



#### But some people can't

#### Prosopagnosia

H. Cygan, H. Okuniewska, et al. (2018). Face processing in a case of high functioning autism with developmental prosopagnosia. Acta Neurobiologiae Experimentalis
 Journal. 78: 114–131; Barton, J., et al. (2004) Are patients with social developmental disorders prosopagnosic? Perceptual heterogeneity in the Asperger and socio-emotional processing disorders. Brain. 127: 1706-1716

- can't read the face of others
  - may focus only on individual components of the face
  - may not realize one expression has multiple meanings

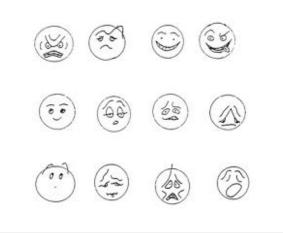
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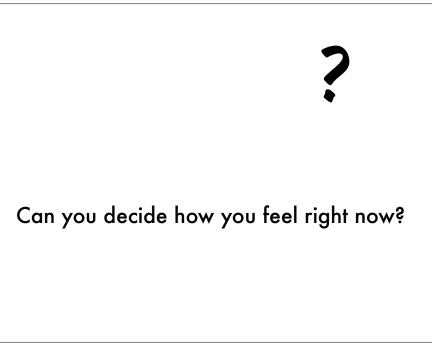
## Yale Eye-Gaze Study

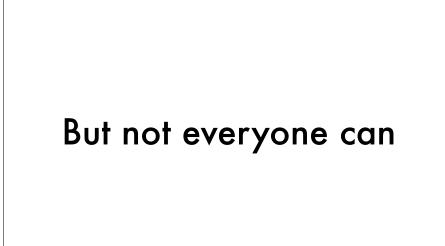


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# Feelings







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E. Kinnaird, C. Stewart and K. Tchanturia (2019) Investigating alexithymia in autism: A systematic review and meta-analysis. *European Psychiatry*. 55: 80-89; C. Mul, S. Stagg, et al. (2018). The feeling of me feeling for You: Interoception, alexithymia and empathy in autism. *Journal of Autism and Developmental Disorders*. 48: 2953-2967.

- the inability to identify and describe feeling states
  - can't read emotions in others
  - limited vocabulary to describe these states

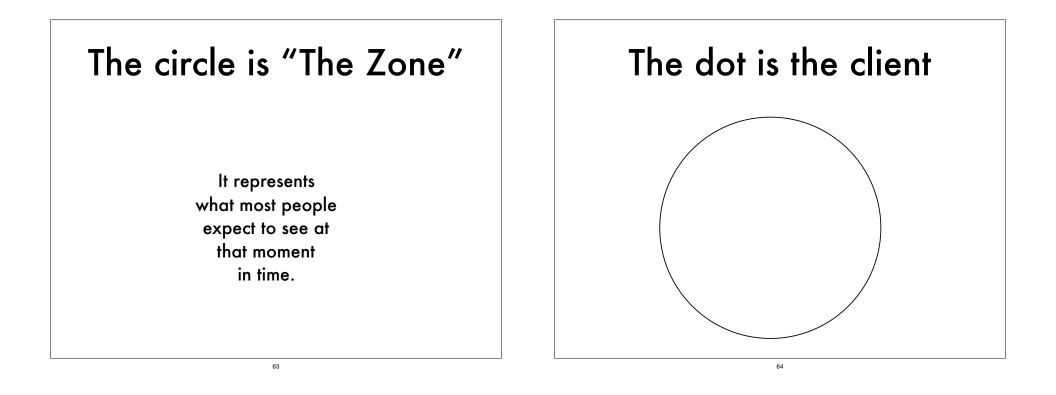
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• especially with subtle states

How can we help these individuals develop this skill that the rest of us simply take for granted?

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That's where "The Zone" can help



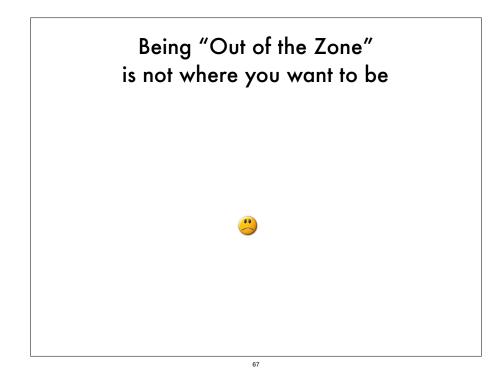
#### Ever overdress for a party?



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## Embarrassing, right?





# Appropriate social skills require one to:

- realize a message comes in many forms
- identify when a message is being sent
- successfully decode the message
- produce an "action plan"
- implement the plan
- look for feedback to assess it's "correctness"
- revise as necessary

#### Does this guy use these skills?



#### But I don't care!

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#### Why is it important to care?

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Individuals who recognized the need for improved social thinking had higher salaries than those who didn't recognize the need.

> P. Howlin, J. Alcock, C. Burkin, (2005). An 8 year follow-up of a specialist supported employment service for high-ability adults with autism or Asperger syndrome. *Autism* 9: 533-549.

