Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET?

Comitant Exotropia

Which is more common in children: comitant XT, or comitant ET?
ET is significantly more common

Comitant Exotropia

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Is there a gender predilection for comitant XT?

Comitant Exotropia

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Is there a pattern regarding its distribution worldwide?

Comitant Exotropia

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Yes. XT is much more common in the Middle East, Africa and Asia than in the US and/or Europe. It is also more commonly found at latitudes that receive more sun vs snow

Comitant Exotropia

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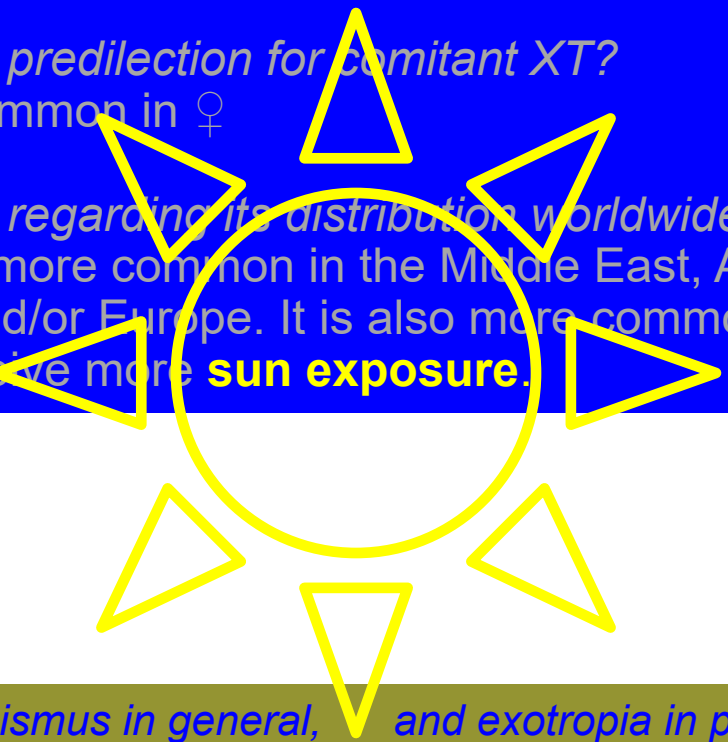

Outside of the US, strabismus in general, and exotropia in particular, is frequently referred to as 'squint' (eg, 'I saw a child in clinic today with a squint.') Why?

Comitant Exotropia

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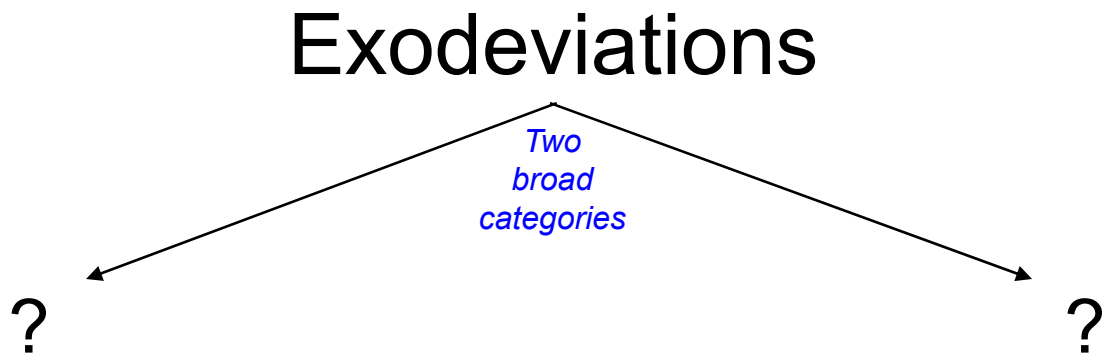
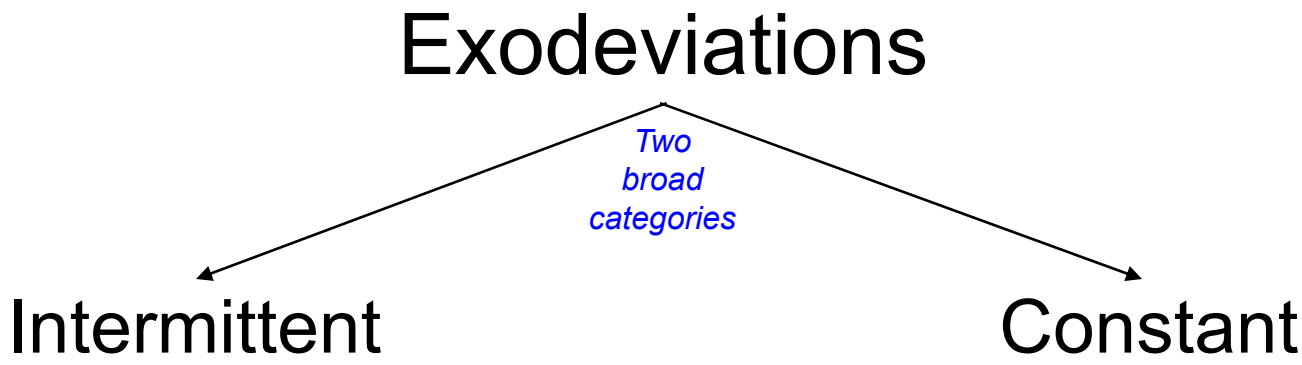
Outside of the US, strabismus in general, and exotropia in particular, is frequently referred to as 'squint' (eg, 'I saw a child in clinic today with a squint.') Why?
One of the common characteristics of exotropia is that the child will close the deviating eye (ie, squint), especially in **bright sunlight**

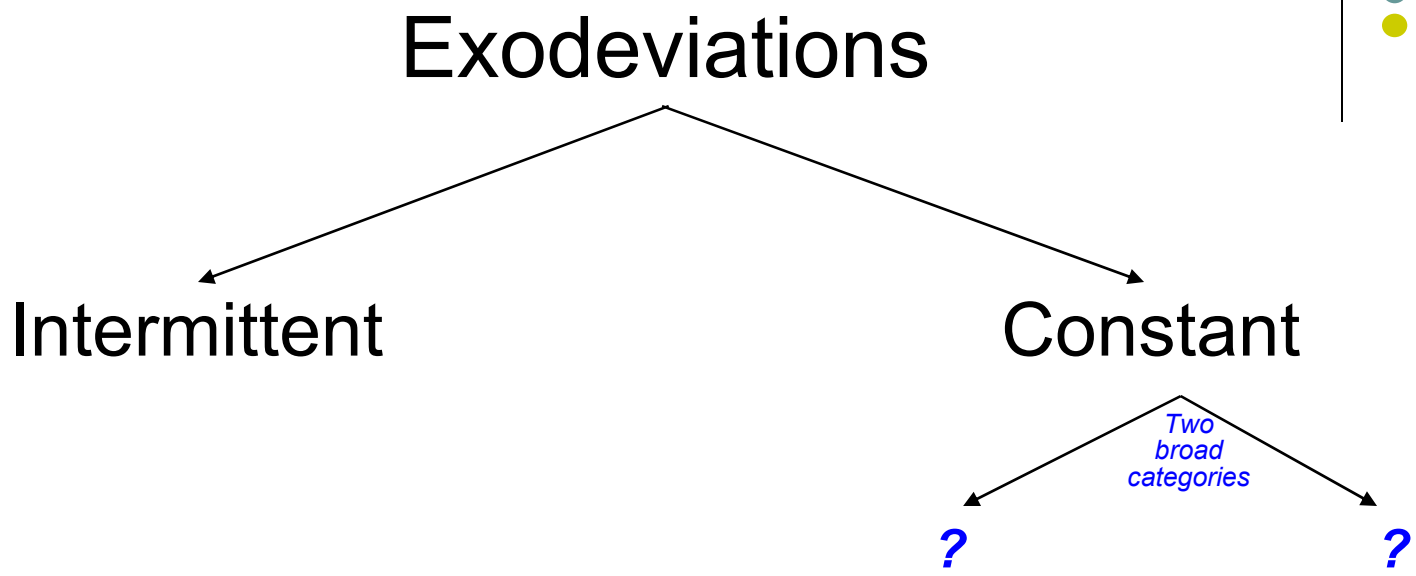
Comitant Exotropia



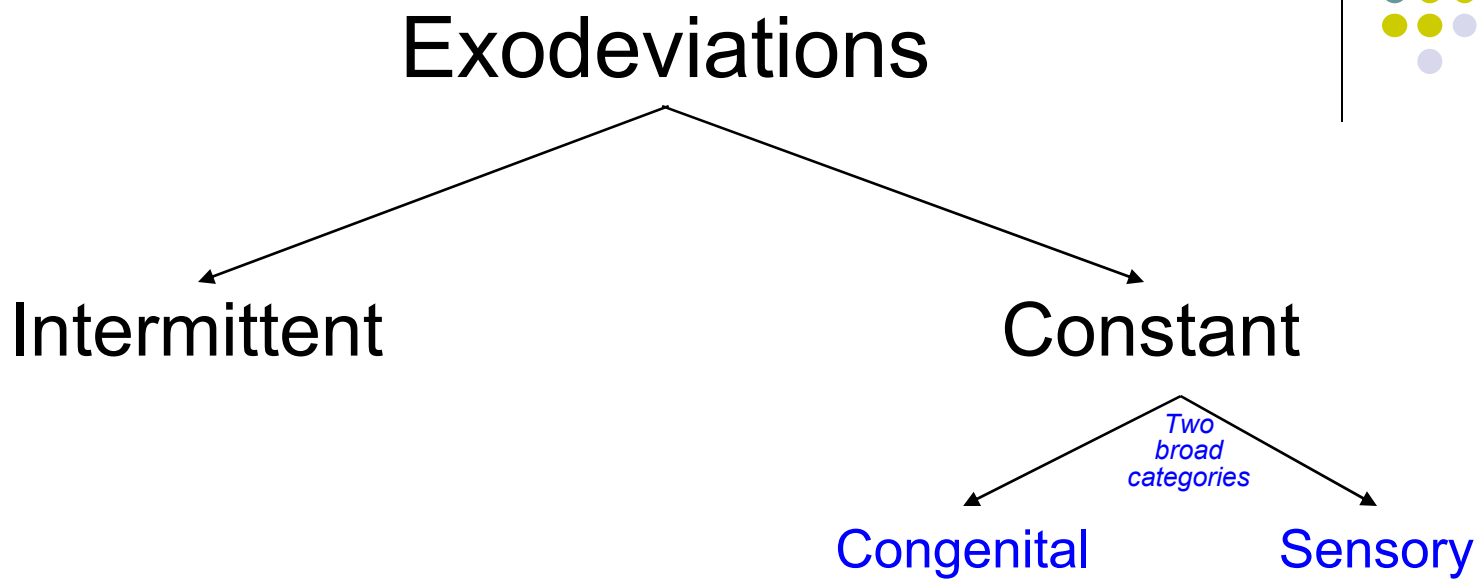
Comitant Exotropia



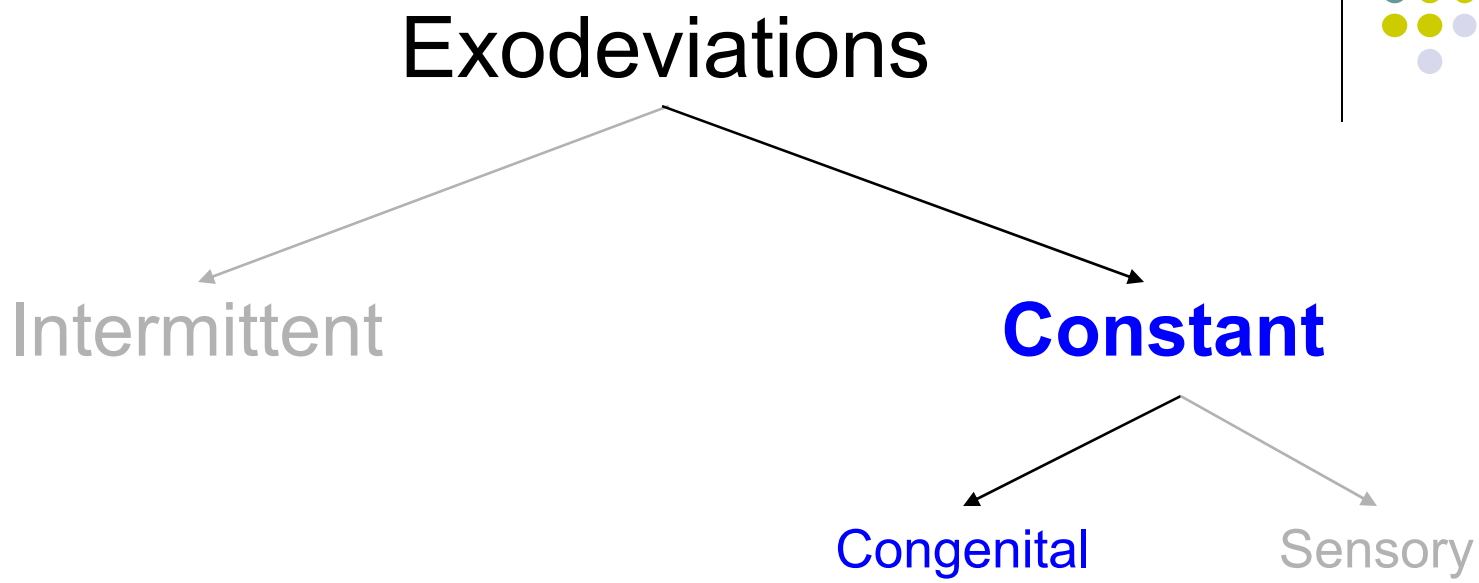
Comitant Exotropia



Comitant Exotropia

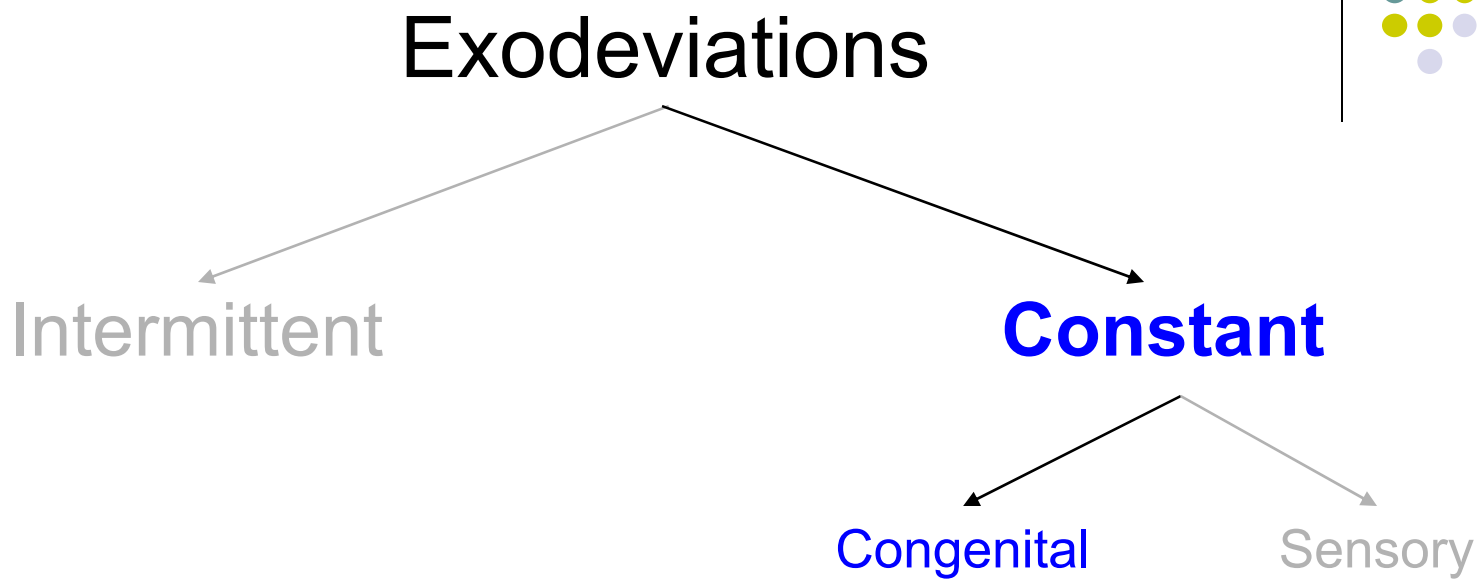


Comitant Exotropia



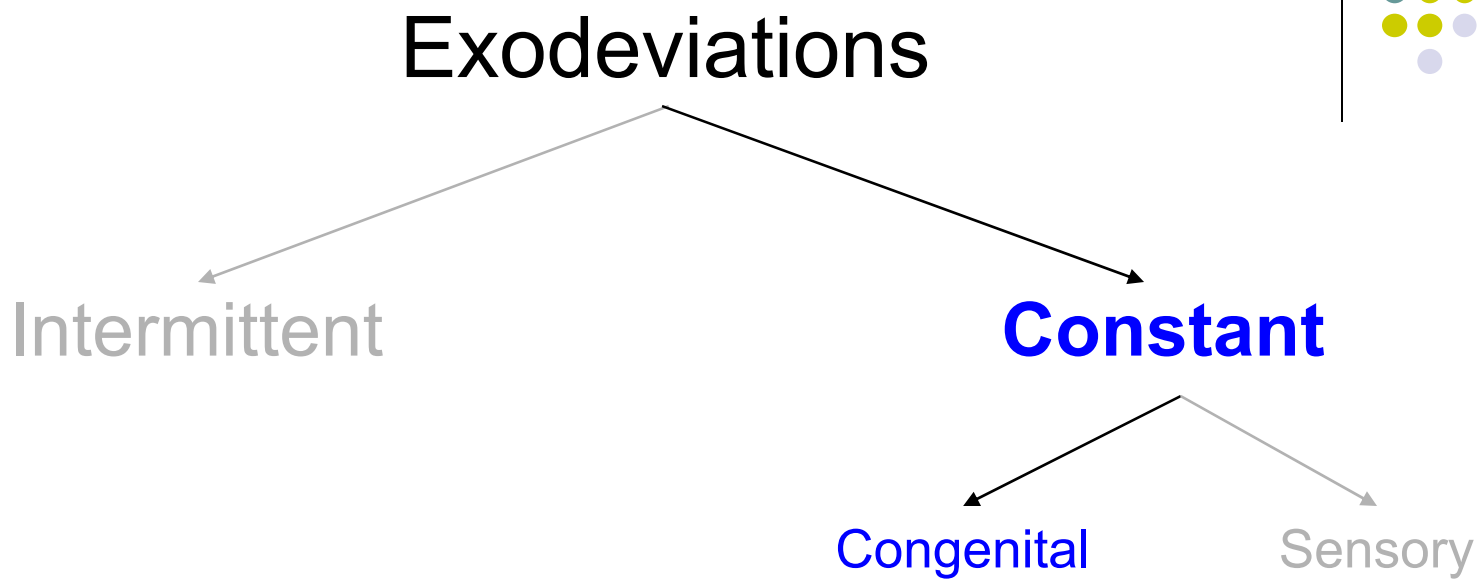
Congenital XT
--Onset prior to age…

Comitant Exotropia



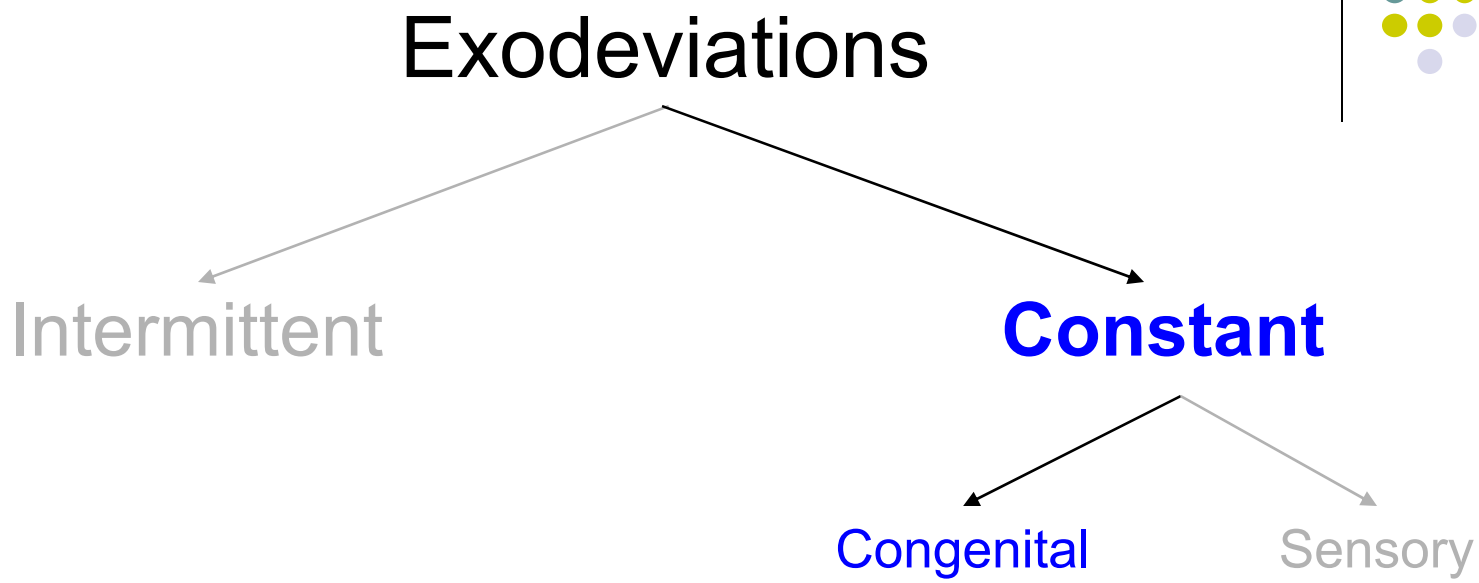
Congenital XT
--Onset prior to age…6 months

