January/February 2017 Updates
AD/HD Women and Interpersonal Behavior

Recently, American researchers reviewed what little literature regarding the relationship difficulties women have who have AD/HD and they found the following:

- AD/HD is found in 2 to 9 time more boys than girls, but the numbers are even in women and men.
- Women with AD/HD have earlier occurrences of depression and more severe and recurrent bouts of it than non-AD/HD women.
- Women with AD/HD experience more domestic abuse, self-injury and suicide attempts than men with AD/HD.
AD/HD Women and Interpersonal Behavior

- Women with AD/HD experience 6 times more domestic violence than their non-impaired peers.
- Women with AD/HD suffer more relationship difficulties than their non-impaired counterparts.
- Women with AD/HD engage in much more risky sexual behavior:
  - They have significantly more lifetime partners
  - Earlier sexual relations and intercourse
  - More unprotected sex
  - More STDs, more casual sex, and more unwanted pregnancies
  - AD/HD women have more difficulties with parenting than non-AD/HD women
Children with AD/HD Rights as Students

The following are links to documents published by the Department of Education’s Office of Civil Rights regarding the rights of children with AD/HD to receive special education services through schools:

- [www2.ed.gov/about/offices/list/ocr/letters/colleague-201607-504-adhd.pdf](http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201607-504-adhd.pdf)
- [http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201607-504-adhd.pdf](http://www2.ed.gov/about/offices/list/ocr/letters/colleague-201607-504-adhd.pdf)
Researchers from Denmark recently found that families with histories of type 1 diabetes, thyrotoxicosis, autoimmune hepatitis, psoriasis, and ancolysing spondylitis. Are more often to have children with AD/HD.

Researchers recently conducted a follow-up study of the children, now adults (average age 25) who were in the MTA AD/HD study in the 1990’s. They found those who persisted in their impairing AD/HD symptomatology in adulthood were the ones who had more symptom severity in childhood, more childhood comorbidities, and more parents with mental health issues than did non-persisters.

Homelessness and AD/HD

A 33 year follow-up study of boys diagnosed with AD/HD, now adults found they were 6 times more likely to be homeless than their non-impaired peers. Approximately, 24% of these AD/HD men were homeless.

Another MTA Study Follow-up

Scientists conducted a follow-up study of children diagnosed with AD/HD, now young adults, compared to a control group of children without AD/HD, now adults. They found the AD/HD adults broke down into two groups: (1) persisters, and: (2) Non-persisters. Regarding education, employment and sexual behavior the non-AD/HD children did best, followed by the non-persister, then the persisters. Regarding psychiatric difficulties the non-AD/HD children and non-persisters did not differ, but the persisters were significantly worse. The researchers concluded adult outcomes were worse when the AD/HD persisted into adulthood.

Scientists discovered that young children with the DRD4 7R allele experienced a bilateral increase volume in their frontal lobes and their left hippocampus when treated with stimulants. This was not found in those children with AD?HD who carried the DAT1 genotype. Older children with the DRD4 7R allele did not experience as big a change as the younger children did. This cortical remodeling in younger children with the DRD4 7R allele may lead to better treatments in the future.

American scientists found that using robust amounts of extended release Adderall and cognitive behavioral therapy (CBT) was effective in treating the symptoms of AD/HD and comorbid cocaine use disorder. They suggested those with AD/HD be screened for substance abuse and those with substance abuse be screened for AD/HD.

Bilingualism and AD/HD

Israeli scientist conducted a study with 80 college students who were unilingual (Hebrew), and bilingual (Hebrew/Russian) with and without AD/HD. They found those with AD/HD and were bilingual had significantly reduced executive function abilities. They cautioned this may be in part to cultural differences.

Scientists found that newly diagnosed adults with AD/HD and comorbidities had significantly lower emotional intelligence than those who were diagnosed in childhood. Severity of symptoms across the lifespan was not found to be a factor. The scientists suggested emotional intelligence training for newly diagnosed adults.

AD/HD and Sleep Disorders

A recent study indicated children with AD/HD and comorbid sleep disorders have a significantly lower quality of life and more impairment than those that do not have such disorders. Sleep disorders were seen as common comorbidity that tended to manifest by insomnia, excessive daytime sleepiness, and variable sleep schedule.

Children with AD/HD were found to have significantly visual registration and encoding as well as lower phonological working memory than typically developing children.