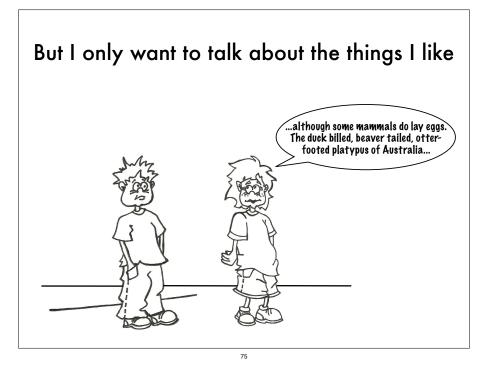
Those lacking social cognition had less positive employment experiences and showed more preference for solitary activities.

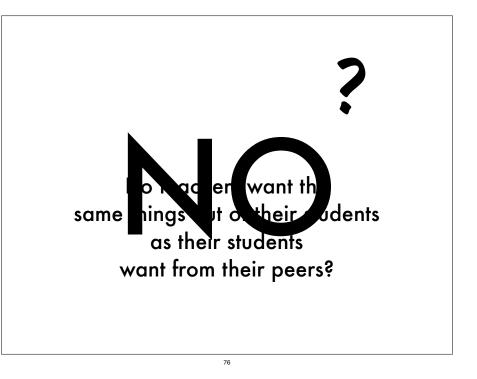
> M. Jennes-Coussens, J. Magill-Evans, C. Koning (2006). The quality of life of young men with Asperger syndrome: a brief report. *Autism.* 10: 403-414.

Outcome in AS was good in 27% of cases. However, 26% had a very restricted life, with no occupation or activity and no friends. Why? Poor awareness of social thinking.

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Cederlund, M., Hagberg, B., Billstedt, E., Gillberg, I. C., and Gillberg, C. (2007). Asperger Syndrome and Autism: A Comparative Longitudinal Follow-Up Study More than 5 Years after Original Diagnosis. Journal of Autism and Developmental Disorders.32: 7245.





#### What's important?

| Adolescent Viewpoint      | Teacher Viewpoint     |
|---------------------------|-----------------------|
| nonverbal comprehension   | turn taking           |
| perspective taking        | perspective taking    |
| vocal tone interpretation | logical communication |
|                           | clarification         |
|                           |                       |

#### What's unimportant?

Adolescent Viewpoint

eye contact

narrative

humor comprehension

topic maintenance

slang usage

Teacher Viewpoint

humor comprehension

slang usage

nonverbal comprehension

topic maintenance

| How often do we communicate?<br>Yorkston, K., Eadie, T., Baylor, C., Deitz, J., Dudgeon, B., Miller, R., Amtmann, D. (2006)<br>Developing a Scale of Communicative Participation. ASHA 2006 Annual Convention. Miami Beach. |      |  |
|---|------|--|
| <ul> <li>80% of waking hours are spent<br/>communicating</li> </ul>   |      |  |
| Listening   | High |  |
| Speaking  |      |  |
| Reading   |      |  |
| Writing   | Low  |  |
|   |      |  |
|   | 79   |  |

#### Neuroscience discovered...

- our brain's design makes it *sociable*
- it is drawn into a brain-to-brain linkup whenever we engage with another person

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 this linkage allows me to affect you and you to affect me

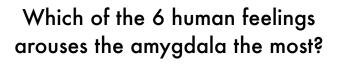


## How can that be?

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#### Thank the amygdala





- Happiness
- Surprise
- Fear
- Anger
- Sadness
- Disgust



# What's with the amygdala?

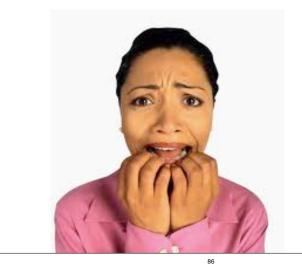
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#### The amygdala reads emotions

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- elation in the tone of someone's voice
- hint of anger around the eyes
- posture reflecting defeat

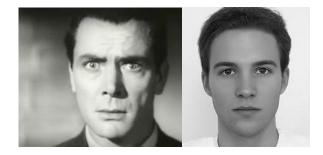
It then processes this information subliminally, beyond the reach of conscious awareness The amygdala instantly recognizes the emotion we see in others



- the stronger the emotion displayed, the more intense the amygdala's reaction Whalen, P., Shin L., McInerney, S., Fischer, H., Wright, C., Rauch, S. (2001). A functional MRI study of human amygdala responses to facial expressions of fear versus anger. 1: 70-83.
- when 2 people interact face-to-face, contagion spreads via multiple neural circuits within each person's brain

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#### Which picture causes you more reaction?



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- the human brain has multiple mirror neuron systems used to:
  - mirror actions
  - read intentions
  - read emotions

# Social skills depend on mirror neurons



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How fast does our brain make a pro or con decision about another person?



Let's return to "The Zone"

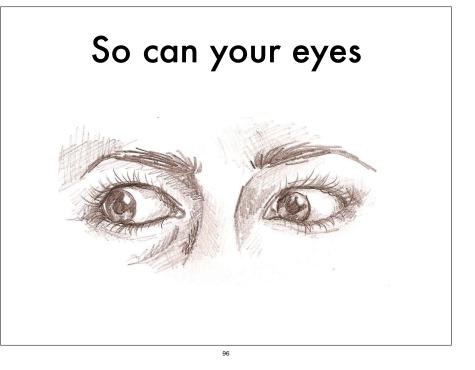
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#### Ever feel out of place?



You used mirror neurons to help you analyze the situation





So, use your eyes, your amygdala, and your mirror neurons to decide if your dot is "In the Zone"

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Because you don't want people to put your dot "Out of the Zone"



#### Thank you for attending

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