Comitant Exotropia



Congenital XT
--Onset prior to age…6 months
--Usually syndromic *[two very general types of syndromes]*

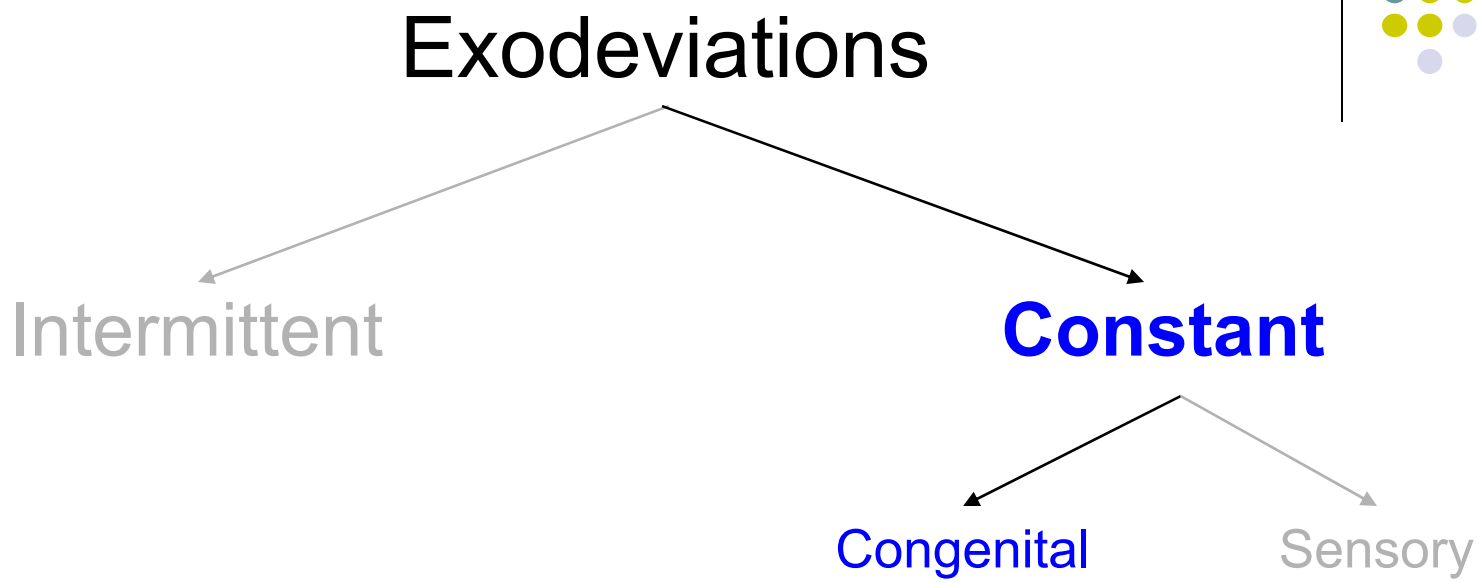
Comitant Exotropia



Congenital XT
--Onset prior to age…6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes

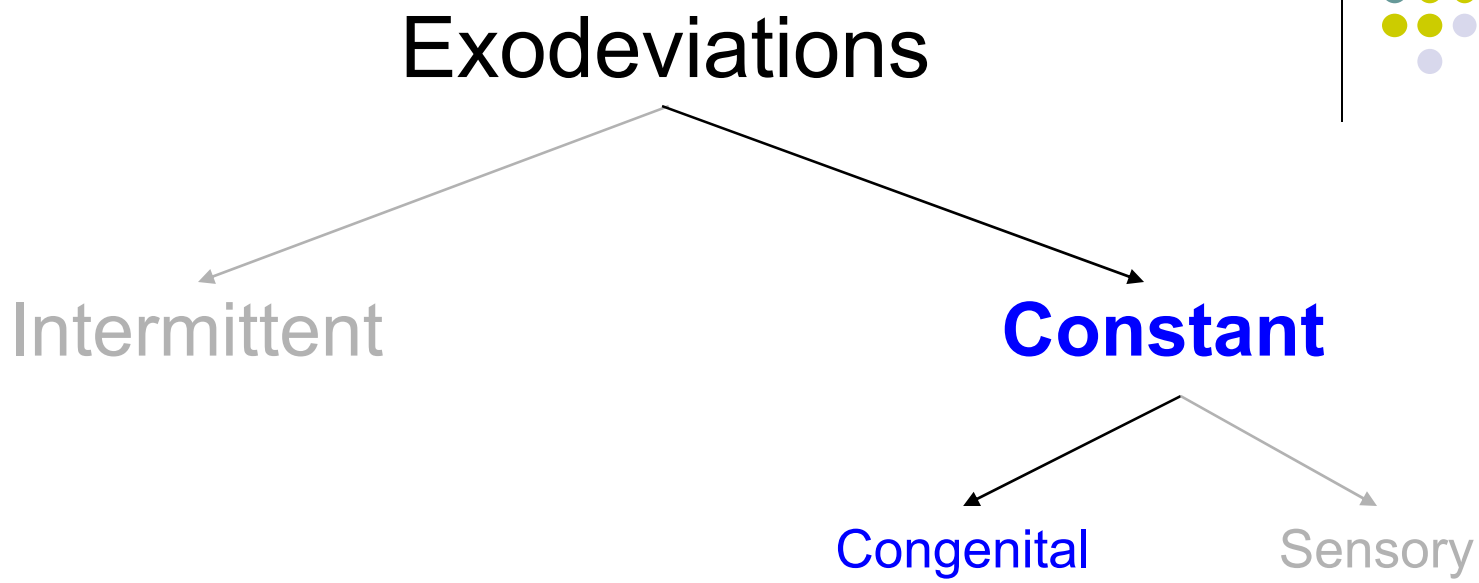
Constant XT in Crouzon syndrome

Comitant Exotropia



Congenital XT
--Onset prior to age…6 months
--Usually syndromic: Craniofacial syndromes, neurologic syndromes
--Potential for stereopsis/bifoveation is…*[good vs poor]*

Comitant Exotropia



Congenital XT
--Onset prior to age…6 months
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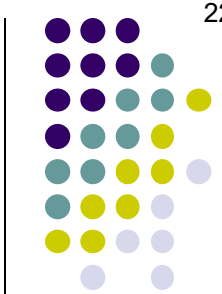
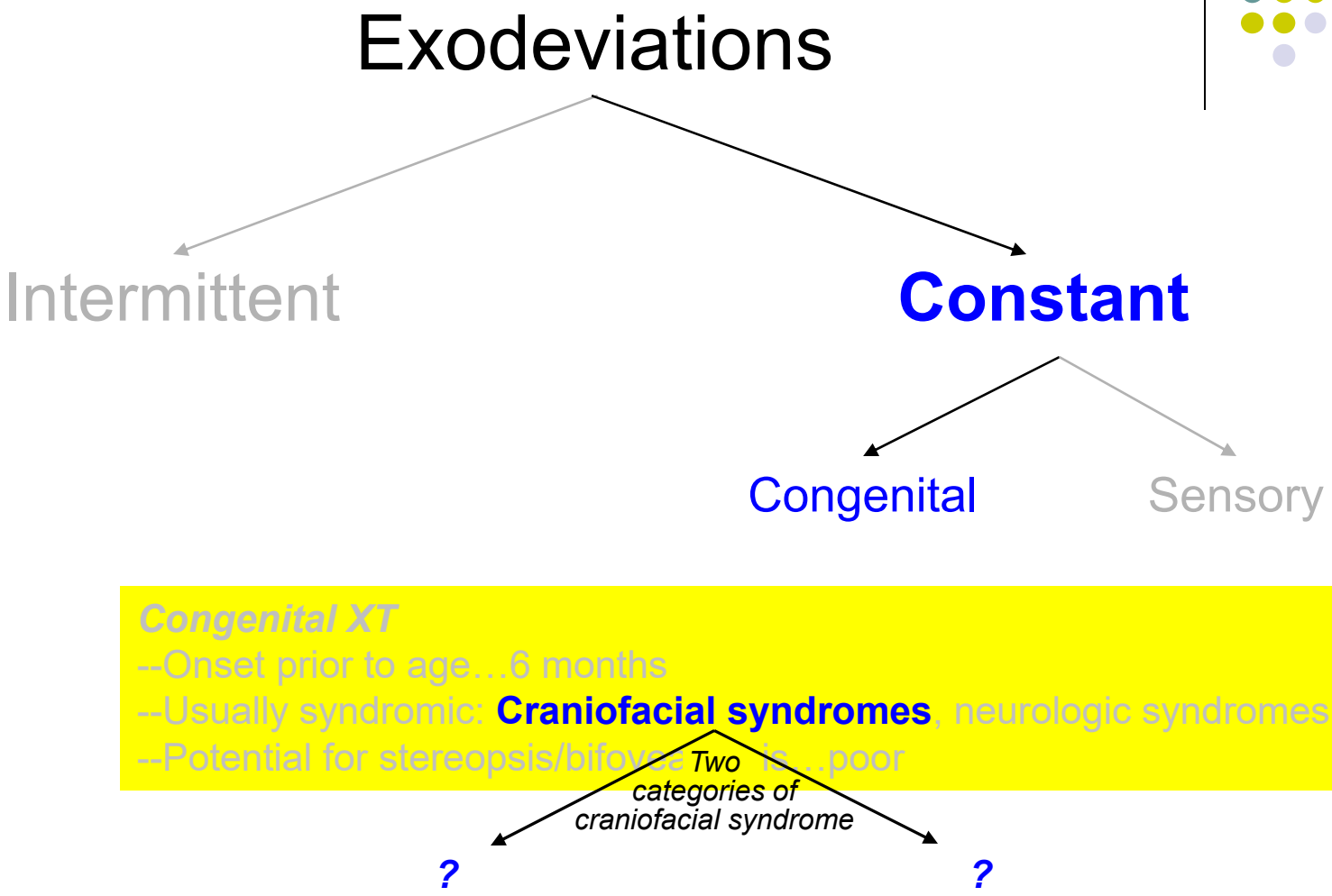
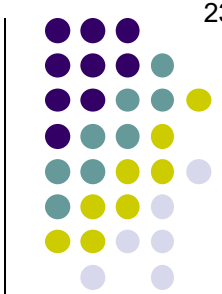
Comitant Exotropia





What are the two broad categories of craniofacial syndrome?

Comitant Exotropia



Exodeviations

Intermittent

Constant

Congenital

Sensory

Congenital XT
--Onset prior to age…6 months
--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes
--Potential for stereopsis/bifovea is…poor

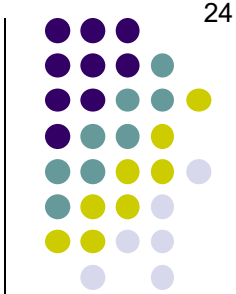
Two categories of craniofacial syndrome

Craniosynostoses

Not craniosynostoses

What are the two broad categories of craniofacial syndrome?

Comitant Exotropia



Exodeviations

Intermittent

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Sensory

Congenital XT

--Onset prior to age…6 months

--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes

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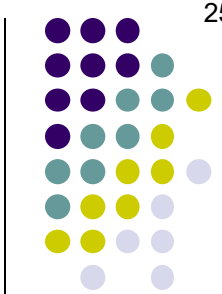
Craniosynostoses

Not craniosynostoses

Which not-craniosynostosis syndromes are addressed in the Peds *book?*

- *?*
- *?*
- *?*
- *?*

Comitant Exotropia



Exodeviations

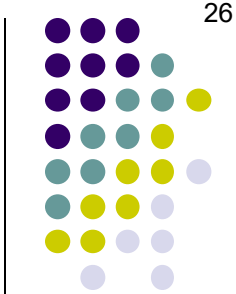
- Intermittent
- **Constant**
  - Congenital
  - Sensory

Congenital XT
--Onset prior to age…6 months
--Usually syndromic: **Craniofacial syndromes**, neurologic syndromes
--Potential for stereopsis/bifovea…is…poor

- *Craniosynostoses*
- *Not craniosynostoses*
  - --Goldenhar
  - --Treacher Collins
  - --Pierre Robin sequence
  - --Fetal alcohol

Which not-craniosynostosis syndromes are addressed in the Peds *book?*

Comitant Exotropia



Exodeviations

Intermittent

Constant

Congenital

Sensory

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Craniosynostoses

Which craniosynostosis syndromes are addressed in the Peds *book?*

--***?***
--***?***
--***?***
--***?***

Not craniosynostoses

--Goldenhar
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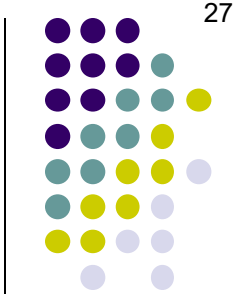
Comitant Exotropia



Exodeviations

- Intermittent
- **Constant**
  - Congenital
  - Sensory

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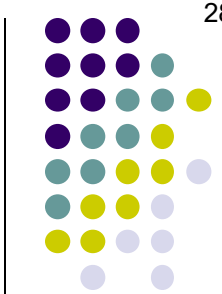
Which craniosynostosis syndromes are addressed in the Peds *book?*

Craniosynostoses
- --Crouzon
- --Apert
- --Pfeiffer
- --Saethre-Chotzen

Not craniosynostoses
- --Goldenhar
- --Treacher Collins
- --Pierre Robin sequence
- --Fetal alcohol

Comitant Exotropia



Exodeviations

Intermittent

Constant

Congenital

Sensory

Congenital XT

--Onset prior to age…6 months

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--Potential for ste

Of these, which three are strongly associated with congenital XT?

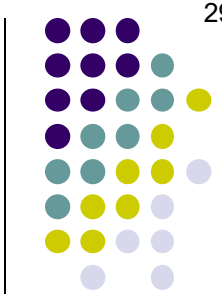
Craniosynostoses

- *Crouzon?*
- *Apert?*
- *Pfeiffer?*
- *Saethre-Chotzen?*

Not craniosynostoses

- *Goldenhar?*
- *Treacher Collins?*
- *Pierre Robin sequence?*
- *Fetal alcohol?*

Comitant Exotropia



Exodeviations

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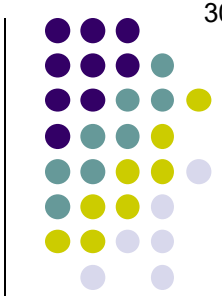


Exodeviations

Intermittent

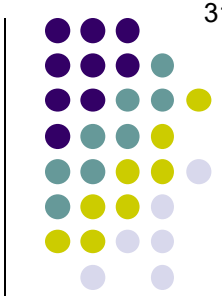
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is... *[general state]*

Comitant Exotropia



Exodeviations

Intermittent

Constant

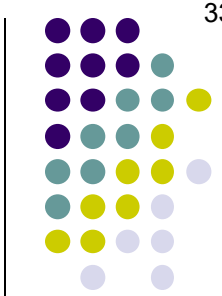
ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive

Intermittent XT: Straight, and XT

Comitant Exotropia



Exodeviations

Intermittent

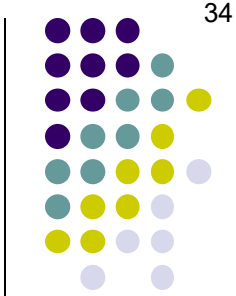
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer

Comitant Exotropia



Exodeviations

Intermittent

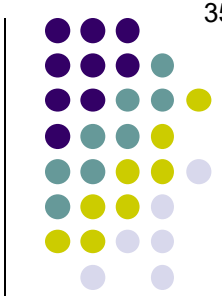
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…*[2 adaptive responses]*

Comitant Exotropia



Exodeviations

Intermittent

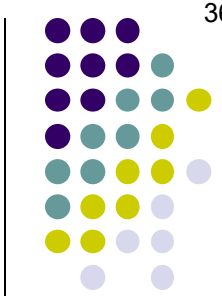
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

Sensory

Intermittent XT

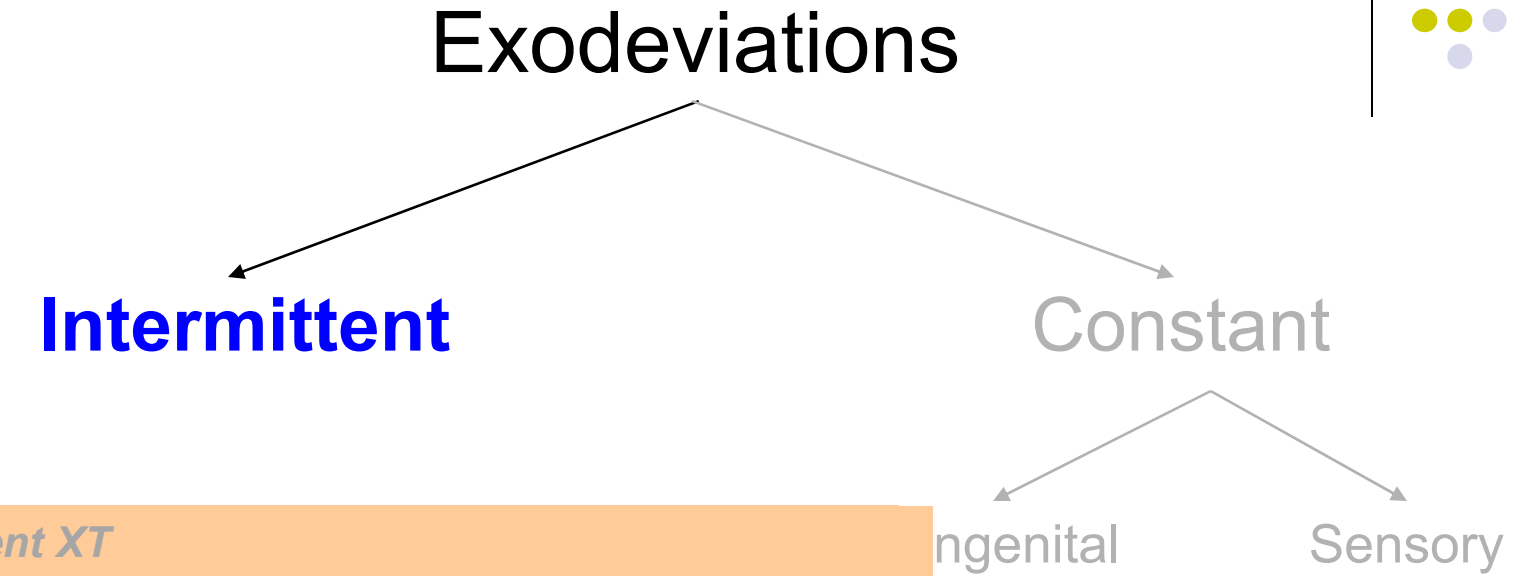
--Initially XT only when pt is…tired/ill/inattentive

--Later, XT periods more frequent, last longer

--If patient < 10 y.o., will develop…suppression and **ARC**

What does ARC *stand for in this context?*

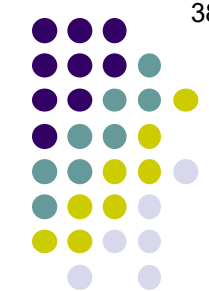
Comitant Exotropia



Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and **ARC**

What does ARC *stand for in this context?*
Anomalous retinal correspondence

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

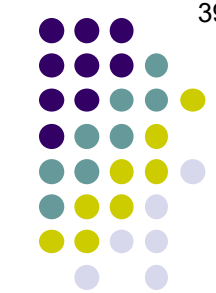
Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…**suppression and ARC**

Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?
--Suppression
--Anomalous retinal correspondence
--

Mnemonic…

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…**suppression and ARC**

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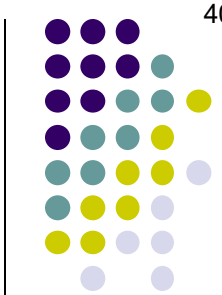
--**S**uppression
--**A**nomalous retinal correspondence
--**M**

Mnemonic…**SAM**

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

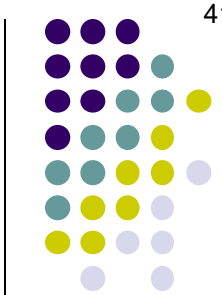
Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…**suppression and ARC**

Suppression and ARC are two of the three adaptations the immature visual system makes in response to misalignment. What is the other?
--**S**uppression
--**A**nomalous retinal correspondence
--**M**onofixation syndrome

Mnemonic…**SAM**

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with… *[other strabismus manifestations]*

Comitant Exotropia

Exodeviations

Intermittent

Constant

ngenital

Sensory

Intermittent XT

--Initially XT only when pt is…tired/ill/inattentive

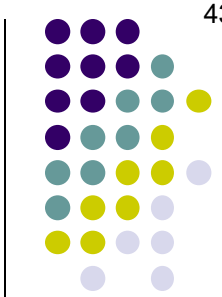
--Later, XT periods more frequent, last longer

--If patient < 10 y.o., will develop…suppression and ARC

--XT frequently associated with…HT, A/V pattern

(hypertropia)

Comitant Exotropia



Exodeviations

Intermittent

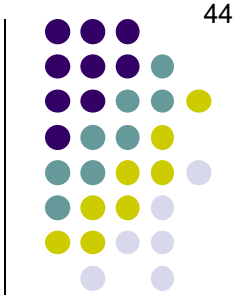
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…*[yet another strabismus manifestation]*

