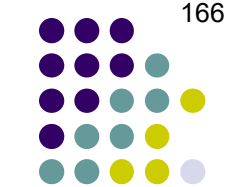
In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance ***F***

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

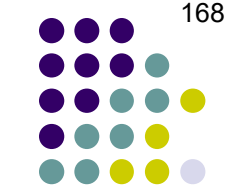
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1)

2)

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is [the same as *vs* different from] that of the color of the filter

2)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is different from that of the color of the filter

2)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is different from that of the color of the filter. So the right eye, with its red filter, cannot see the two green dots, and the left eye with its green filter cannot see the single red dot.
2)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

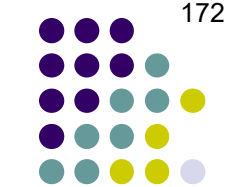
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is different from that of the color of the filter. So the right eye, with its red filter, cannot see the two green dots, and the left eye with its green filter cannot see the single red dot.
2) The filters cause the white light to appear to be the [same color as *vs* opposite color from] that of the filter

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is different from that of the color of the filter. So the right eye, with its red filter, cannot see the two green dots, and the left eye with its green filter cannot see the single red dot.
2) The filters cause the white light to appear to be the same color as that of the filter

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

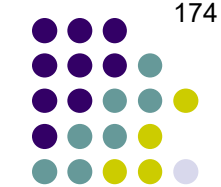
- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two important effects need to be noted:
1) The filters prevent the wearer from seeing the dot that is different from that of the color of the filter. So the right eye, with its red filter, cannot see the two green dots, and the left eye with its green filter cannot see the single red dot.
2) The filters cause the white light to appear to be the same color as that of the filter. So the right eye, with its red filter, sees the white dot as red, and the left eye with its green filter sees it as green.

Sensory Adaptations to Strabismus: **Monofixation syndrome**



In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

Before we get to the issue of how the presence of a suppression scotoma affects what the pt sees, what in general is the impact of the colored filters on perceptual experience of the dots?
Two impor

Next we will look at different response patterns to the test

1) The filte lor of the filter. So the right eye, with its red filter, cannot see the two green dots, and the left eye with its green filter cannot see the single red dot.
2) The filters cause the white light to appear to be the same color as that of the filter. So the right eye, with its red filter, sees the white dot as red, and the left eye with its green filter sees it as green.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

If the pt sees ***two*** dots, it means…

?

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the white (which appears red because of the filter)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

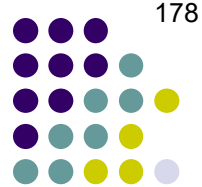
- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance ***F***

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

If the pt sees ***two*** dots, it means…	If the pt sees ***three*** dots, it means…
…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.	***?***

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ***F***

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

If the pt sees ***three*** dots, it means…

…she is seeing the two green dots along with the white (which appears green because of the filter)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, ***F***

<u>If the pt sees ***two*** dots, it means…</u>

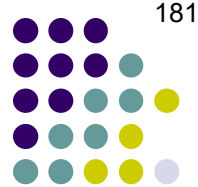
…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

<u>If the pt sees ***three*** dots, it means…</u>

…she is seeing the two green dots along with the white (which appears green because of the filter).
This means the **right** eye has a suppression scotoma.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

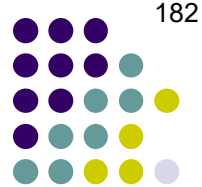


- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, ***F***

If the pt sees ***two*** dots, it means…	If the pt sees ***three*** dots, it means…	If the pt sees ***four*** dots, it means one of two things:
…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.	…she is seeing the two green dots along with the white (which appears green because of the filter). This means the **right** eye has a suppression scotoma.	-- ***?*** --

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ∧ *F*

If the pt sees ***two*** dots, it means…	If the pt sees ***three*** dots, it means…	If the pt sees ***four*** dots, it means one of two things:
…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.	…she is seeing the two green dots along with the white (which appears green because of the filter). This means the **right** eye has a suppression scotoma.	--There is no suppression scotoma in either eye; or -- ***?***