Recently it was found that children with Sluggish Cognitive Tempo suffer significant impairment at school and at home, and there are not proper services in place to help them adequately.

Hyperlexia and AD/HD

Girls with AD/HD were found to have hyperlexic-like tendencies when reading with significantly better word decoding and significantly worse comprehension than typical developers. The higher the hyperlexic tendencies the more social communication difficulties they were found to have. The hyperlexic tendencies may demonstrate is some with AD/HD subsyndromal autism.

Pregnant Women with AD/HD were found to have significantly impaired occupational functioning as well as interpersonal functioning when compared to non-AD/HD pregnant women. This impairment was found to be cause by inattention and impulsivity symptoms of the AD/HD, but not their hyperactivity.

Mindfulness Plus Cognitive Behavioral Therapy as Treatment for ADHD

Chinese scientists compared a group of college students with AD/HD that received a treatment of mindfulness and cognitive behavioral therapy to a wait list control group of students with AD/HD. The treatment group showed more of a normalization win response time and made fewer impulsive errors. They also had better sustained attention.

Adults with Sluggish Cognitive Tempo

A study of adults with Sluggish Cognitive Tempo (SCT) indicated SCT is related to inattentive symptoms, and they appear to have more internalizing symptoms than AD/HD adults. Adults with SCT have additional executive functions difficulties over and above those of AD/HD when found comorbidly, particularly in organization and problem solving. Finally, their inattentive symptoms are far more pronounced than in those with solely AD/HD.

Scientists conducted longitudinal MRIs of children between age 12 and 20 with “Attention Problems”. They also measured their driving behaviors, symptom impairment, and “risky behaviors”. They found those most at risk of poor driving were those with the highest symptom impairment, and the least developed right orbital-frontal cortex.

Researchers were able to successfully differential between Korean children with AD/HD, Inattentive Presentation, and those with Sluggish Cognitive Tempo (SCT). The SCT symptoms match those that would be seen in affected children in the U.S.

AD/HD, PTSD, & OCD

Researchers discovered that the comorbidity rate for those with Post Traumatic Stress Disorder and AD/HD is no higher than the general population. It was also found the comorbidity rate for Obsessive Compulsive Disorder and AD/HD was not higher than the general population.

AD/HD and Substance Abuse

A recent study indicated that those there was no difference between individuals with substance abuse disorders without AD/HD and those with substance abuse disorders and AD/HD in novelty seeking, low self-direction, and cooperation. However, those with AD/HD had a significantly lower score on harm avoidance/uncertainty, persistence, particularly in abuse risk environments, and recognition of having a substance abuse disorder than those without AD/HD.

A recent study of children 8 to 15 with and without AD/HD indicated those with AD/HD were significantly worse than those without AD/HD in facial recognition and emotion recognition. There was no difference in the level of impairment of males and females with AD/HD. When the AD/HD children were treated with atomoxetine they showed significant improvement in their facial and emotional recognition.

Demirci, E., et al. (December 16, 2016). Is emotion recognition the only problem in ADHD? effects of pharmacotherapy on face and emotion recognition in children with ADHD. ADHD Attention Deficit Hyperactivity Disorders. 8(4), 197-204.
Bilingualism and AD/HD

A 2014 study indicated those with AD/HD who are bilingual have more impairment with Executive Functions than those who are monolingual. The researchers speculated who were bilingual taxed their already impaired Executive Function more than those who were monolingual, hence they have more impairment.

Caffeine, AD/HD and Rats

A recent study indicated that “AD/HD” rats experienced better memory, less attention problems and normalized dopaminergic function when administered caffeine.

Children, AD/HD, and Anti-Psychotics

A recent Canadian study indicated many AD/HD children have emotional comorbidities that are often treated by additional prescriptions than stimulants for AD/HD about 10% of these children are also prescribed anti-psychotics which have been found to have very negative side effects in children, especially metabolic issues. They encouraged more research into this issue and extreme caution when using such medications with children.

University of Chicago scientists neuropsychologically compared children with ADHD to those with bipolar disorder and to those with bipolar disorder and AD/HD. They found the two bipolar groups were more impaired in general emotional and cognitive executive functions, and the AD/HD group had more problems with planning, organization, working memory, metacognition, and inhibition.

American scientists found that using the 5 most commonly provided testing accommodations given to AD/HD 3rd through 8th graders (i.e., extended time, etc.) did not improve test score in experimental subjects when compared to controls. This was also seen on tests of reading and math.