Comitant Exotropia



Exodeviations

Intermittent

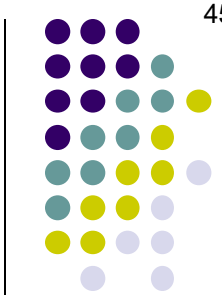
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…IO overaction

Comitant Exotropia



Exodeviations

Intermittent

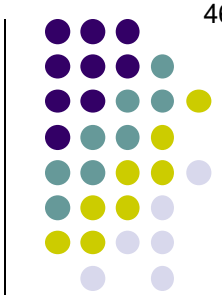
Constant

ngenital

Sensory

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…IO overaction
--Amblyopia is…*[common v uncommon]*

Comitant Exotropia



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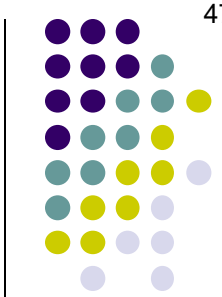

Exodeviations

Intermittent

Constant

ngenital

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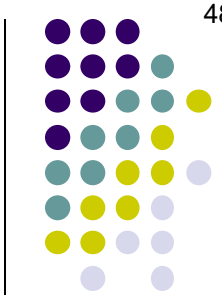
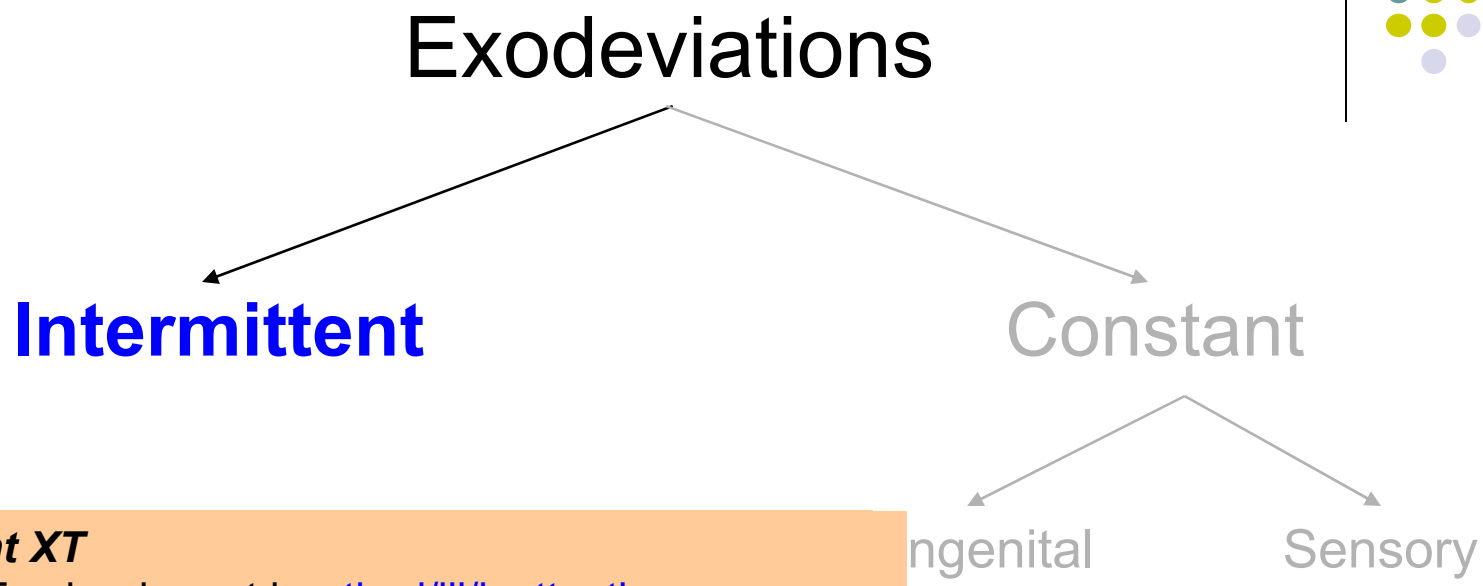
Management

--Give specs for refractive status (but *not* for mild refractive status)

Comitant Exotropia





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--Amblyopia is…uncommon

Management
--Give specs for myopia (but *not* for mild hyperopia)

Comitant Exotropia

Exodeviations

Intermittent

Constant

Why no Rx for mild hyperopia?

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
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--Amblyopia is…uncommon
Management
--Give specs for myopia (but ***not*** **for mild hyperopia**)

Comitant Exotropia

Exodeviations

Intermittent

Constant

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--Amblyopia is…uncommon
Management
--Give specs for myopia (but ***not*** **for mild hyperopia**)

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
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--Amblyopia is…uncommon

Management
--Give specs for myopia (but *not* for ~~mild~~ high **hyperopia**)

Constant

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

*What about **high** hyperopia?*

Comitant Exotropia

Exodeviations

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Management
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Constant

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

*What about **high** hyperopia?*
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

Comitant Exotropia

Exodeviations

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*What about **high** hyperopia?*
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

Why partially correct high hyperopia?

Comitant Exotropia

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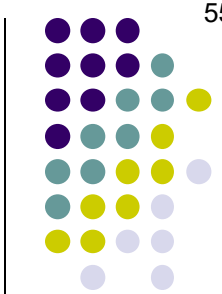
Constant

Why no Rx for mild hyperopia?
Because the near triad. That is, the accommodative effort required by the uncorrected hyperopia will induce convergence, which may offset the XT.

*What about **high** hyperopia?*
In contrast to mild hyperopia, high levels of hyperopia should be at least partially corrected

Why partially correct high hyperopia?
If the accommodative demand is too high, the patient may be unable to sustain it, and s/he will 'give up' and lose focus, with the subsequent loss of fusion causing a lapse into XT

Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

Sensory

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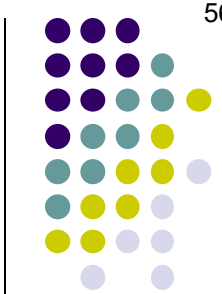
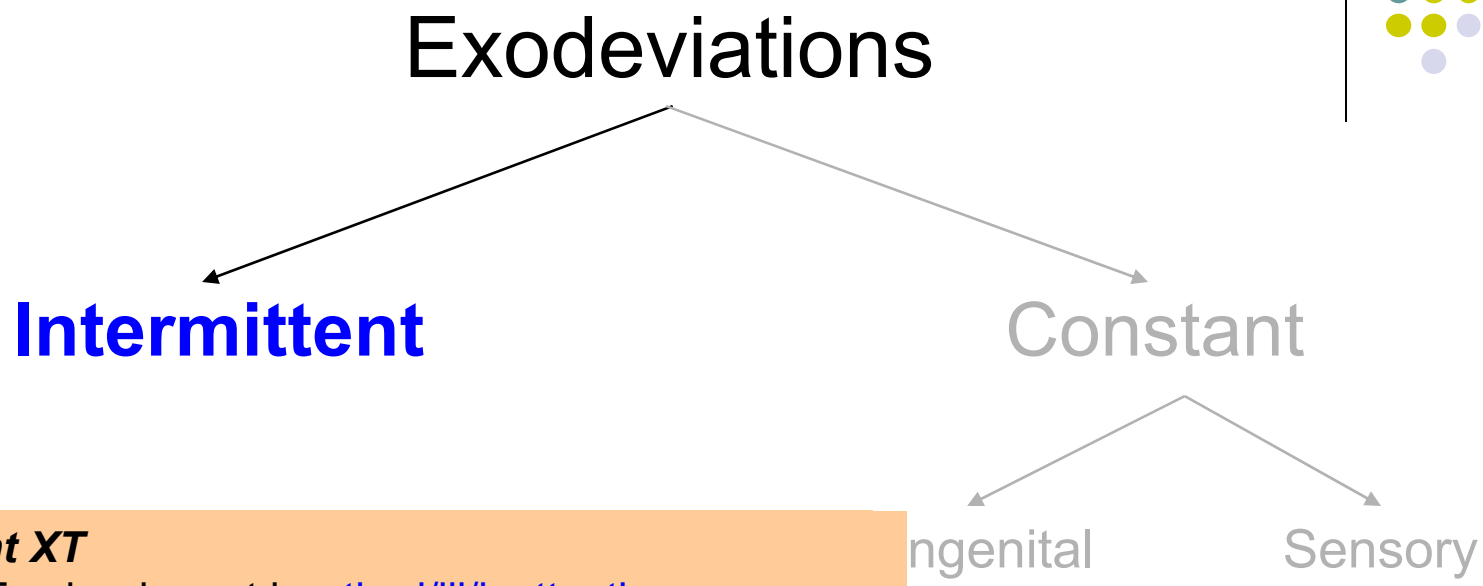
Management

--Give specs for myopia (but *not* for mild hyperopia)

--Consider nonsurgical intervention of the nondeviating eye

Comitant Exotropia





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Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye

Comitant Exotropia

Exodeviations

Intermittent

Constant

ngenital

Sensory

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Management

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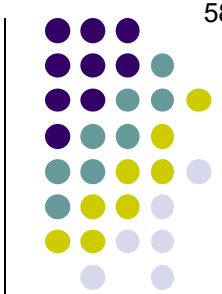
--Consider **part-time patching** of the nondeviating eye

If amblyopia is uncommon, why perform patching?

Comitant Exotropia



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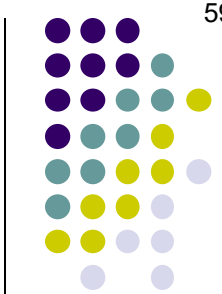
Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider **part-time patching** of the nondeviating eye

If amblyopia is uncommon, why perform patching?
The patching is ***not*** for amblyopia; rather, it seems to help the XT (for reasons that are not clear)

Comitant Exotropia



Exodeviations

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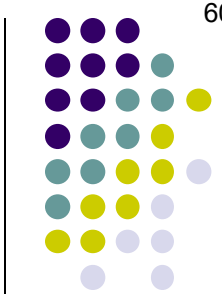
Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider nonsurgical intervention 2 and nonsurgical intervention 3 training

Comitant Exotropia



Exodeviations

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Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training

Comitant Exotropia

Exodeviations

Intermittent

Constant

ngenital

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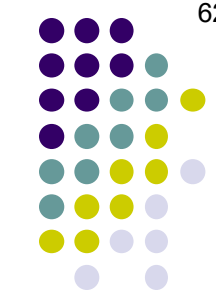
Do intermittent XT patients c/o diplopia?

--Consider **diplopia awareness** and convergence training

Comitant Exotropia



Exodeviations

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ngenital

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Do intermittent XT patients c/o diplopia?
It depends. Prior to development of ARC and suppression, they will experience and c/o diplopia. However, once ARC/suppression develop, the diplopia ceases.

--Consider **diplopia awareness** and convergence training

Comitant Exotropia

Exodeviations

Intermittent

Constant

ngenital

Sensory

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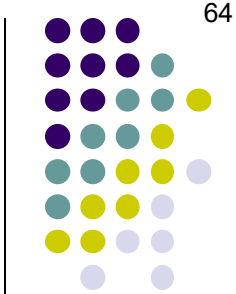
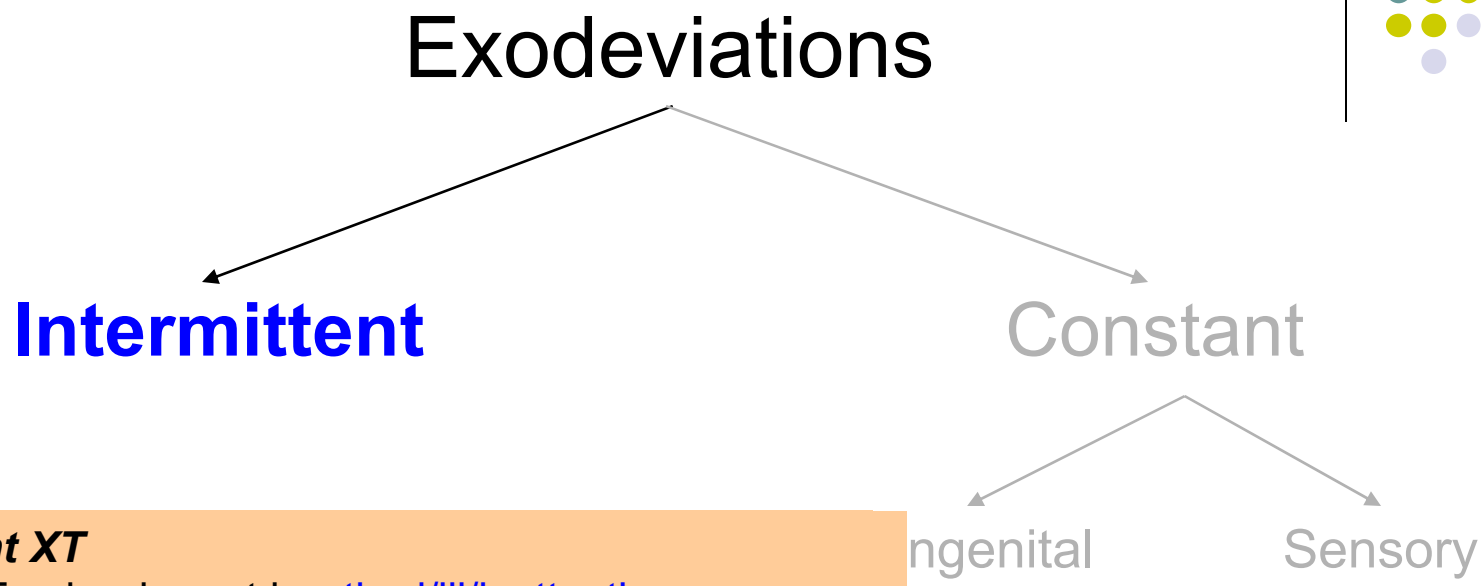
Do intermittent XT patients c/o diplopia?
It depends. Prior to development of ARC and suppression, they will experience and c/o diplopia. However, once ARC/suppression develop, the diplopia ceases. Often the ARC and suppression are ***facultative***; that is, the patient will have NRC and fine stereo when their eyes are straight, but ARC and suppression when they are XT.

--Consider **diplopia awareness** and convergence training

Comitant Exotropia





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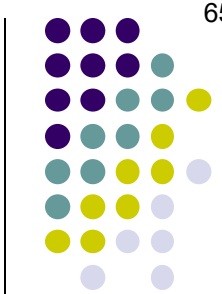
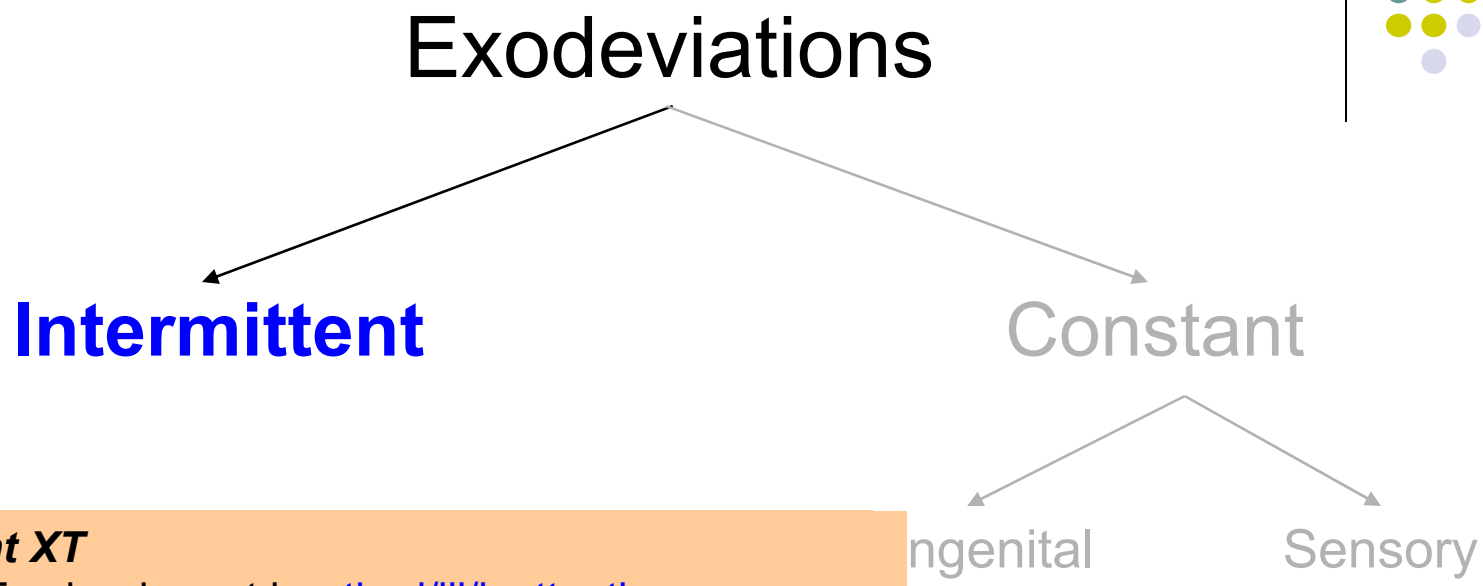
--Amblyopia is…uncommon

Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: *[last resort]*

Comitant Exotropia





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Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Comitant Exotropia

Exodeviations

Intermittent

Constant

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Management
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--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

How is progression *defined?*

Comitant Exotropia

Exodeviations

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Constant

How is progression *defined?*
With respect to **control** of the XT

Comitant Exotropia

Exodeviations

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Management
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--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

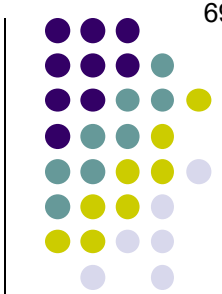
What are the 3 levels of control?

--

--

--

Comitant Exotropia



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Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

What are the 3 levels of control?

--**Good** control

--**Moderate** control

--**Poor** control

Comitant Exotropia

Exodeviations

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--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

What are the 3 levels of control?
How is each defined?
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Comitant Exotropia

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--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

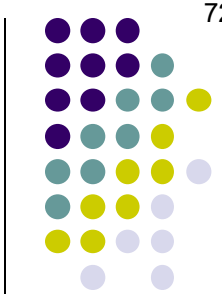
Constant

How is progression *defined?*
With respect to **control** of the XT

What are the 3 levels of control?
How is each defined?
--**Good** control =
  --Become XT only with cover, ***and***
  --Resumes fusion w/o blink
--**Moderate** control

--**Poor** control

Comitant Exotropia



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--Consider part-time patching of the nondeviating eye
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--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

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--If XT continues to progress: Surgery

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How is progression *defined?*
With respect to **control** of the XT

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  --Resumes fusion only **with** blink
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Comitant Exotropia

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--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

What are the 3 levels of control?
How is each defined?
--**Good** control =
  --Become XT only with cover, ***and***
  --Resumes fusion w/o blink
--**Moderate** control =
  --Become XT only with cover, ***and***
  --Resumes fusion only **with** blink
--**Poor** control =
  --
  --

Comitant Exotropia

Exodeviations

Intermittent

Intermittent XT
--Initially XT only when pt is…tired/ill/inattentive
--Later, XT periods more frequent, last longer
--If patient < 10 y.o., will develop…suppression and ARC
--XT frequently associated with…HT, A/V pattern
--1/3 XT patients also have…IO overaction
--Amblyopia is…uncommon
Management
--Give specs for myopia (but *not* for mild hyperopia)
--Consider part-time patching of the nondeviating eye
--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Constant

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  --Become XT spontaneously, ***and***
  --Remains XT for extended period

Comitant Exotropia

Exodeviations

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Additionally, be aware that several quantitative scales for assessing intermittent exotropia have been developed (the *Peds* book refers by name to the *Newcastle Control Score for Intermittent Exotropia)*

--Consider diplopia awareness and convergence training
--If XT continues to progress: Surgery

Constant

How is progression *defined?*
With respect to **control** of the XT

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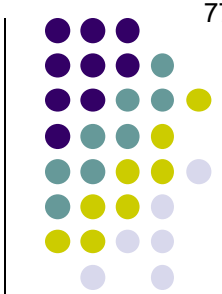
Comitant Exotropia



Exodeviations

Intermittent

Constant

ngenital

Sensory

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--Consider diplopia awareness and conver
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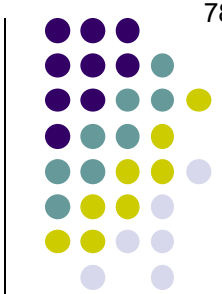
Bilateral LR recession is performed, and the patient is 10Δ ET 2 weeks post-op. What should you do?

Comitant Exotropia



Exodeviations

Intermittent

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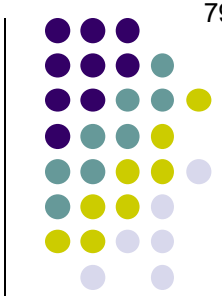
Bilateral LR recession is performed, and the patient is 10Δ ET 2 weeks post-op. What should you do?
Nothing. A small overcorrection (up to ~15Δ) after XT surgery is **desirable**. Prisms can be considered if the ET persists beyond a month or so.