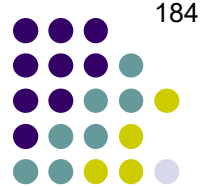
A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, ∧ *F*

If the pt sees ***two*** dots, it means…	If the pt sees ***three*** dots, it means…	If the pt sees ***four*** dots, it means one of two things:
…she is seeing the red dot along with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.	…she is seeing the two green dots along with the white (which appears green because of the filter). This means the **right** eye has a suppression scotoma.	--There is no suppression scotoma in either eye; or --A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~dista~~ near and 2 or 3 at ~~near~~ distance **F**

(Assuming, gentle reader, that you are blessed with NRC and bifixation, this is what you would experience if you took the test.)

If the pt se… …she is se… with the white (which appears red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

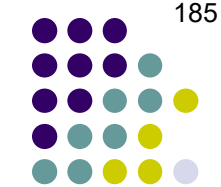
…f the pt sees ***four*** dots, it means one of two things:

…is seeing the red… along with the white (which a…ars green because of the filter). This means the **right** eye has a suppression scotoma.

--There is no suppression scotoma in either eye; or
--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma
- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.
- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~dista~~ near and 2 or 3 at ~~near~~ distance, *F*

(Assuming, gentle reader, that you are blessed with ***NRC and bifixation****, this is what you would experience if you took the test.)*

In a pt with NRC and bfixation, what color would the white dot be?

If the pt se… the pt sees ***four*** dots, it means one of two things:

…she is se…

with …

beca… …is no suppression scotoma

the le… …r eye; or

and t… …pression scotoma is

scoto… …t, but it is smaller than the …ubtended by the dots at that …g distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~dista~~ near and 2 or 3 at ~~near~~ distance, *F*

(Assuming, gentle reader, that you are blessed with ***NRC and bifixation****, this is what you would experience if you took the test.)*

In a pt with NRC and bfixation, what color would the white dot be?
It depends. In pts with a strongly dominant eye, it might appear to be the color of that eye's filter.

If the pt se… the pt sees ***four*** dots, it means one of two things:

…she is se…

with …

beca… …is no suppression scotoma

the le… …r eye; or

and t… …pression scotoma is

scoto… …t, but it is smaller than the …ubtended by the dots at that …g distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~dista~~ near and 2 or 3 at ~~near~~ distance *F*

(Assuming, gentle reader, that you are blessed with ***NRC and bifixation****, this is what you would experience if you took the test.)*

If the pt se… the pt sees ***four*** dots, it means one of two things:

…she is se…
with …
beca…
the le…
and t…
scoto…

…is no suppression scotoma …r eye; or …pression scotoma is …t, but it is smaller than the …ubtended by the dots at that …g distance (ie, the images of the dots are falling outside the border of the scotoma)

In a pt with NRC and bfixation, what color would the white dot be?
It depends. In pts with a strongly dominant eye, it might appear to be the color of that eye's filter. Other pts would experience so-called 'rivalry' in which the color of the dot would be seen to switch back and forth between green and red.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

In a nutshell: What does the Worth 4-dot test, test for?
Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

How is it performed?
The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, *F*

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the w… because … the left e… and thus … scotoma.

If the pt sees ***three*** dots, it means…

…she is seeing the two green dots…

If the pt sees ***four*** dots, it means one of two things:

…scotoma …s …an the …ots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Are there situations in which a pt would see five *dots?*

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ *near* and 2 or 3 at ~~near~~ *distance*, *F*

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the … because … the left e… and thus … scotoma.

If the pt sees ***three*** dots, it means…

she is seeing the two green dots …

If the pt sees ***four*** dots, it means one of two things:

… scotoma

… s

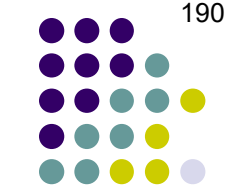
… an the

… ots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Are there situations in which a pt would see five *dots?*
Indeed there are

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, **F**

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the … because … the left e… and thus … scotoma.

