

# Adults with Autism

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## Where Are The Adults? “For some reason, you guys don’t read your own books...”

“Let's see, each generation there is about 500,000 autistics, and there is usually 1.5 to 2 million autistics living and walking around at any given moment in the United States alone! But, there are very few services catered to Adult autistics! Hmm. There is a definite disconnect here! Thus, the so called "experts" try to fudge the numbers and talk of the "wave" of new autistics getting older. WRONG! They are here but are just mislabeled as something other than autistic, and normally living in an institution, group home, or living with their parents. The lucky few get their own apartment but have few friends because of their "odd personality."

## The Future Awaiting Them

“It is funny how I have to do the "teaching" these days, when I was the "student" until I was 30, too long, because of the autism...Just say I am a 38 year old female who was diagnosed with PDD-NOS, NVLD and a math disability at age 35. I needed to be diagnosed NOT because of a mental health problem, but because of an "employment problem." I was being discriminated against because I didn't meet typical standards. That is what awaits the more high functioning autistics when they get out of school! If we got more understanding, I will tell you there would be less "mental health issues" that would be needed to be addressed.”

# A Uni-Tasking Mind in a Multi-Tasking World

“Another problem is my hours will be cut. No, not because of the bad economy, but because, again, " I am deemed too slow." My job? A Janitor. Yep, the lowest of the low, and I can't even meet expectations as a janitor. Yep, you don't deal with people as much, which is good if you have autism, but you have to "multi-task" as a janitor, even though it is quite repetitive. If I didn't have a good memory, I would be gone from this job too!

So, I live with my parents, and will be working only 3 hours a night as a janitor! That, according to Div. of Vocational Rehabilitation is a success, case closed!”

## A Different Mind in Today's Intolerant Multi-Tasking, Rapid Processing World

- “I think it is insulting, for somebody who has 2 degrees, a BA and an AAS degree. I have been told there are no jobs that best fit my particular needs...Unlike Temple, I don't have a portfolio that I can show off to an employer to get into the door!”

# Genes and Multi-Organ Involvement

- 2.27 relative risk of autism diagnosis conferred by the CC genotype MET receptor tyrosine kinase. MET signaling is involved in neocortical and cerebellar development, immune function, and gastrointestinal repair, consistent with the multi-organ symptoms reported in autism

Campbell et al. PNAS 2006, 45: 16834-16839

# Can You Pet the Fur Off Of A Cat?



# Epidemiology (new slide)





- *A Major Omission From All Cognitive Theories*

# Dr. Temple Grandin

“For some of us with ASDs, the emotional-relatedness physical or biochemical circuitry is missing- no matter how hard we try, it’s a bridge that may never be built because some of the basic building materials are missing.”

“Romantic relationships have a level of social complexity that I still don’t understand today and I consciously choose not to participate in them. My way of thinking and functioning does not describe everyone on the spectrum.”

## Temple Grandin's Perspective

“I experience the emotion of love, but it’s not the same that most neurotypical people do. Does that mean my love is less valuable than what other people feel?”

“Some people with autism don’t understand or experience any sort of emotional attachment or romantic love. I would speculate that autism involves an atypical development of the ...reward systems.”

## Another View of Autism: Sean Baron

“On June 2, 1975, I was very angry. The bottom of my stomach felt as if I had swallowed a dumbbell: I spent much of my childhood and teenage years dealing with that emotion and getting to know it intimately.”

“My autism brought me much misery and unhappiness, and in essence robbed me of a childhood. I was born with a pervasive fear that never seemed to diminish, so I spent most of my earliest years devising ways to lessen the unrelenting terror, if not get rid of the chronic dread completely. To that end, I tried to find ways to look at and take in the world that would make sense to me and

## Another View: Sean Barron

“..be less overwhelming, while at the same time, provide a measure of comfort, control, balance, and security- all of which were missing from my life. Isolating and manipulating objects while tuning out people; fixating on repetitive motions; asking the same questions over and over; developing stereotypical movements, arbitrary rules and rigid thinking; and focusing to an extreme degree on one item or event to the exclusion of every else were among the ways I found some control and security, while temporarily sidestepping my fears.”

# “Using fMRI Brain Activation to Identify Cognitive States Associated with Perception of Tools and Dwellings”

Shinkareva SV, Mason RA, Malave VL, Wang W, Mitchell TM, et al (2008) PLoS ONE 3(1)

Previous studies have succeeded in identifying the cognitive state corresponding to the perception of a set of depicted categories, such as tools, by analyzing the accompanying pattern of brain activity, measured with fMRI. The current research focused on identifying the cognitive state associated with a 4s viewing of an individual line drawing (1 of 10 familiar objects, 5 tools and 5 dwellings, such as a hammer or a castle). Here we demonstrate the ability to reliably (1) identify which of the 10 drawings a participant was viewing, based on that participant's characteristic whole-brain neural activation patterns, excluding visual areas; (2) identify the category of the object with even higher accuracy,

## *“Using fMRI Brain Activation to Identify Cognitive States Associated with Perception of Tools and Dwellings” cont’d.*

based on that participant’s activation; and (3) identify, for the first time, both individual objects and the category of the object the participant was viewing, based only on other participants’ activation patterns. The voxels important for category identification were located similarly across participants, and distributed throughout the cortex, focused in ventral temporal perceptual areas but also including more frontal association areas (and somewhat left-lateralized). These findings indicate the presence of stable, distributed, communal, and identifiable neural states corresponding to object concepts.

# “Predicting Human Brain Activity Associated with the Meanings of Nouns”

Mitchell TM, Shinkareva SV, Carlson A, Chang K-M, Malave VL, Mason RA, Just MA

The question of how the human brain represents conceptual knowledge has been debated in many scientific fields. Brain imaging studies have shown that different spatial patterns of neural activation are associated with thinking about different semantic categories of pictures and words (for example, tools, buildings, and animals). We present a computational model that predicts the functional magnetic resonance imaging (fMRI) neural activation associated with words for which fMRI data are not yet available. This model is trained with a combination of data from a trillion-word text corpus and observed fMRI data associated with viewing several dozen concrete nouns. Once trained, the model predicts fMRI activation for thousands of other concrete nouns in the text corpus, with highly significant accuracies over the 60 nouns for which we currently have fMRI data.



## “Functional connectivity in a baseline resting-state network in autism”

Cherkassky VL, Kana RK, Keller TA & Just MA. NeuroReport 17:1687 1690 2006

Brain activity in people with high-functioning autism has been shown to be atypical in a number of ways, including reduced synchronization across areas of activation measured by functional magnetic resonance imaging. This activation atypicality has been observed mostly during the performance of cognitive tasks. This study compares the resting-state network of 57 participants with autism and 57 control participants matched for age and intelligence quotient. The results indicate that both groups have a resting-state network that is very similar both in volume and in organization, but in autism this network is much more loosely connected. This functional underconnectivity was observed in the anterior<sup>^</sup>posterior connections. The results expand the theory of cortical underconnectivity in autism to the resting state of the brain.