Comitant Exotropia



Exodeviations

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--If XT continues to progress: Surgery

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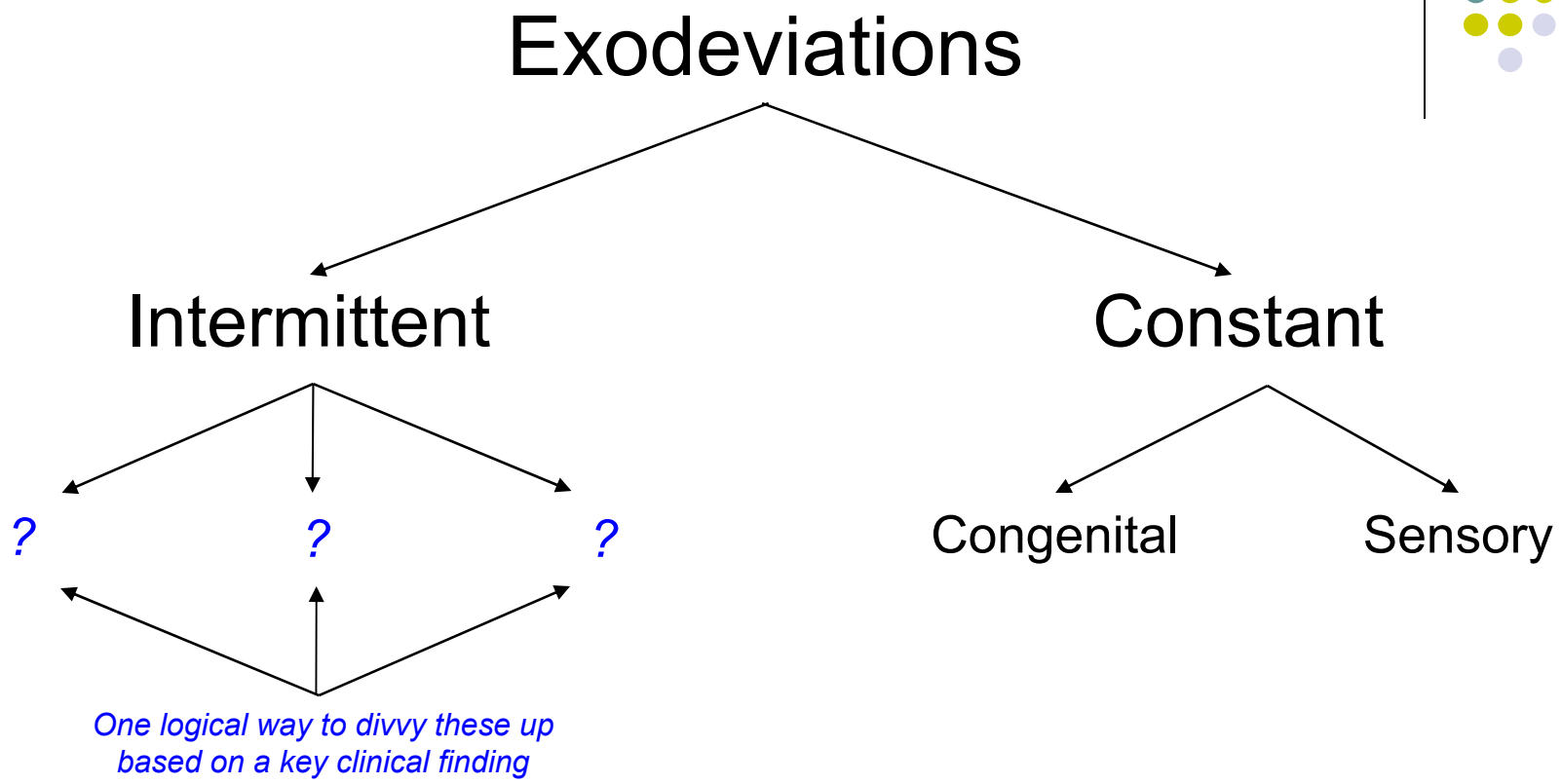
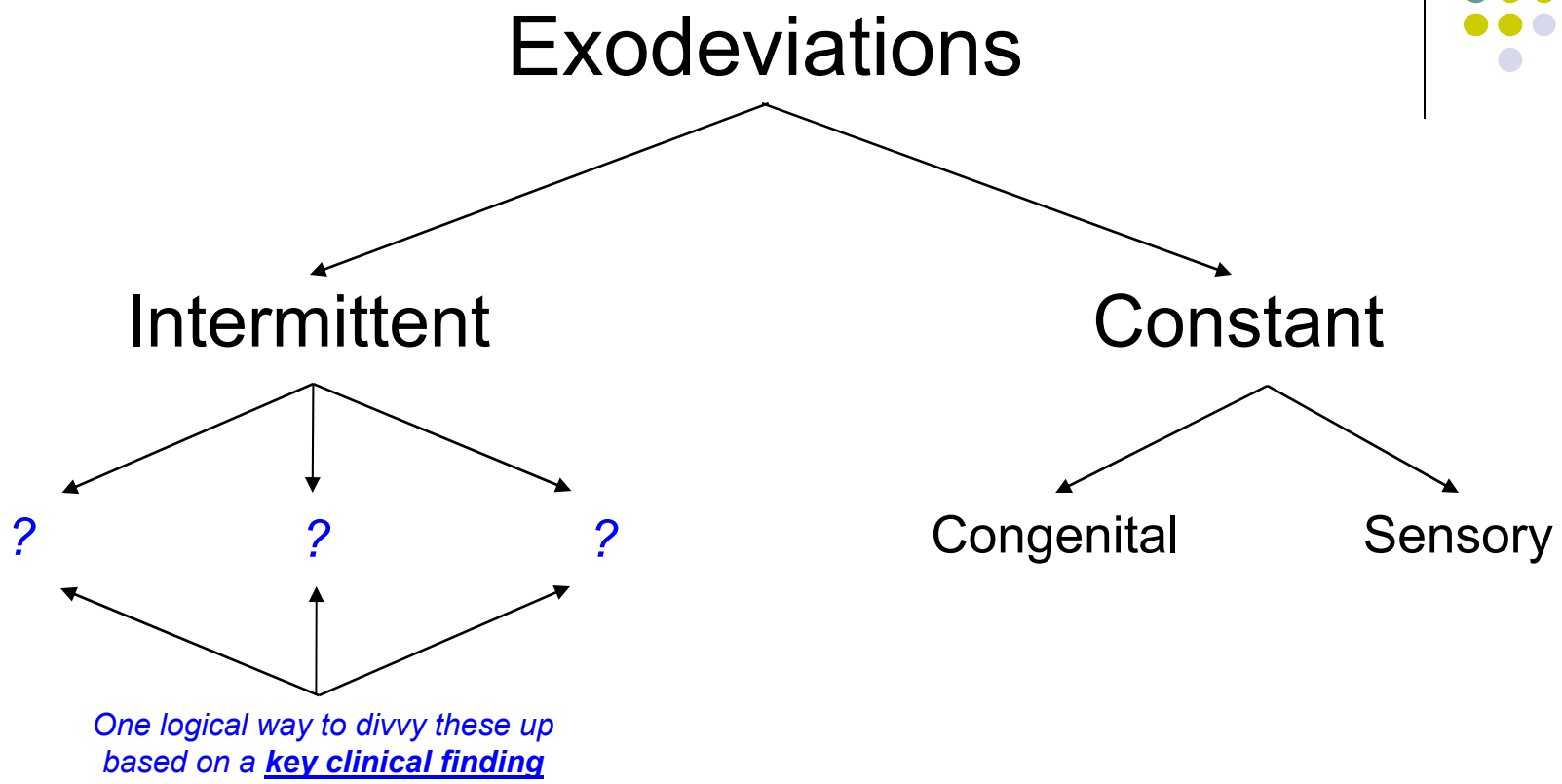
Nothing. A small overcorrection (up to ~15Δ) after XT surgery is **desirable**. Prisms can be considered if the ET persists beyond a month or so. Surgical correction should not be considered for at least 4-6 months (unless a slipped muscle is the culprit, in which case an immediate re-op is indicated).

Comitant Exotropia

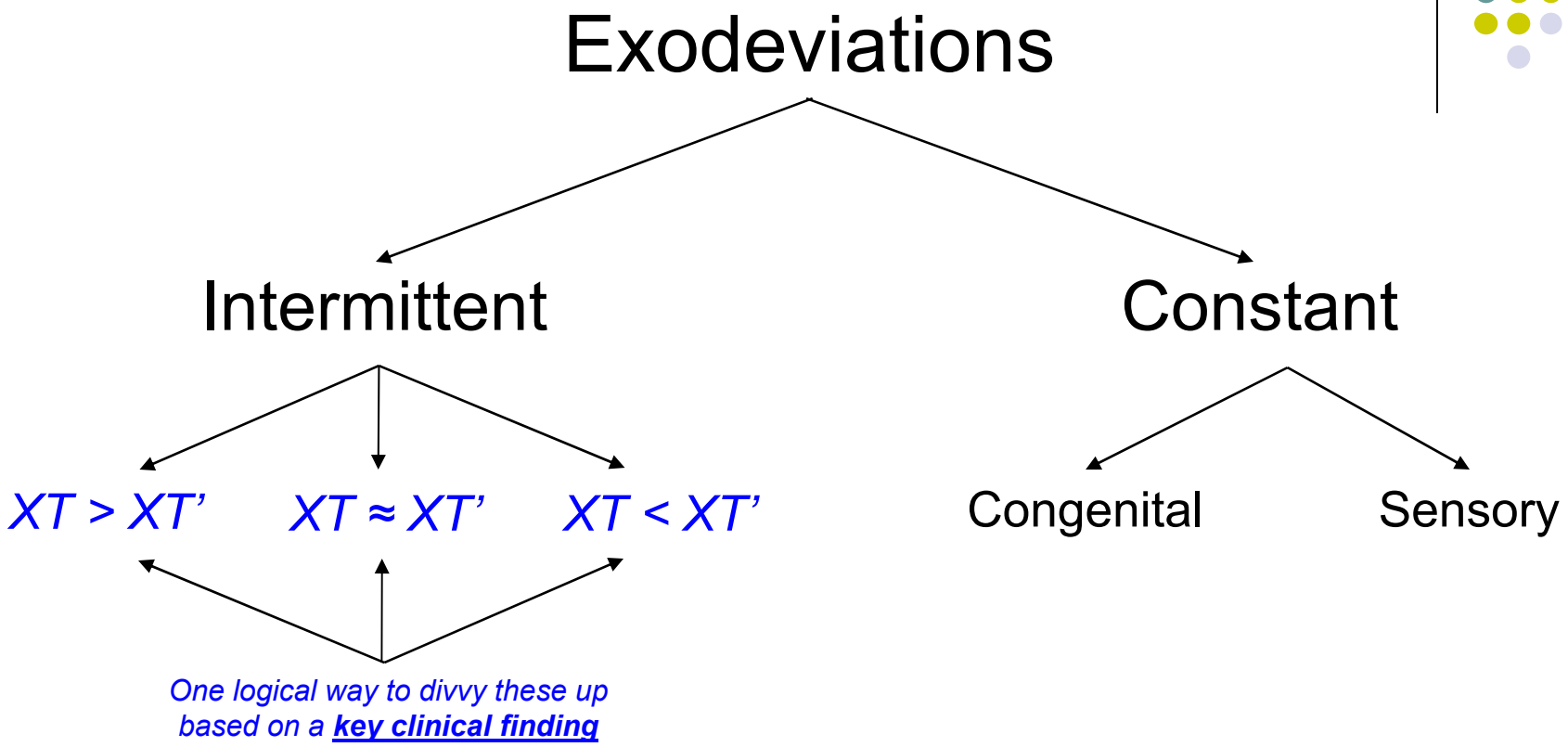


Comitant Exotropia



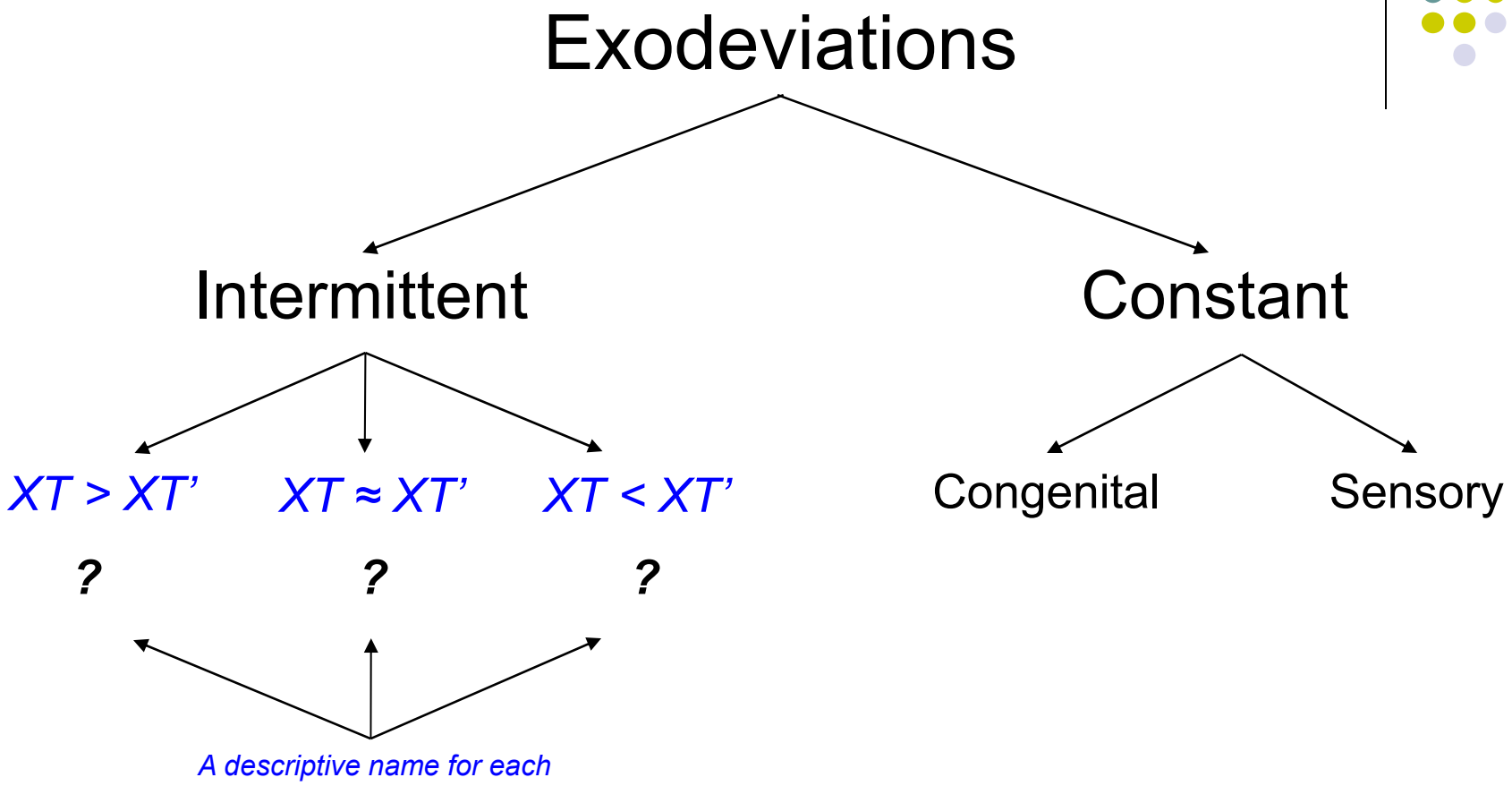
Hint: This 'key clinical finding' is determined via an exam maneuver performed very early in the initial evaluation of a child with intermittent XT, that being…

Comitant Exotropia

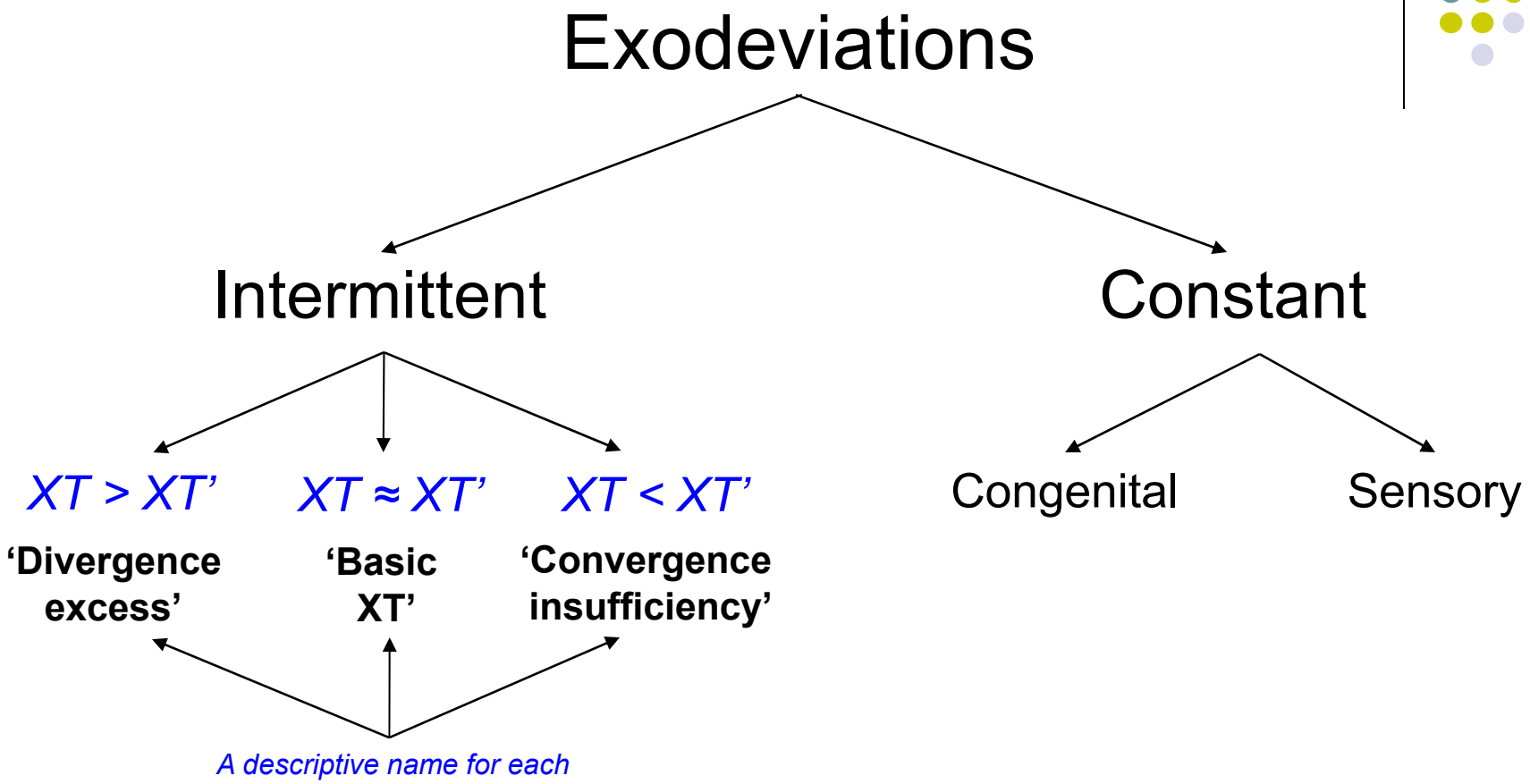


Hint: This 'key clinical finding' is determined via an exam maneuver performed very early in the initial evaluation of a child with intermittent XT, that being…
Measuring the magnitude of the deviation at both distance and near