If the pt sees ***three*** dots, it means…

she is seeing the two green dots

If the pt sees ***four*** dots, it means one of two things:

…scotoma

…s

…an the

…ots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Are there situations in which a pt would see five *dots? What would this indicate?*
Indeed there are

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

- *How is it performed?*
  The pt wears glasses consisting of a **red** filter over her right eye, and a **green** filter over her left. She then views an image consisting of four small colored lights ('dots') arranged in a diamond . The dot at the top of the diamond is **red**, at the two sides are **green** , and at the bottom is **white** . The pt is then asked how many dots she sees.

- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance, **F**

If the pt sees ***two*** dots, it means…

…she is seeing the red dot along with the … because … the left e… and thus … scotoma.

If the pt sees ***three*** dots, it means…

she is seeing the two green dots

If the pt sees ***four*** dots, it means one of two things:

…scotoma

…s

…an the …ots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

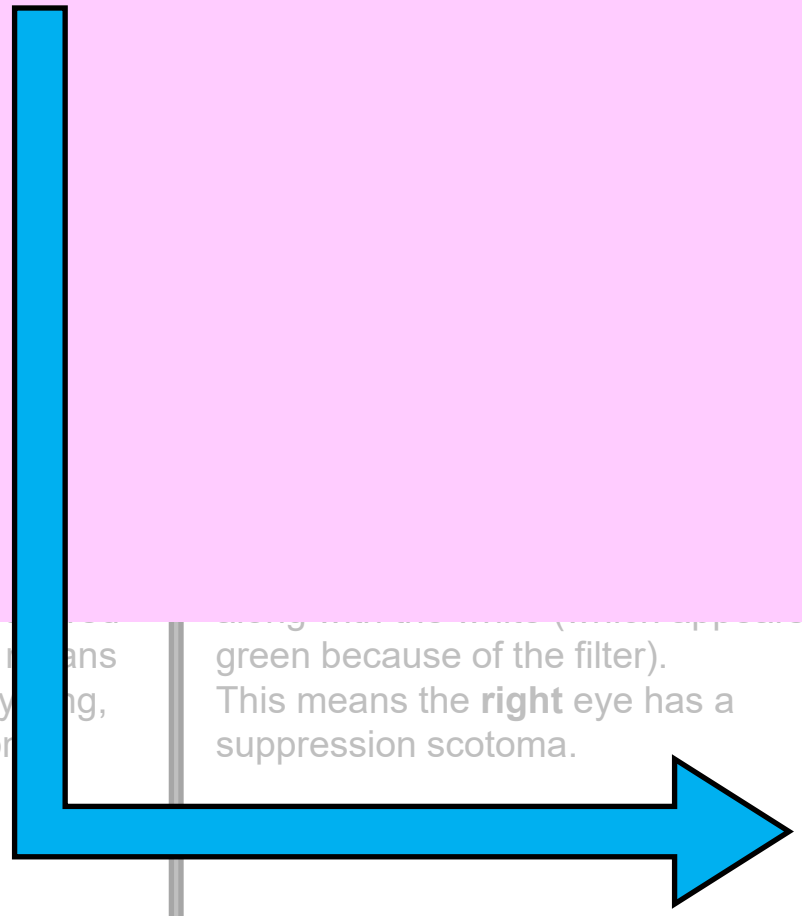
Are there situations in which a pt would see five *dots? What would this indicate?*
Indeed there are. This would constitute diplopia, and thus would indicate the presence of manifest strabismus absent the 'benefit' of a suppression scotoma and peripheral fusion.

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail.



--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*

because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

…because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

Given this fact, consider a pt as described in the box, ie, she has a suppression scotoma in one eye, but the image of the dots are falling outside its boundaries; hence, she reports seeing four dots.