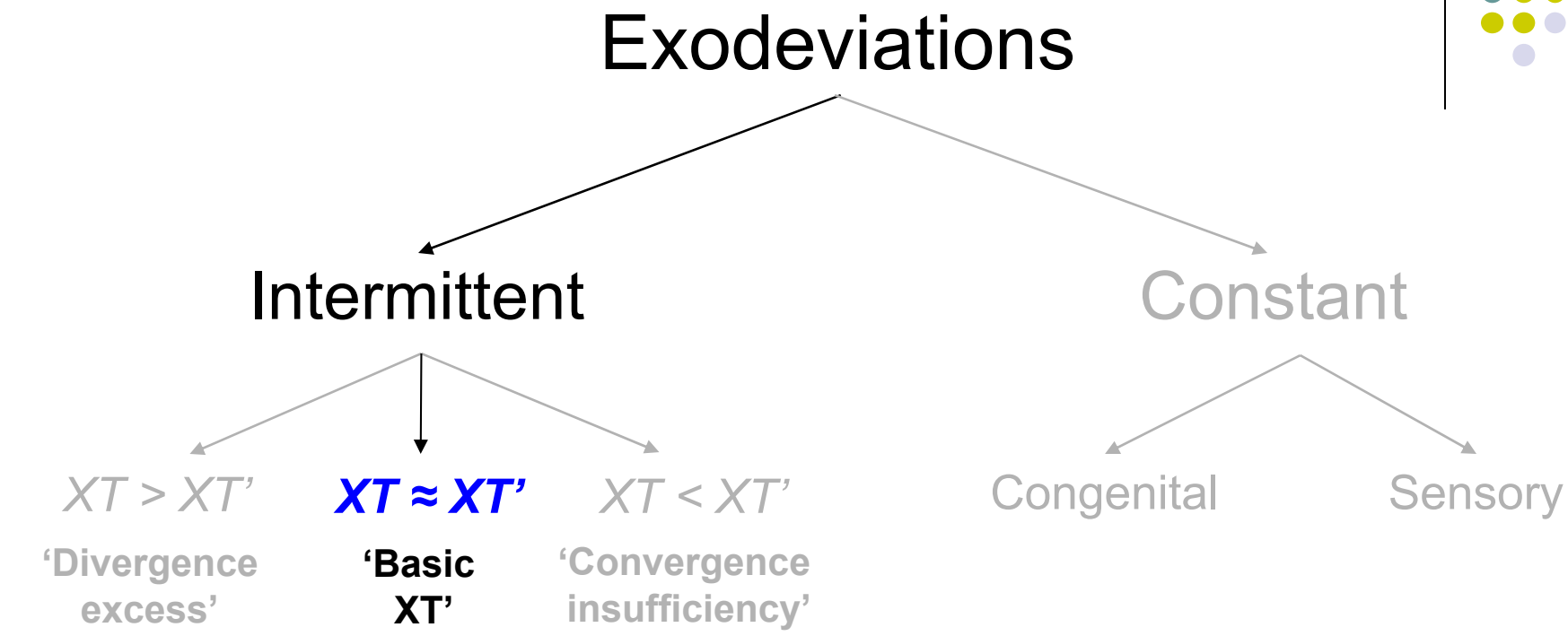
Comitant Exotropia



Comitant Exotropia

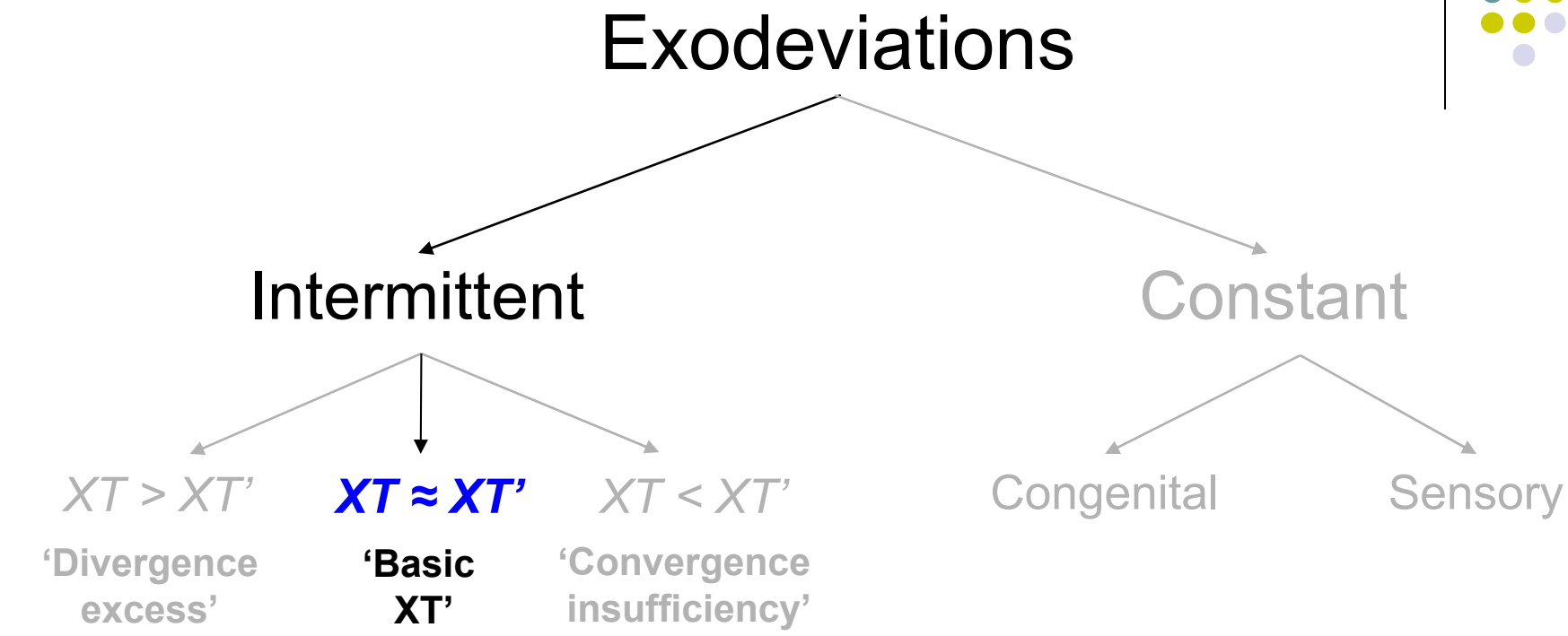


Comitant Exotropia



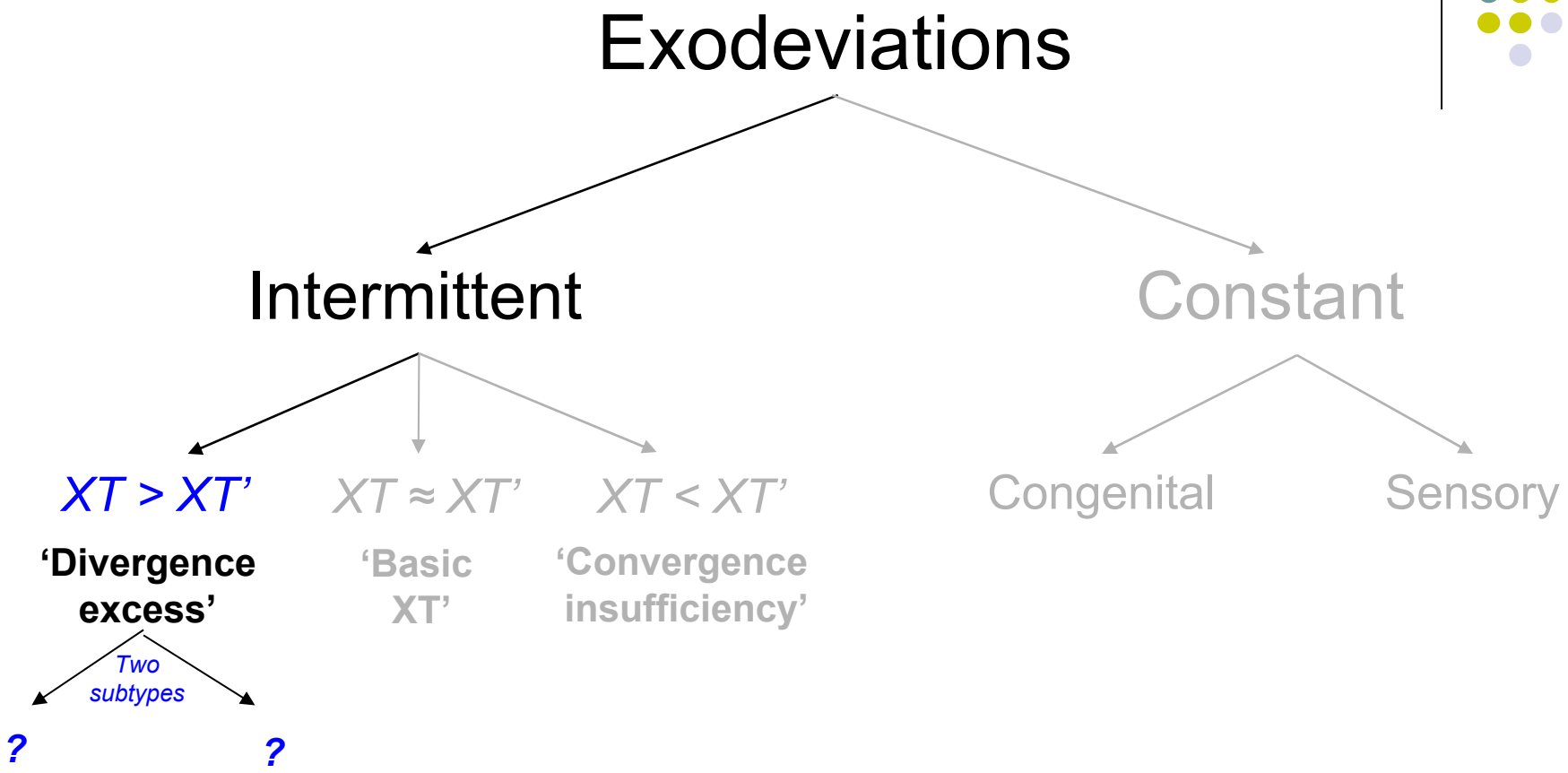
How close do the distance and near measurements have to be for an intermittent XT to qualify as 'basic'?

Comitant Exotropia



How close do the distance and near measurements have to be for an intermittent XT to qualify as 'basic'?
Less than 10Δ difference

Comitant Exotropia



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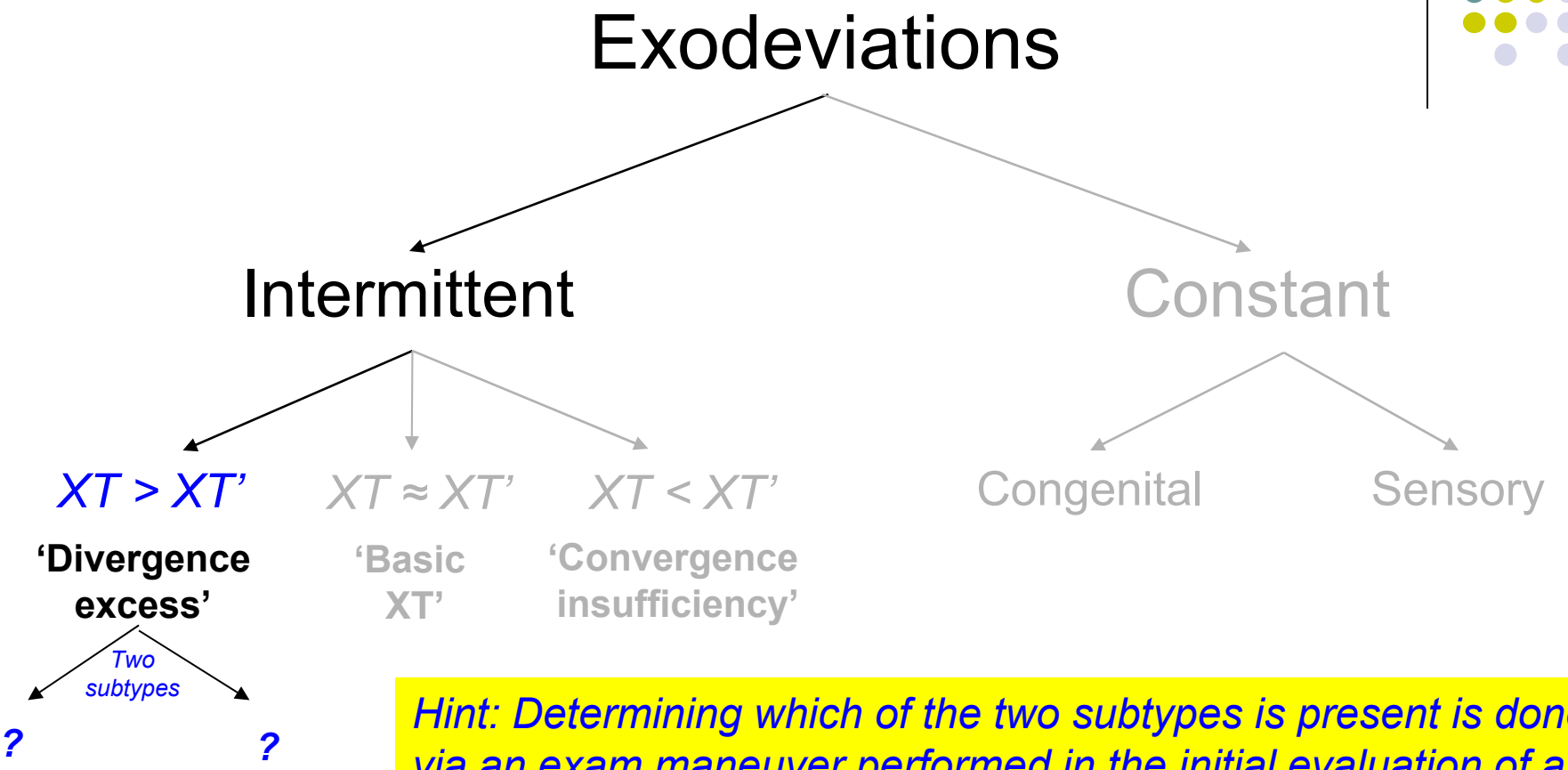
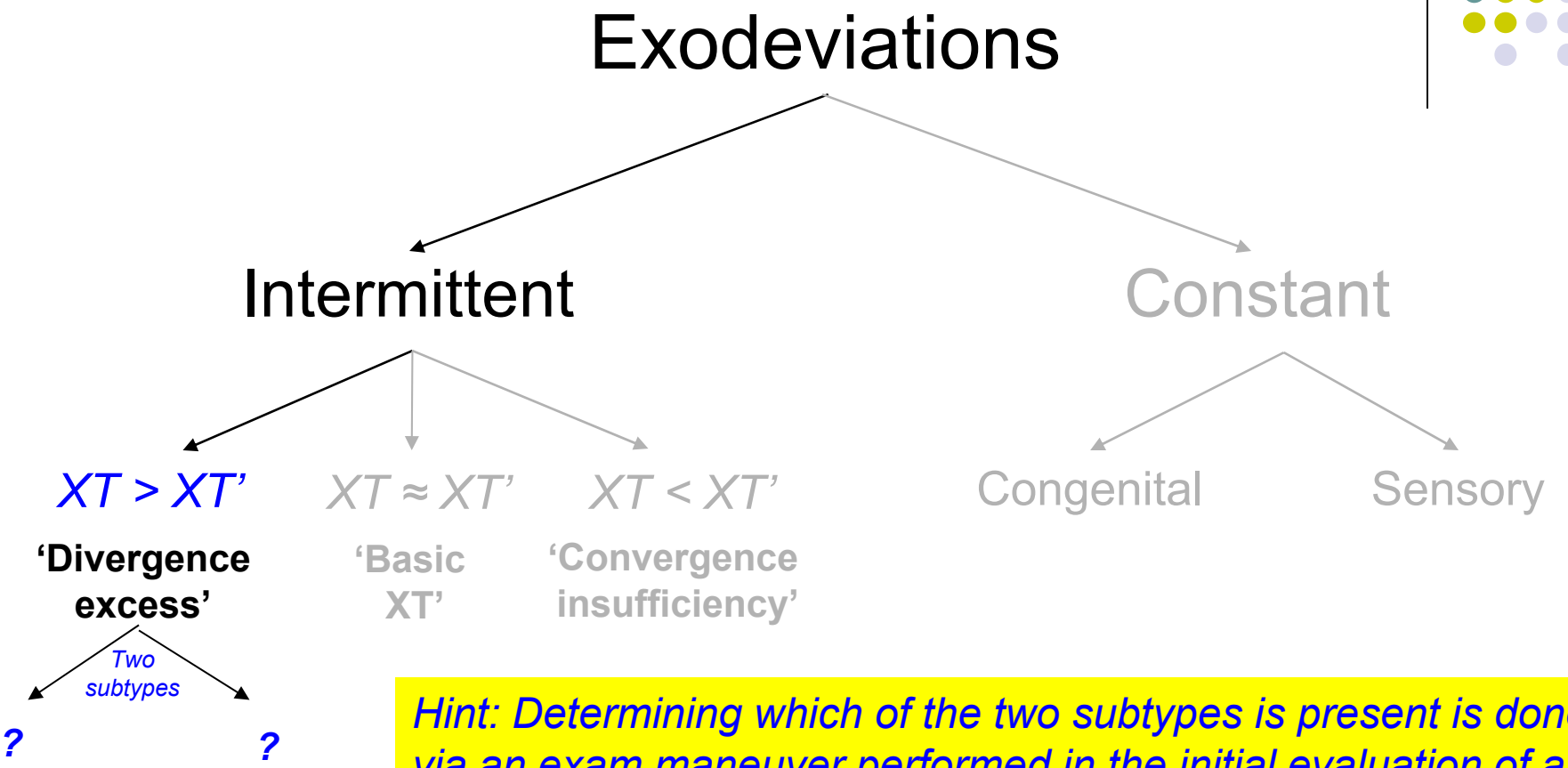


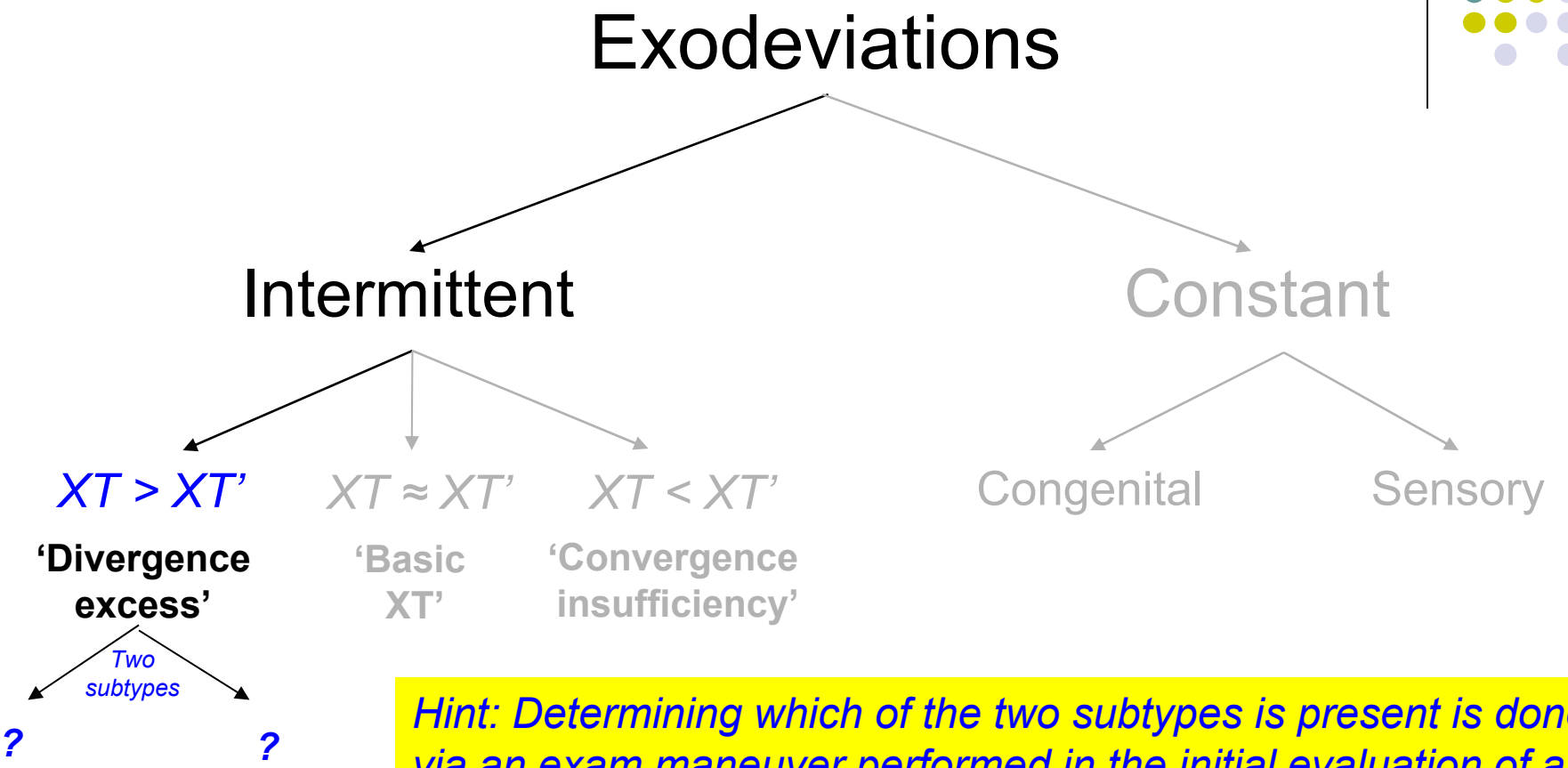
Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…

Comitant Exotropia



Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…
Re-measurement of the magnitude of the deviation at both distance and near after three words

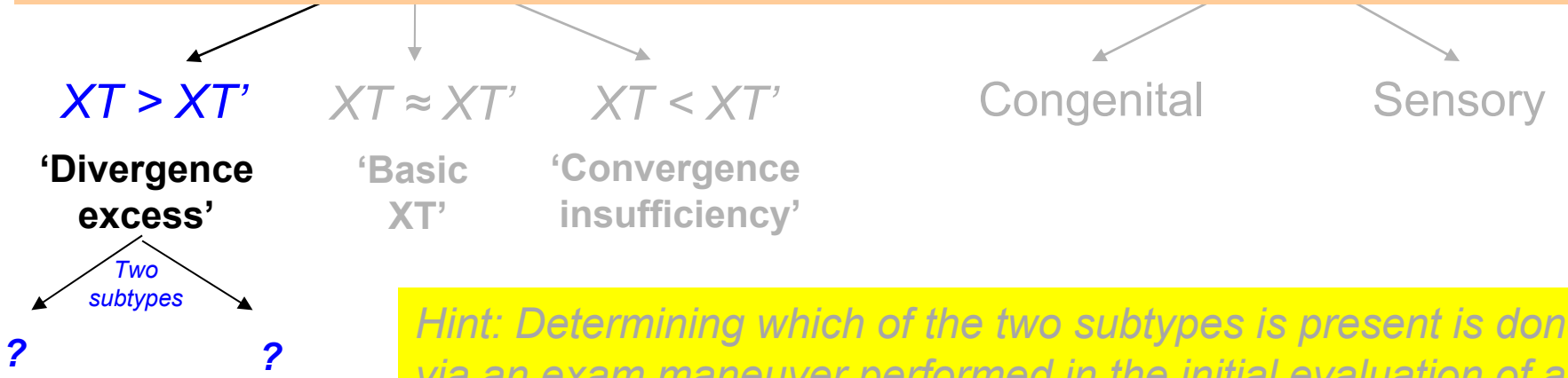
Comitant Exotropia



Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…
Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?



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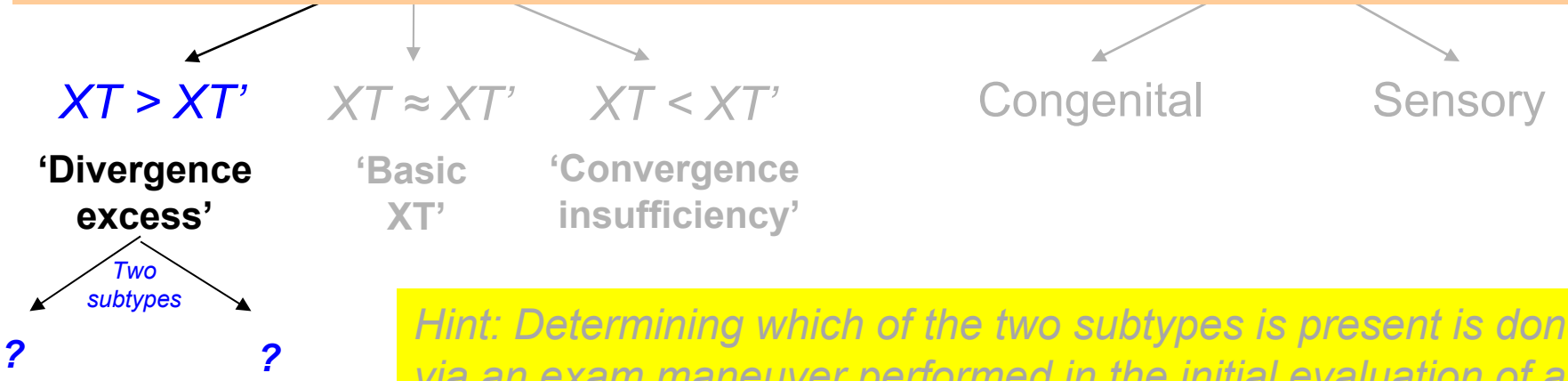
Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called [three words] is the cause of the distance vs near disparity in deviation size.



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Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
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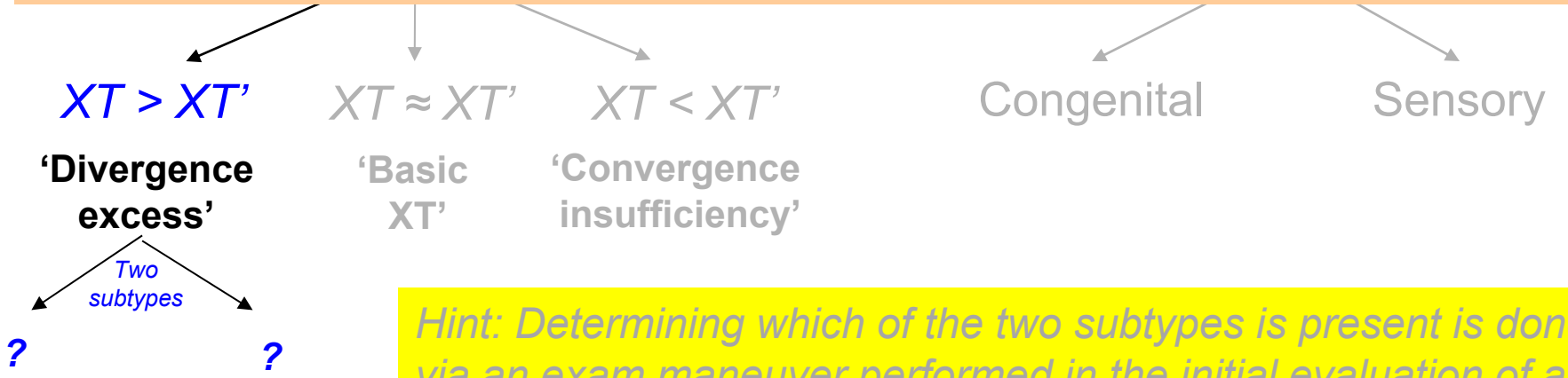

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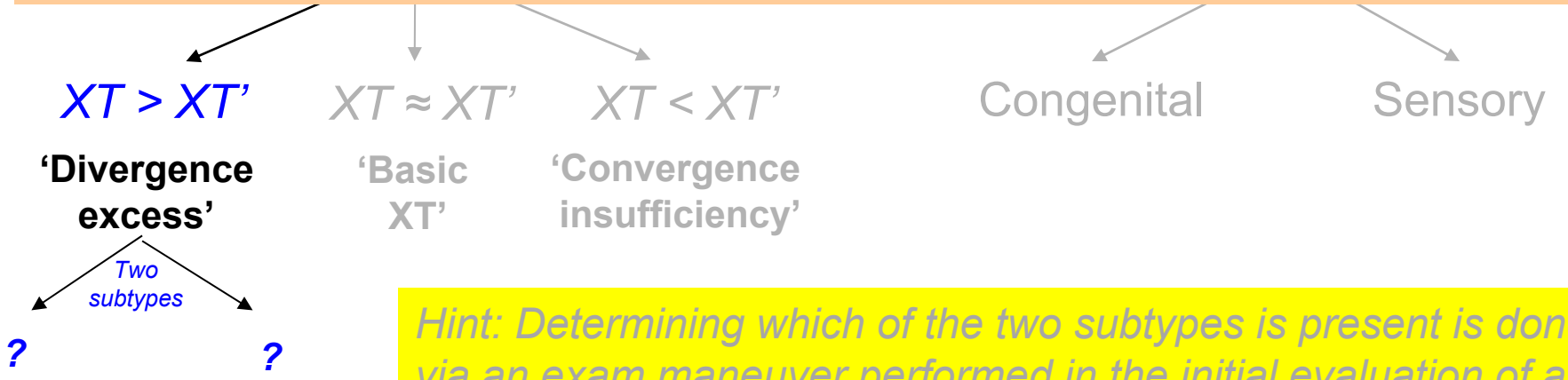
Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called **tenacious proximal fusion** (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a 'proximal fusion aftereffect'--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation. **Occluding one eye for an extended period allows TPF (if present) to dissipate.**



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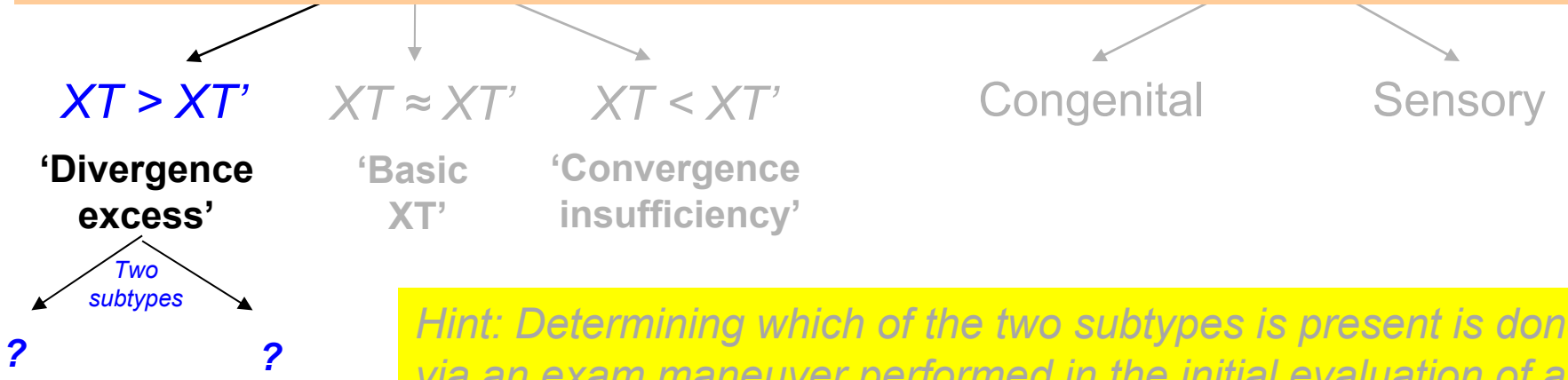
When we say monocular occlusion for "an extended period," how long are we talking about?



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Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

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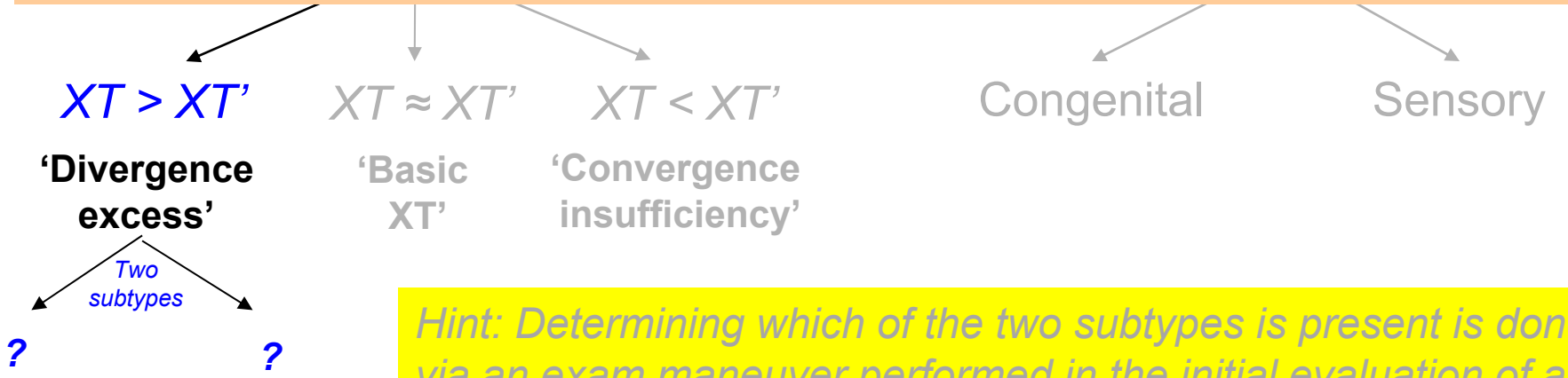
When we say monocular occlusion for "an extended period," how long are we talking about?
Back in the day, the child would be patched up to 24 hours; however, this was found to be unnecessarily long. Current practice is to patch the child for 30-60 minutes.



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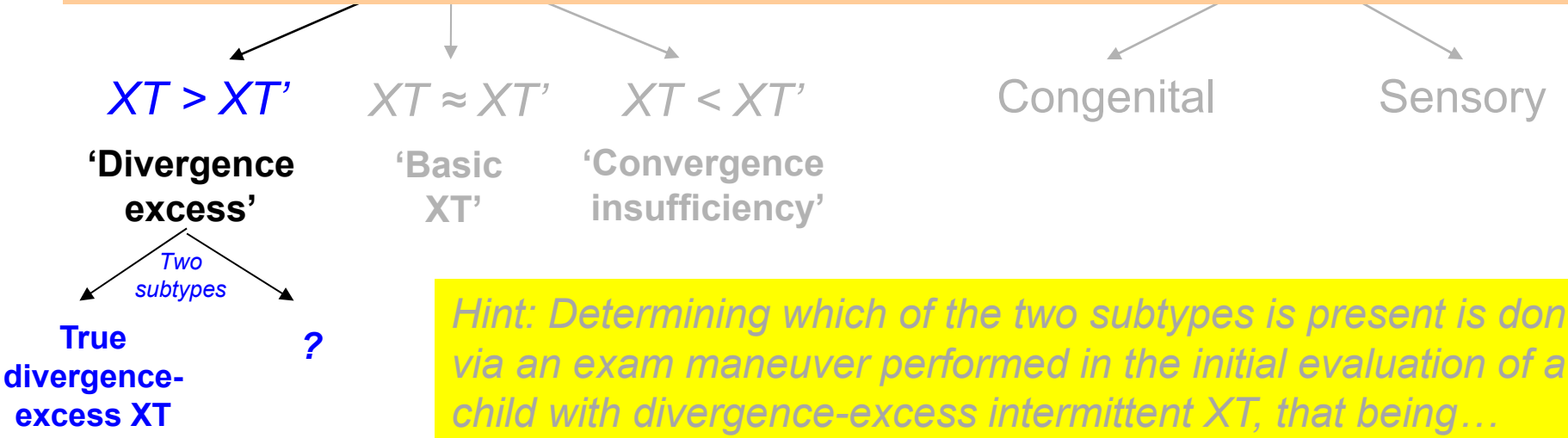
Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called **tenacious proximal fusion** (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a 'proximal fusion aftereffect'--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation.
Occluding one eye for an extended period allows TPF (if present) to dissipate.
Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT' difference is unchanged, the pt has a **true divergence-excess XT**.



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Occluding one eye for an extended period allows TPF (if present) to dissipate.
Upon re-measurement after prolonged monocular occlusion, if the magnitude of the XT>XT' difference is unchanged, the pt has a **true divergence-excess XT**.
But if the magnitude after occlusion is less than 10Δ, the pt has **pseudo-divergence-excess XT**.

XT > XT'
'Divergence excess'
Two subtypes
True divergence-excess XT
Pseudo-divergence-excess XT

XT ≈ XT'
'Basic XT'

XT < XT'
'Convergence insufficiency'

Congenital

Sensory

Hint: Determining which of the two subtypes is present is done via an exam maneuver performed in the initial evaluation of a child with divergence-excess intermittent XT, that being…
Re-measurement of the magnitude of the deviation at both distance and near after **prolonged monocular occlusion**

Comitant Exotropia

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True divergence-excess XT

Pseudo-divergence-excess XT

XT ≈ XT'

'Basic XT'

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Congenital

Sensory

Remember this?

How close do the distance and near measurements have to be for an intermittent XT to qualify as 'basic'?

Less than 10Δ difference

Comitant Exotropia

Why must the deviation be re-measured after prolonged monocular occlusion?
To determine whether a phenomenon called **tenacious proximal fusion** (TPF) is the cause of the distance vs near disparity in deviation size. TPF represents a 'proximal fusion aftereffect'--a tendency for the fusional convergence induced by near vision to persist. Because of TPF, attempts to break fusion-mediated convergence with an alternate-cover test may be unsuccessful, and initial measurements will produce the incorrect impression that the near deviation is significantly less than the distance deviation.
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XT > XT' — **'Divergence excess'** — *Two subtypes* — True divergence-excess XT; **Pseudo-divergence-excess XT**

XT ≈ XT' — **'Basic XT'**

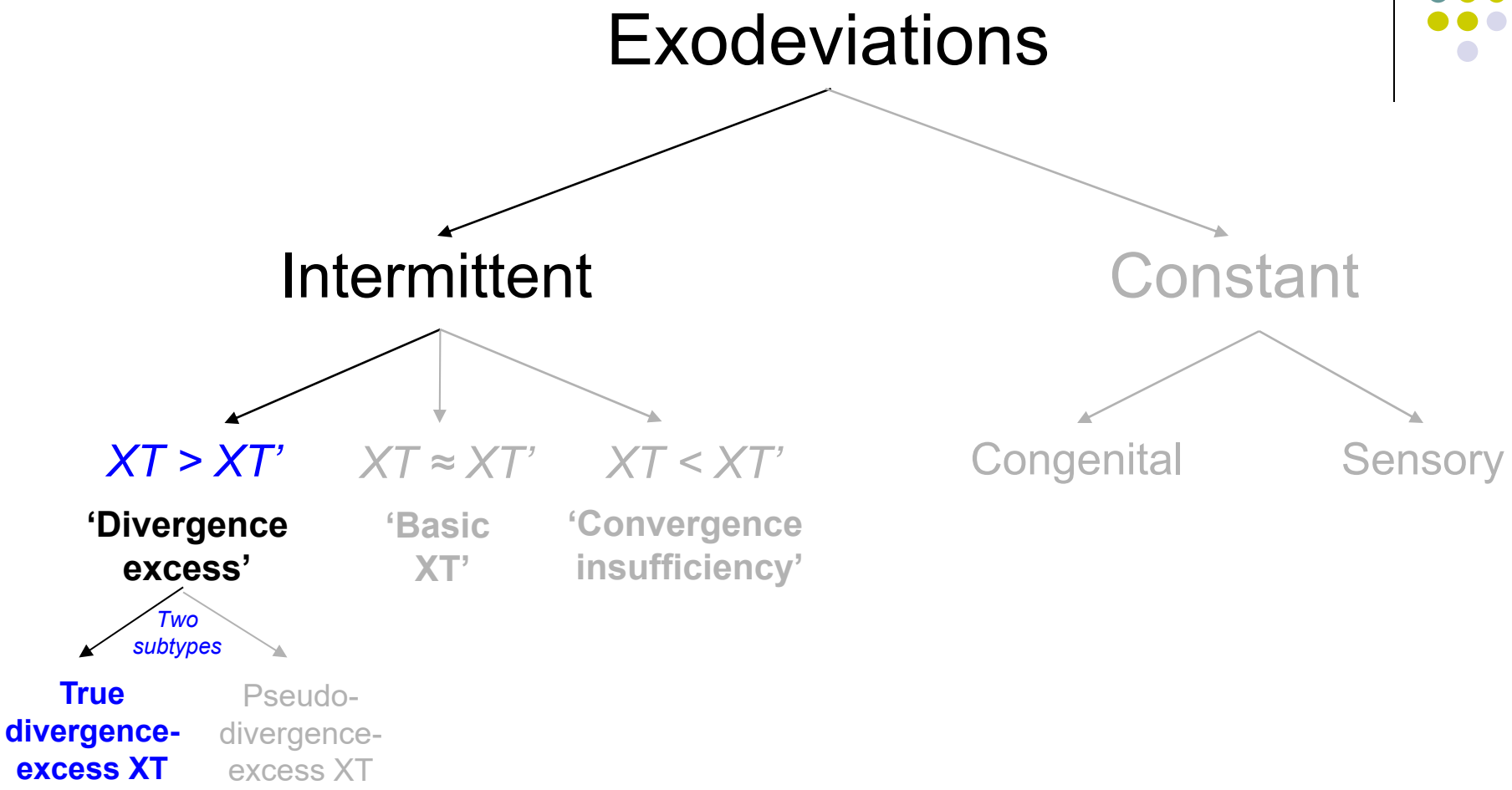
XT < XT' — Congenital — Sensory

Remember this?

So in essence, Pseudo-divergence-excess XT is like Basic XT, but with tenacious proximal fusion leading to the false impression of a significant near-vs-distance difference in deviation size

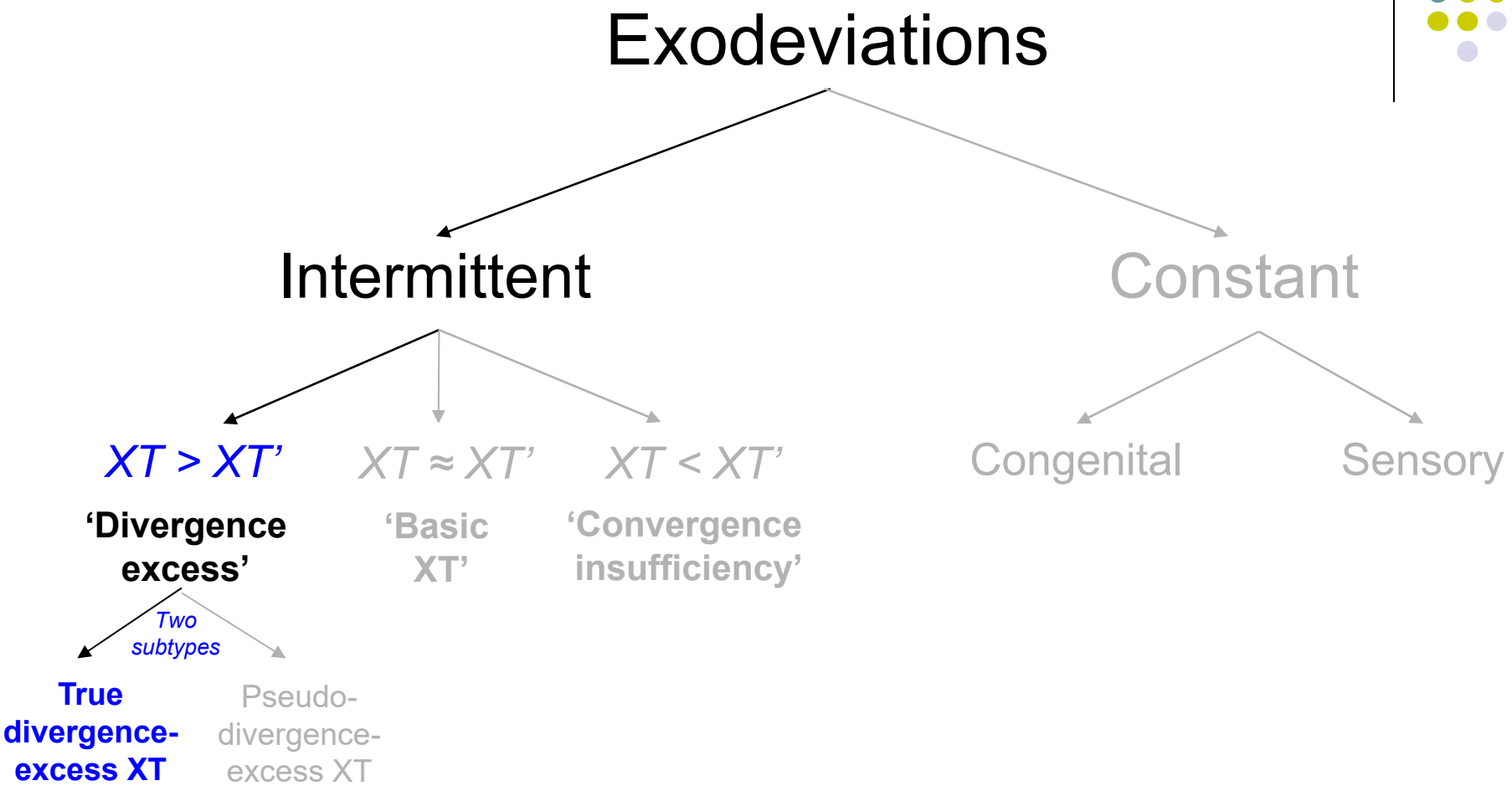
How close do the distance and near measurements have to be for an intermittent XT to qualify as 'basic'?
Less than 10Δ difference