(No question yet—proceed when ready)

because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

Given this fact, consider a pt as described in the box, ie, she has a suppression scotoma in one eye, but the image of the dots are falling outside its boundaries; hence, she reports seeing four dots. *Question: What would happen if you increased the distance between her and the four-dot display?*

because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

Given this fact, consider a pt as described in the box, ie, she has a suppression scotoma in one eye, but the image of the dots are falling outside its boundaries; hence, she reports seeing four dots. Question: What would happen if you increased the distance between her and the four-dot display?
Eventually, the distance would be great enough that the image of the dots would fall **within** her suppression scotoma. At that point, her perceptual experience would shift from seeing four dots to seeing two or three (depending upon whether her left vs right eye has the scotoma).

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

Given this fact, consider a pt as described in the box, ie, she has a suppression scotoma in one eye, but the image of the dots are falling outside its boundaries; hence, she reports seeing four dots. Question: What would happen if you increased the distance between her and the four-dot display?
Eventually, the distance would be great enough that the image of the dots would fall **within** her suppression scotoma. At that point, her perceptual experience would shift from seeing four dots to seeing two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. When the distance between the display and the pt is short, the dot-images fall outside their scotoma and they report four dots.

because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

Given this fact, consider a pt as described in the box, ie, she has a suppression scotoma in one eye, but the image of the dots are falling outside its boundaries; hence, she reports seeing four dots. Question: What would happen if you increased the distance between her and the four-dot display?
Eventually, the distance would be great enough that the image of the dots would fall **within** her suppression scotoma. At that point, her perceptual experience would shift from seeing four dots to seeing two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. When the distance between the display and the pt is short, the dot-images fall outside their scotoma and they report four dots.
But when they are re-tested at a greater distance, the dot-images will fall within the scotoma, and they report two or three.

…because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma?

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

with … because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is #-# degrees.

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

with … because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees.

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

…s…
with … (which appear red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… (which appear green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees. Assuming one is using a standard Worth display, the angular size of the dot-image will be <1 deg at a distance of # meters, and thus will assuredly fall within the limits of the scotoma.

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots.
But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

…s…
with … because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees. Assuming one is using a standard Worth display, the angular size of the dot-image will be <1 deg at a distance of 3 meters, and thus will assuredly fall within the limits of the scotoma.

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots.
But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

…s…
with … because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees. Assuming one is using a standard Worth display, the angular size of the dot-image will be <1 deg at a distance of 3 meters, and thus will assuredly fall within the limits of the scotoma.
…fall outside *the suppression scotoma?*

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

…s…
with … because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… green because of the filter). This means the **right** eye has a suppression scotoma.

… in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q/A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees. Assuming one is using a standard Worth display, the angular size of the dot-image will be <1 deg at a distance of 3 meters, and thus will assuredly fall within the limits of the scotoma.
…fall outside *the suppression scotoma?* Again assuming the use of a standard display, the angular size of the dot-image will be >4 (and thus be outside the scotoma) at a distance in the # to # meter range.

two or three (depending upon whether her left vs right eye has the scotoma).
This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

If th…s

…s…
with … (which appear red because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

… (which appear green because of the filter). This means the **right** eye has a suppression scotoma.

… a … in either eye; or

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

A

Sensory Adaptations to Strabismus: **Monofixation syndrome**

- *In a nutshell: What does the Worth 4-dot test, test for?*
  Like the 4Δ BO prism test, it tests for the presence of a suppression scotoma

Let's contemplate this situation in more detail. *First, what is the relationship between the visual angle subtended by an image and the distance of the object from the eye? (Note that this is a Basic Optics question more than a strabismus one.)*
They are inversely related, ie, the greater the distance, the smaller the angle

At what distance between the pt and the display can you be confident the dot-images will…
…fall within the suppression scotoma? Recall that the typical scotoma size in monofixation syndrome is 1-4 degrees. Assuming one is using a standard Worth display, the angular size of the dot-image will be <1 deg at a distance of 3 meters, and thus will assuredly fall within the limits of the scotoma.
…fall outside *the suppression scotoma?* Again assuming the use of a standard display, the angular size of the dot-image will be >4 (and thus be outside the scotoma) at a distance in the .67 to 1 meter range.