Comitant Exotropia



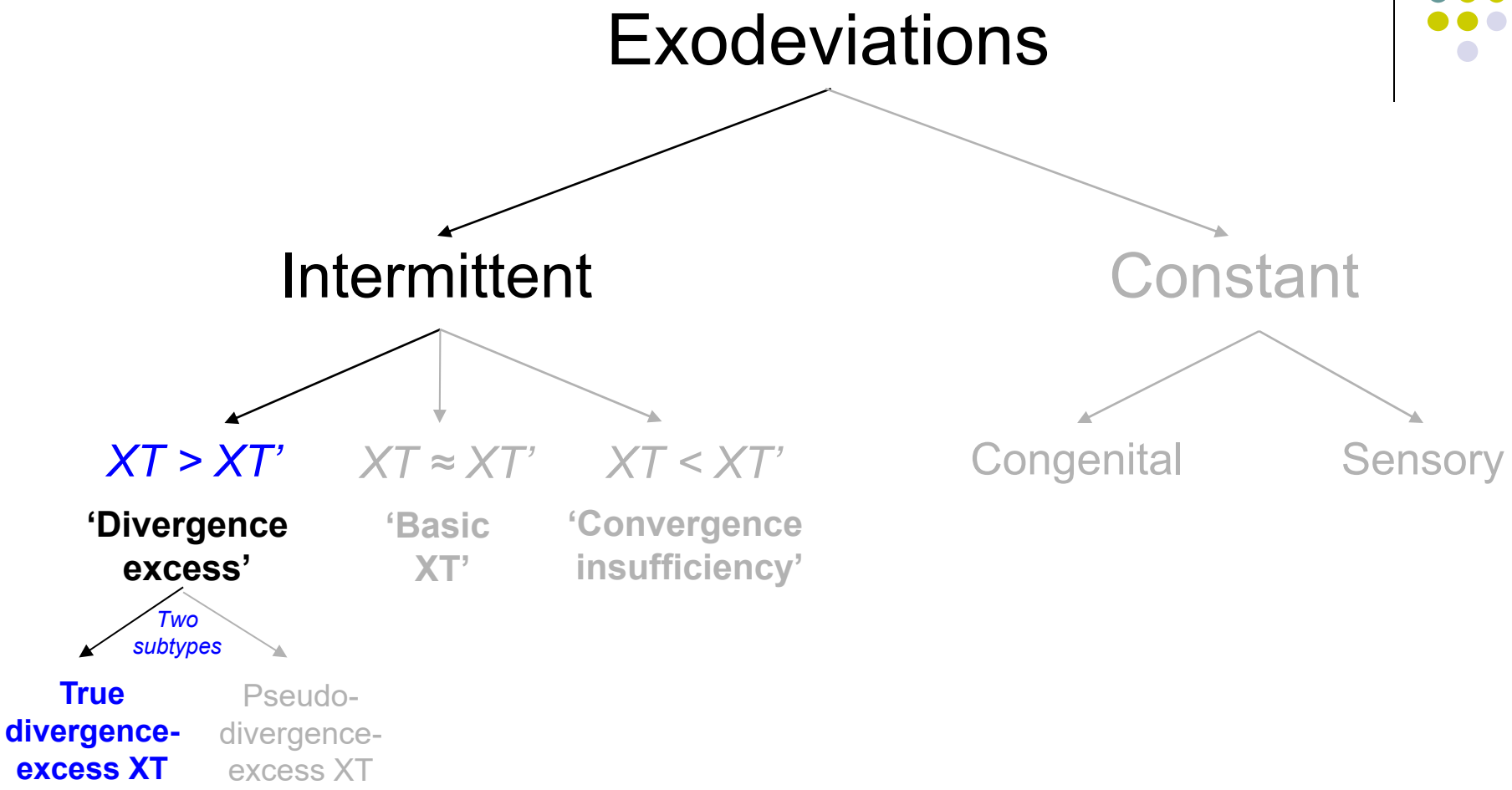
In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

Comitant Exotropia



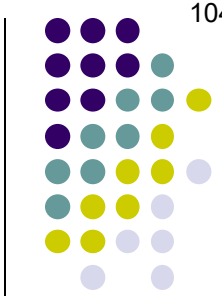
In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?
This has not been completely elucidated, but in at least half of cases the cause seems to be three words

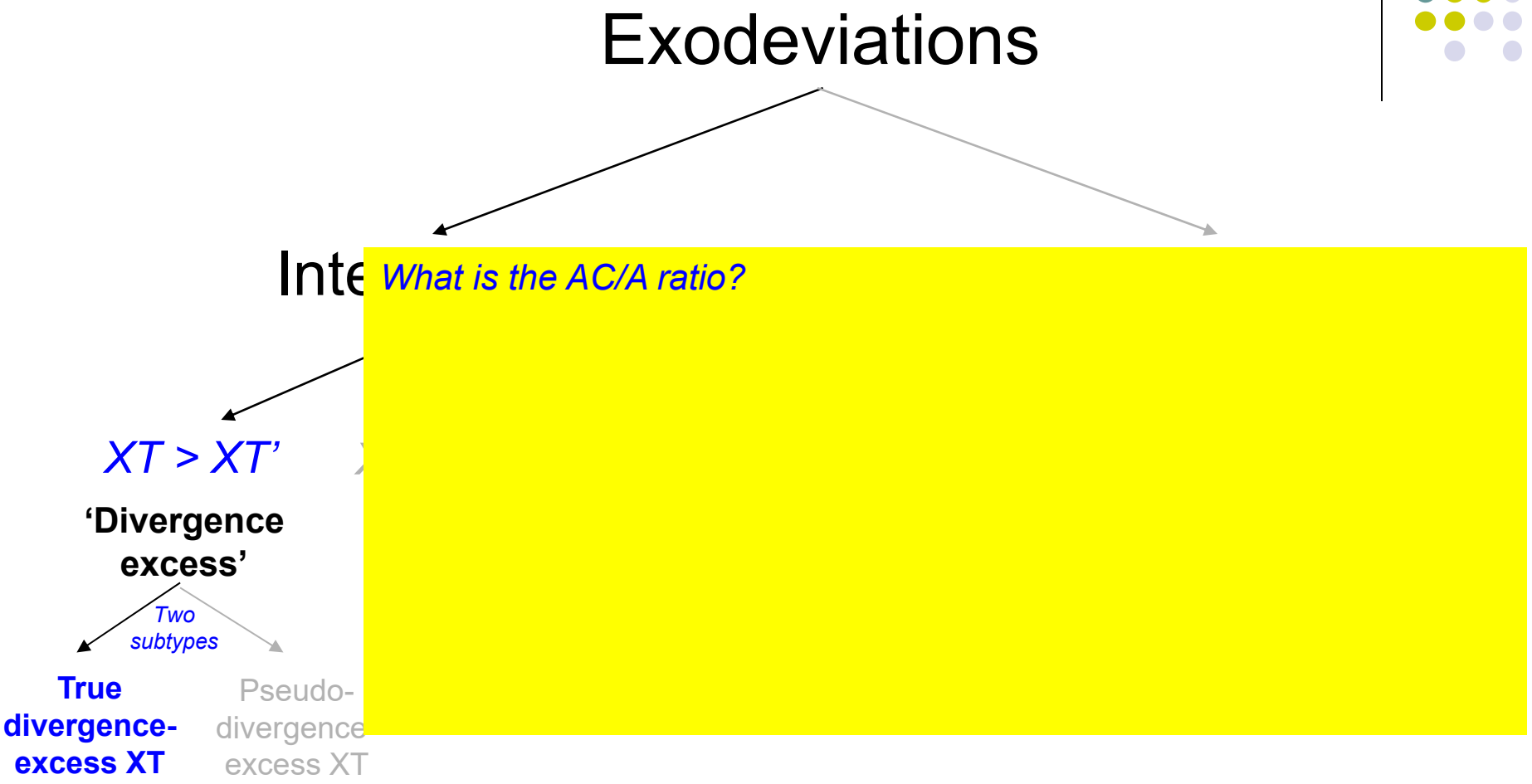
Comitant Exotropia



In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?
This has not been completely elucidated, but in at least half of cases the cause seems to be **high AC/A ratio**

Comitant Exotropia





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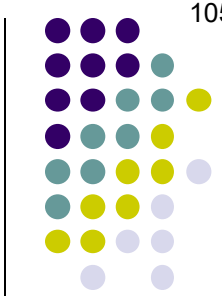
Comitant Exotropia



Exodeviations

Inte

What is the AC/A ratio?

The [two words] consists of convergence, accommodation and miosis.

XT > XT'

'Divergence excess'

Two subtypes

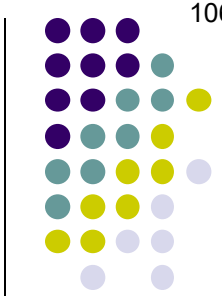
True divergence-excess XT

Pseudo-divergence excess XT

In true divergence-excess XT, what is the underlying mechanism of the XT vs XT' disparity?

This has not been completely elucidated, but in at least half of cases the cause seems to be **high AC/A ratio**

Comitant Exotropia



Exodeviations

Inte

What is the AC/A ratio?

The *near triad* consists of convergence, accommodation and miosis.

XT > XT'

'Divergence excess'

Two subtypes

True divergence-excess XT

Pseudo-divergence excess XT

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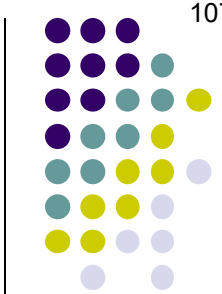
Comitant Exotropia



Exodeviations

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What is the AC/A ratio?

The *near triad* consists of convergence, accommodation and miosis. The act of convergence induces a certain amount of accommodation (this is why your vision gets blurry when you intentionally cross your eyes). Likewise, the act of accommodation induces a certain degree of convergence. The quantitative relationship between the amplitude of convergence (AC) and the amount of accommodation (A) is represented by the AC/A ratio.

XT > XT'

'Divergence excess'

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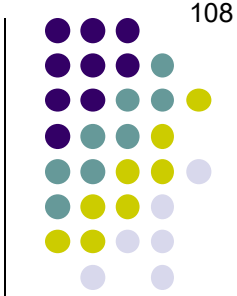

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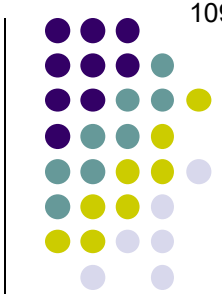

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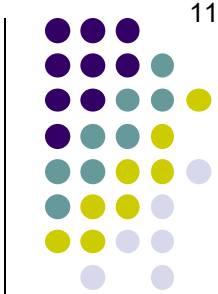

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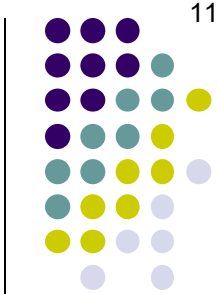

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AC/A ratio = (XT' with add - XT' without add)/3

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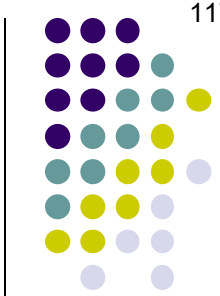

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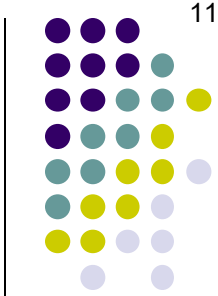

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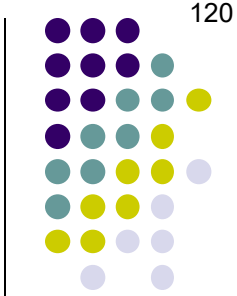

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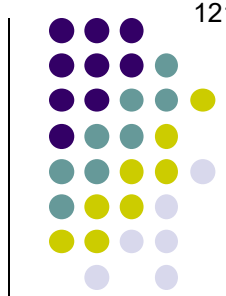

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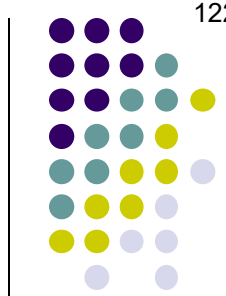

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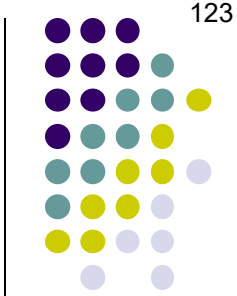

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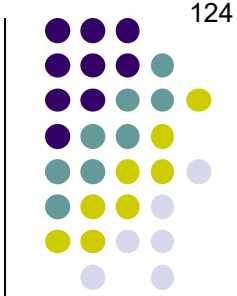

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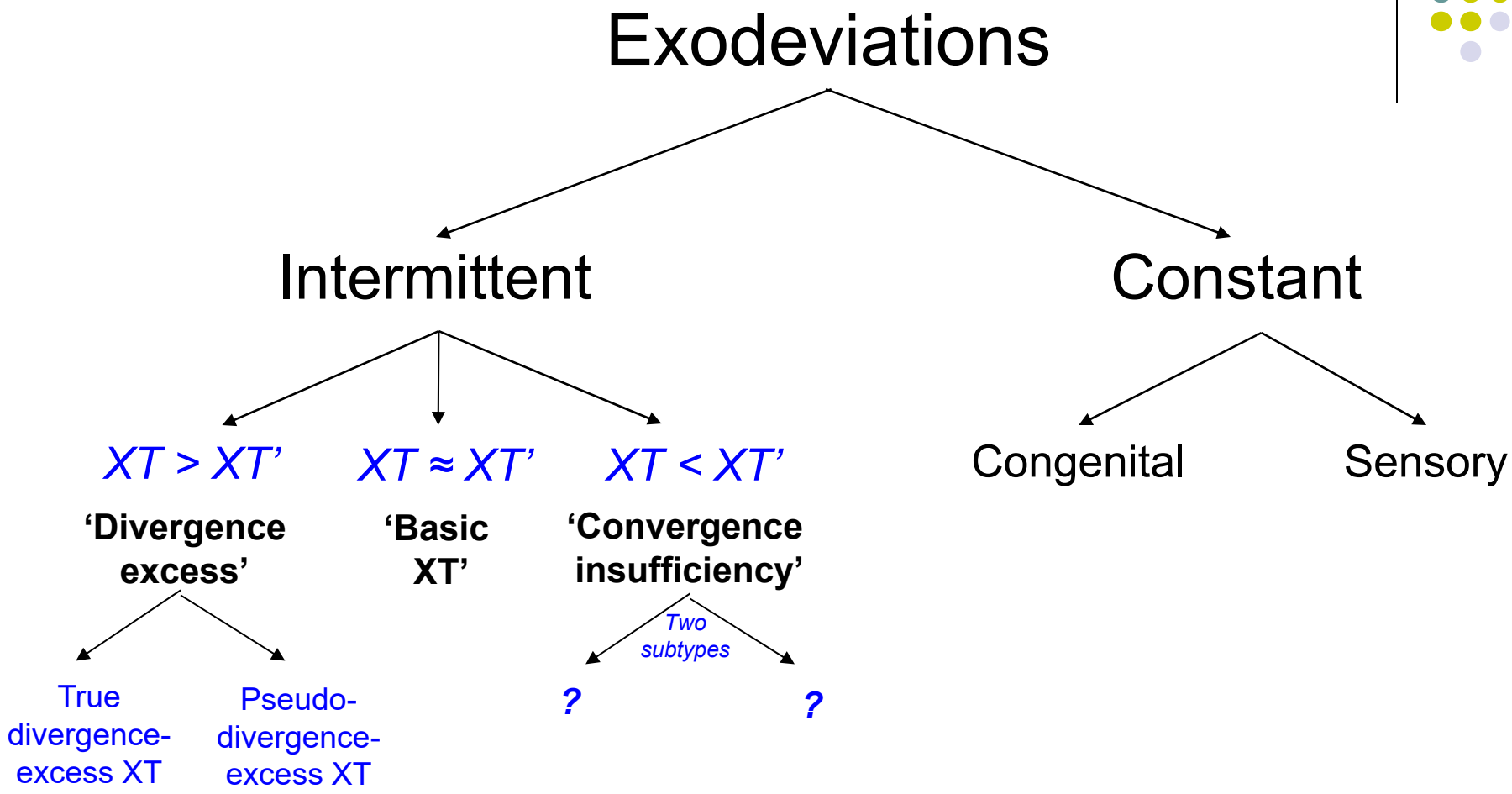

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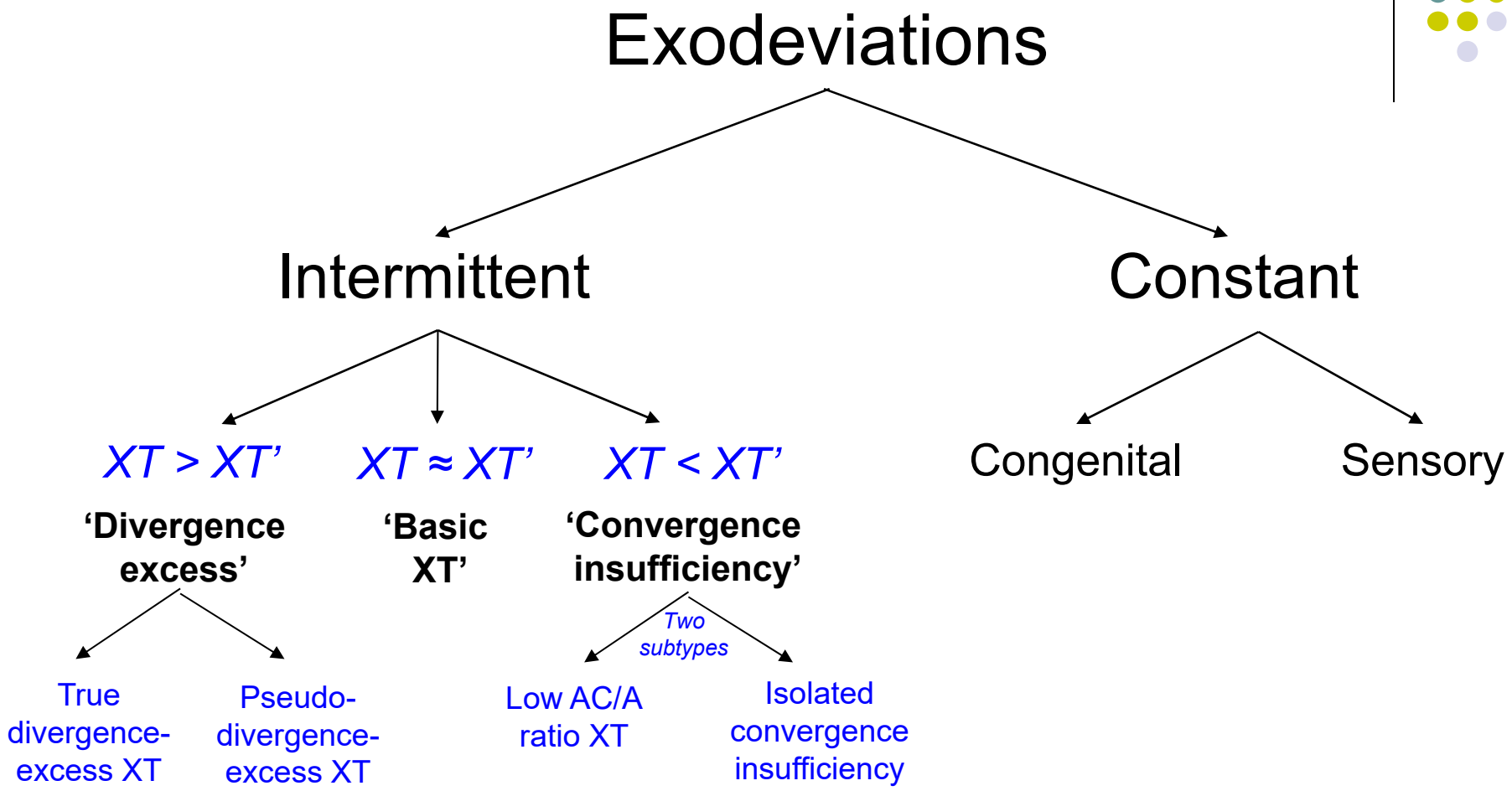

Compared to pts with other forms of intermittent XT:

--Are isolated CI pts more likely or less likely to be older at presentation?

XT > XT' | *XT ≈ XT'* | *XT < XT'* | Congenital | Sensory

'Divergence excess' | **'Basic XT'** | **'Convergence insufficiency'**

Two subtypes

True divergence-excess XT

Pseudo-divergence-excess XT

Low AC/A ratio XT

Isolated convergence insufficiency

Compared to pts with other forms of intermittent XT:

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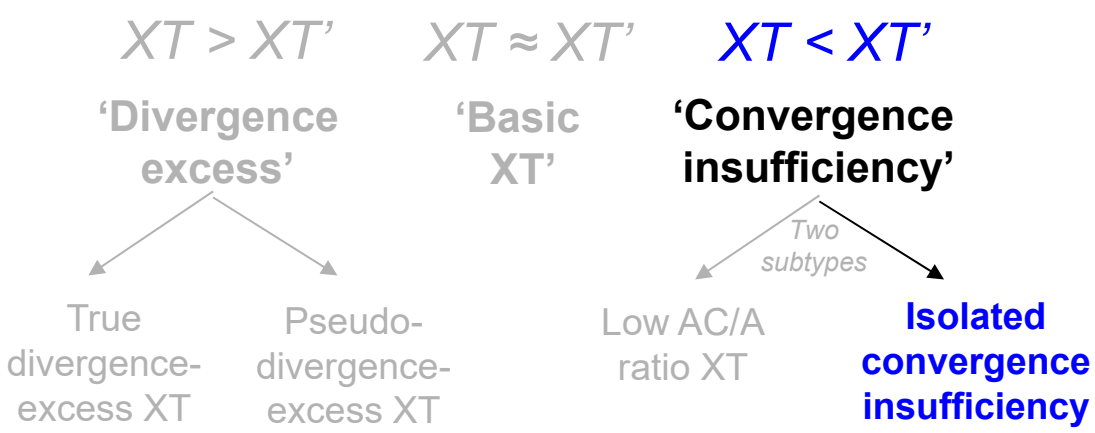
More likely. They usually present as teens or adults.



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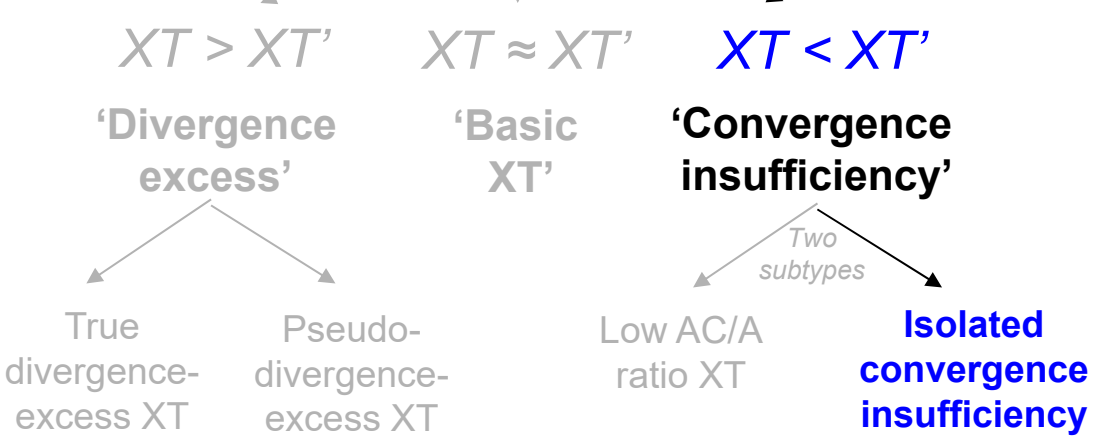

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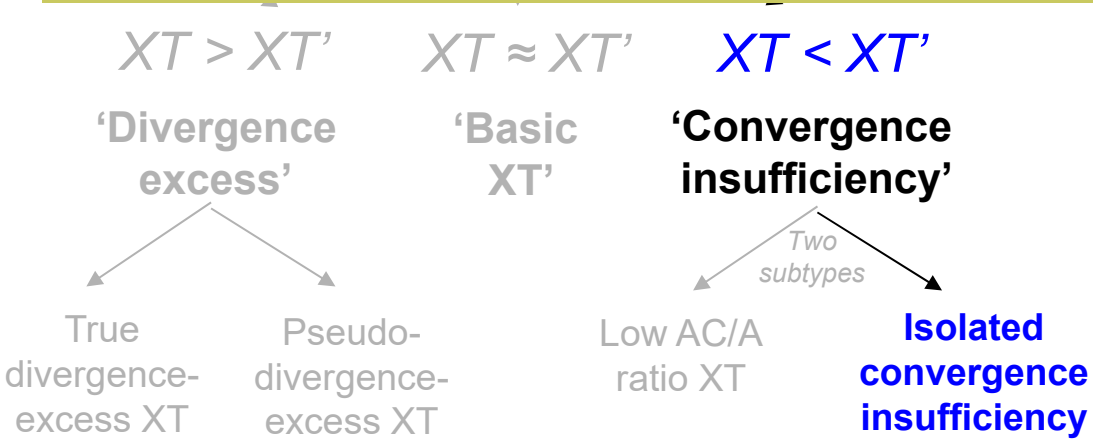
Smaller; the typical pt will be ortho at distance



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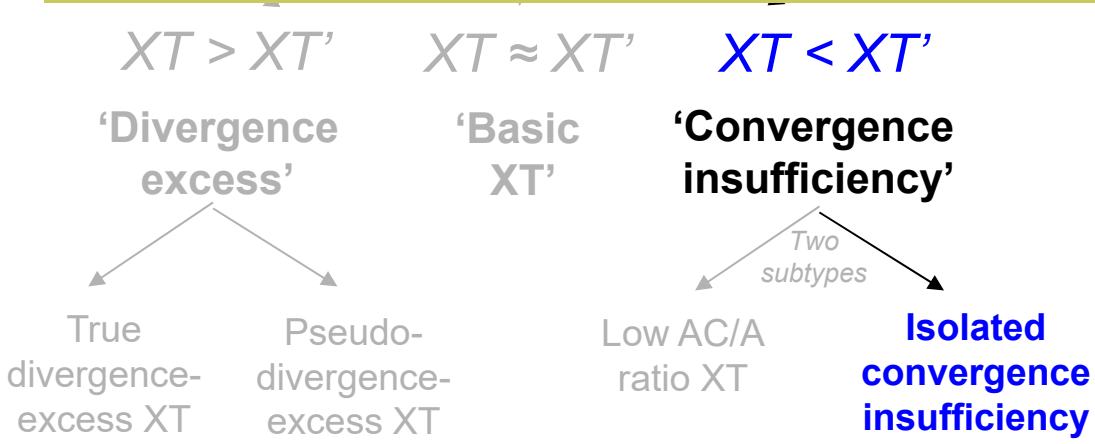

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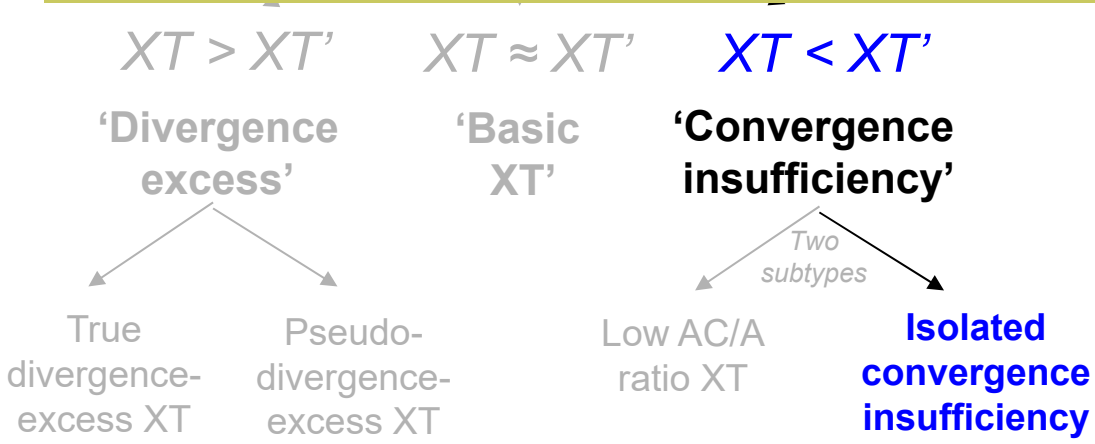
Smaller; the typical pt will be ortho at distance

--Is the XT' in isolated CI typically larger, or smaller?

Smaller; frequently, they will have an X'



Compared to pts with other forms of intermittent XT:
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More likely. They usually present as teens or adults.

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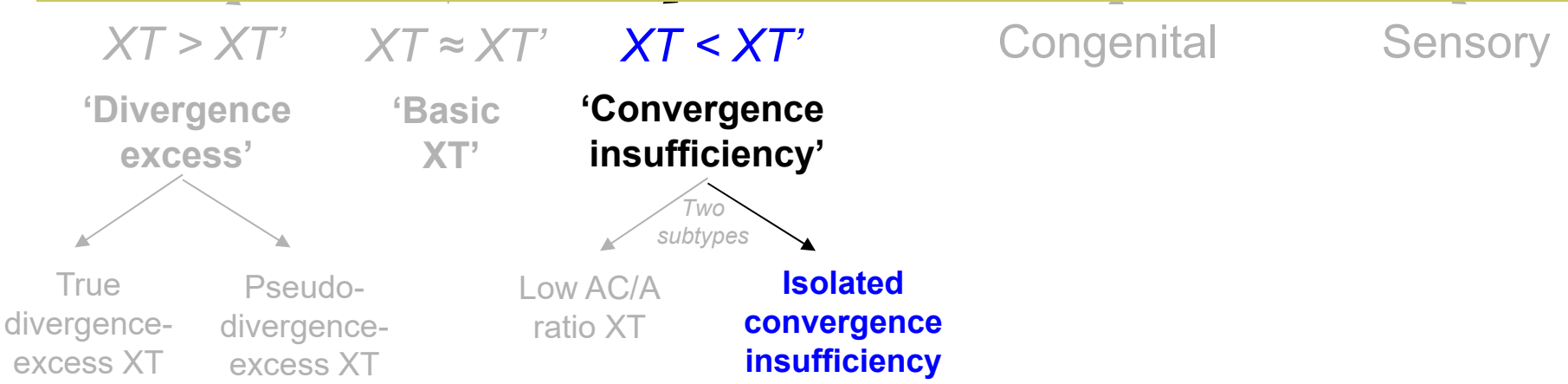

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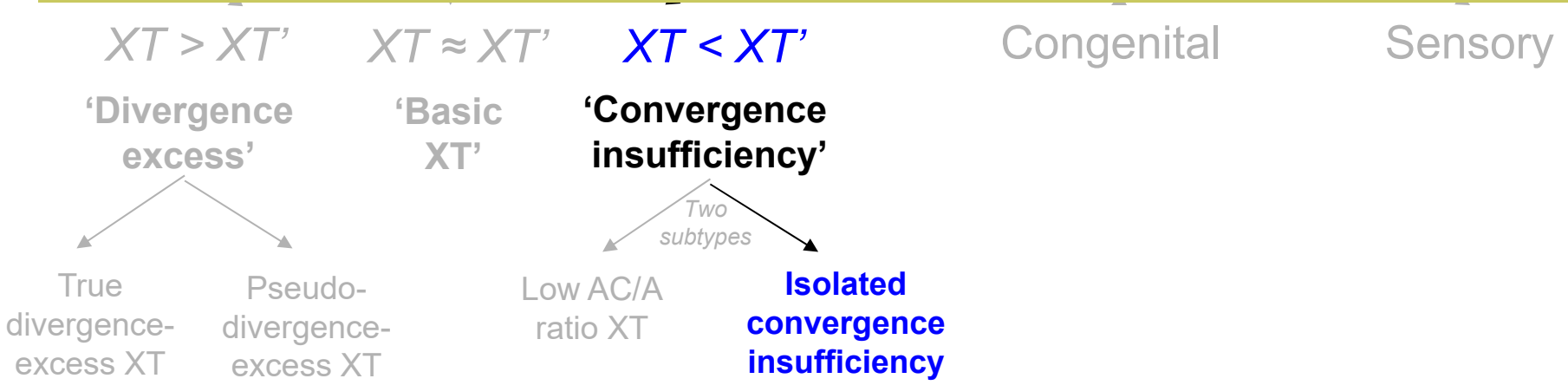
That's a good question! With their larger XT', you might expect a pt with one of the other intermittent XT conditions to report diplopia; however, they usually enjoy the benefit of a diplopia-blocking suppression scotoma, while CI pts do not. Thus, the CI pt is probably **more** likely to experience diplopia.



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How do isolated CI pts present?

XT > XT' | *XT ≈ XT'* | *XT < XT'* | Congenital | Sensory

'Divergence excess' | **'Basic XT'** | **'Convergence insufficiency'**

Two subtypes

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Pseudo-divergence-excess XT

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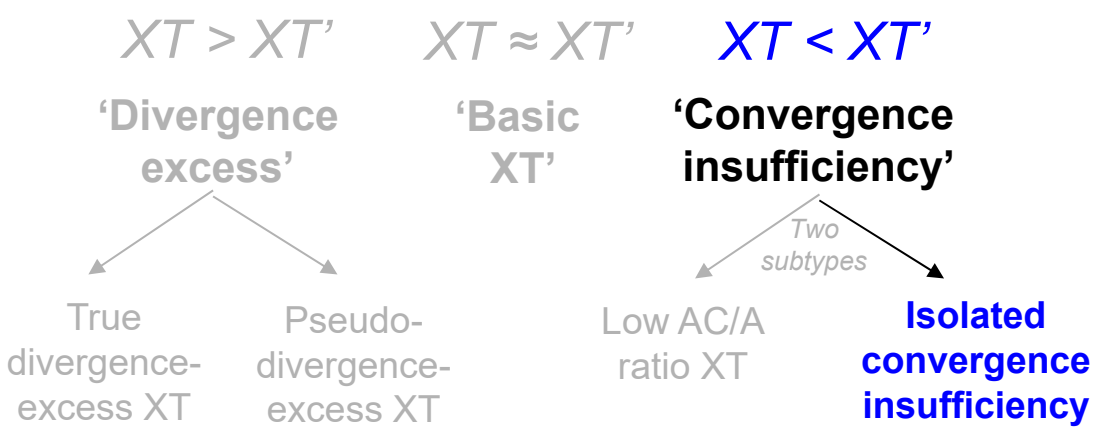

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How is isolated CI managed?

Orthoptic exercises (ie, 'pencil pushups') are first-line treatment. Some pts may require base-out prisms. Rarely, bilateral medial-rectus resections are indicated.

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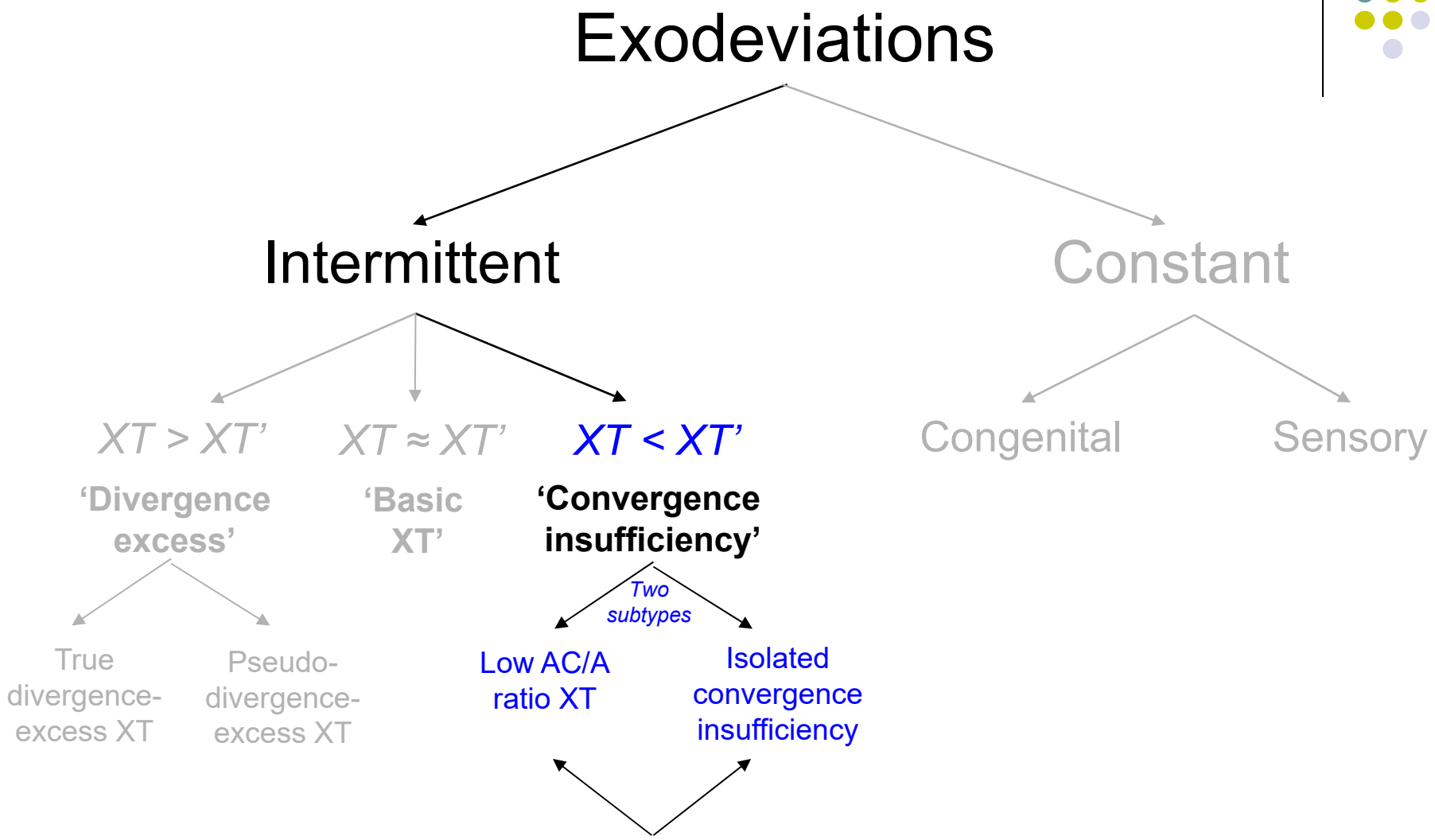
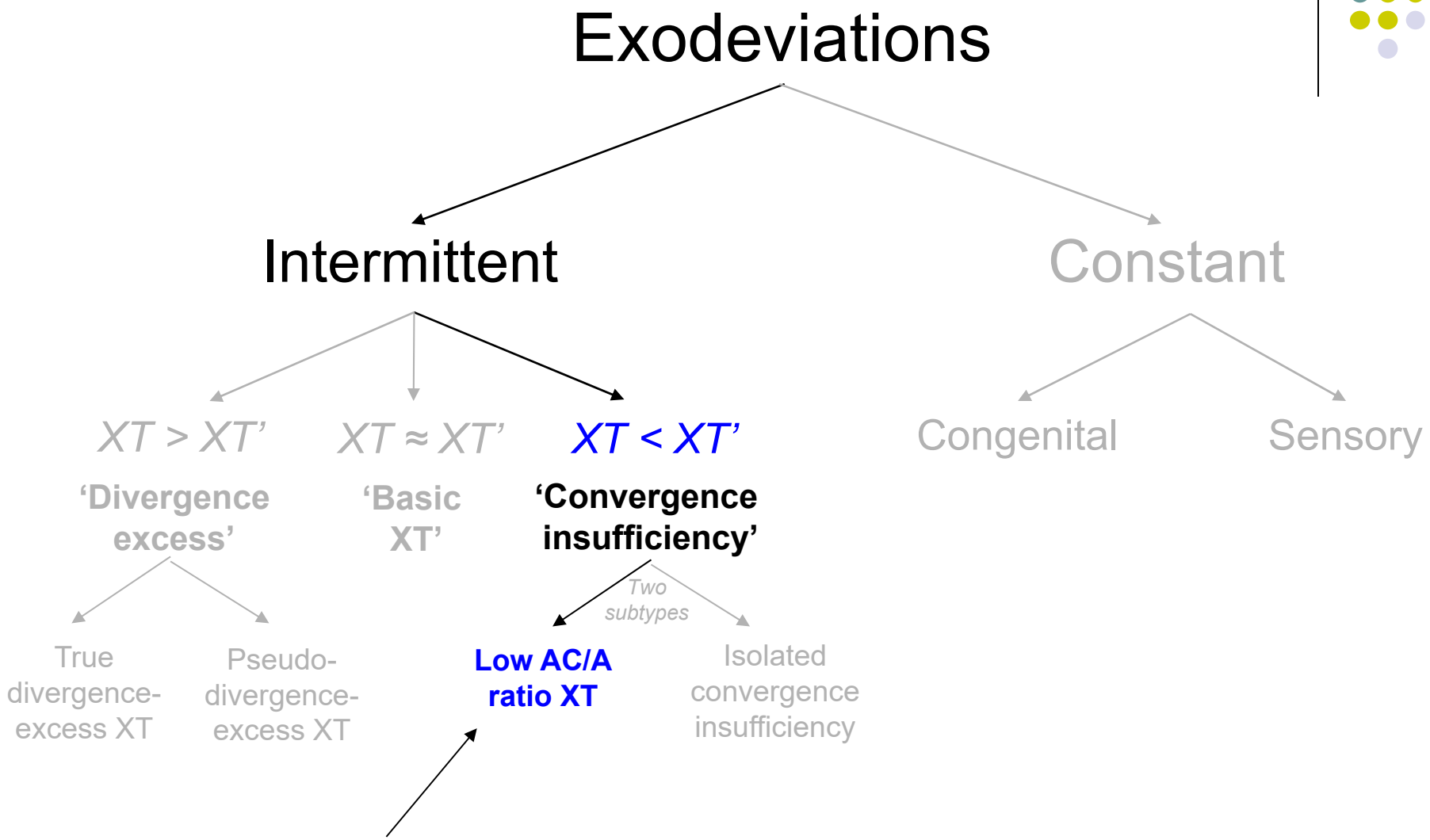
Comitant Exotropia



Note that the BCSC *Peds* book (in my possession) refers to these as *Convergence Weakness Exotropia*.

Comitant Exotropia



Speaking of the BCSC *Peds* book--it does not delve into the *Low AC/A ratio* subtype, so neither will we here.