This is how monofixation syndrome pts respond during Worth 4-dot testing. **When the distance between the display and the pt is short**, the dot-images fall outside their scotoma and they report four dots. But when they are re-tested at a **greater distance**, the dot-images will fall within the scotoma, and they report two or three.

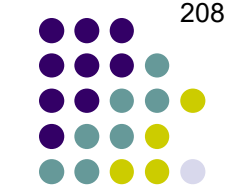
because of the filter). This means the left eye isn't seeing anything, and thus has a suppression scotoma.

green because of the filter). This means the **right** eye has a suppression scotoma.

--A suppression scotoma is present, but it is smaller than the angle subtended by the dots at that viewing distance (ie, the images of the dots are falling outside the border of the scotoma)

Q

Sensory Adaptations to Strabismus: **Monofixation syndrome**

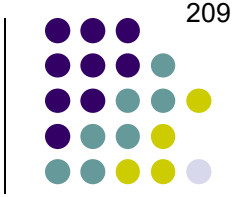


- Monofixators have peripheral fusion but no central fusion ***T***
- A small foveal suppression scotomata is present ~~OU~~ unilaterally ***F***
- Retinal correspondence = Small angle ARC ***T*** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ ***F***
- Amblyopia is ~~uncommon~~ common ***F***
- Is ~~an~~ not an indication for re-op if it develops after ET surgery ***F***
- Can be diagnosed via the *4Δ BO prism* test ***T***
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance ***F***
- Stereopsis in the 200-3000 arc-s range is usually not achievable

Next

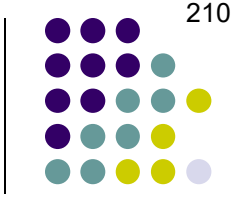
A

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion **T**
- A small foveal suppression scotomata is present ~~OU~~ unilaterally **F**
- Retinal correspondence = Small angle ARC **T** ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ **F**
- Amblyopia is ~~uncommon~~ common **F**
- Is ~~an~~ not indication for re-op if it develops after ET surgery **F**
- Can be diagnosed via the *4Δ BO prism* test **T**
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance **F**
- Stereopsis in the 200-3000 arc-s range is usually ~~not~~ achievable **F**

Sensory Adaptations to Strabismus: **Monofixation syndrome**



- Monofixators have peripheral fusion but no central fusion *T*
- A small foveal suppression scotomata is present ~~OU~~ unilaterally *F*
- Retinal correspondence = Small angle ARC *T* ET
- Muscle balance is typically a micro (<8 PD) ~~XT~~ *F*
- Amblyopia is ~~uncommon~~ common *F*
- Is ~~an~~ not indication for re-op if it develops after ET surgery *F*
- Can be diagnosed via the *4Δ BO prism* test *T*
- *Worth 4-dot* testing reveals 4 dots at ~~distance~~ near and 2 or 3 at ~~near~~ distance *F*
- Stereopsis in the 200-3000 arc-s range is usually ~~not~~ achievable *F*

Monofixation syndrome is a common entity. These patients have peripheral fusion without central fusion; thus they possess gross stereopsis (200-3000 arc-s) but not the high-grade stereopsis that requires bifoveation (~40 arc-s). This is because they cannot bifixate an object of regard (hence the term 'monofixation'). Vision in the nonfixating eye is characterized by a small foveal suppression scotoma and minute ARC. Muscle balance testing usually reveals an ET of about 8PD. Amblyopia is the rule; it is usually mild but can be profound. Monofixation is considered a desirable outcome in correction of ET with spectacles or surgery. The *4Δ BO prism test* is very useful in diagnosing a monofixation syndrome. *Worth 4-dot* testing reveals a characteristic pattern: When assessed at a distance of 2-3 feet, the lights fall outside the suppression scotoma and the patient perceives all four dots. However, when the light is held at distance (10+ feet), the lights fall within the suppression scotoma, and only 2 or 3 dots will be appreciated with the non-suppressing eye.