Specific Learning Disorder
Researchers from Israel found when they compared dyslexic readers to those who were typical readers the former was significantly more impaired in reading skills and empathic abilities when compared to the latter. This the scientists attributed to the differences in the dyslexics’ temporoparietal junctions.

American scientist found that students with dyslexia can be differentiated from those with language impairment by test instruments. This was interpreted as indicating they were two distinct disorders that have distinct symptoms. Hence, it serves to determine if a person has one or both of them to choose the correct treatment(s).

Statistical Analysis of Dyslexia Literature’s Symptoms

Italian researchers reviewed the dyslexia literature and the results of the symptoms that were found to be related to it. Their statistically analysis of these findings indicated they validly and reliably differentiated dyslexics from controls and who would have trouble learning to read..

European scientists found that adults with dyslexia continue to have significant deficits in phonological processing which they compensate for by using well developed morphemic processing (decoding the meaning of the word).

French scientists evaluated 3rd, 4th and 5th graders with dyslexia and found that 40% of them had arithmetic deficits. This was especially true in mental calculation and number transcoding. The researchers interpreted this result as demonstrating that dyslexia is not necessarily different from mathematics disorder.

Text-To-Speech and Reading Comprehension

Researchers recently discovered through conducting a meta-analysis of the literature that text-to-speech technology can significantly improve reading comprehension in children with reading disorders of comprehension.

Math Achievement, Visual Spatial Skills, Number Processing Skills and Piagetian Conservation

Researchers found that children in second through forth grades math achievement could be predicted by their visual-spatial skills and number processing speed. After forth grade their visual-spatial processing and Piagetian conservation skills better predicted their math achievement. As expected those with Mathematics Disorder were the weakest in these areas.

Magnocellular Differences in Dyslexics and Rapid Automatized Naming

Recently it was found that differences in the magnocellular area of the brains of dyslexics do not cause differences in the rapid automatized naming abilities of such children.

Scientists recently conducted a proof-of-concept study to determine the best method to treat children with AD/HD and Dyslexia. They tried methylphenidate (MPH) only, and MPH with one of two remedial reading curriculums. The findings were the MPH helped with the AD/HD symptoms, did not normalize them and had little effect on reading skills. The reading curriculum that emphasized phonemic awareness and word decoding significantly improved reading skill but did not normalize them. Preliminary results indicated MPH with reading curriculum emphasizing phonemic awareness and word decoding work best with AD/HD, Dyslexic children.

Recently, some indications have been found that the ability to understand symbolic fractions (i.e. 4/5), is related to a non-symbolic spatial representation of size ability.

Researchers investigated WISC-IV profiles of Italian SLD children. They found children with low Verbal cluster scores were low in verbal and text comprehension. Those with low Coding cluster scores had problems with non-word reading. Those with Low Reasoning and Executive Function (LREF) cluster score had difficulty with math and reading comprehension and speed. Finally, low executive functioning (LEF) could effect any off the above academic areas.

Researchers found that 4th graders with difficulty in fractions can improve their skills in such areas when doing speeded practice (assuming they have adequate working memory), implicatively teaching multiplication theory as applied to word problems and teaching self-talk to monitor processing.

Autism
Researchers recently found those with autism have significant difficulty narrating social interactions. They need someone to provide scaffolding to help them maintain story structure and use limited syntax to describe the situations. The children also showed anxious reluctance to engage in such activities.

Researchers found the Short Play Communication Evaluation (Space) was helpful with autistic children approximately 4 years old in assessing their social communication and joint attention skills. It takes 15 minutes to administer and can give teachers an idea of students’ areas of weakness.

Successful Women with Autism

Researchers found that successful women with autism tend to have some important life experience that demonstrates to them they are competent and can positively effect their lives, they experienced the receiving of the autism diagnosis as a positive and a way to explain their differences, they learned others thought they were competent, and they had mentors and were mentors to others. They also experienced great fatigue due to always having to re-prove they were competent.

Researchers compared the sign-language spills of deaf children with and without autism. They found those with autism sign-language movements were significantly slower, were less accurate, and poorly sequenced when compared to non-autistic deaf students. Their sign-language moment continued into other body parts inappropriately, and they had significantly reduced receptive language comprehension. Their level of language impairment tended to match the severity of their autistic symptoms.

Researchers found that children with autism who have auditory over-responsiveness to low decibel stimuli that is observed by their caregivers can benefit from an audiological evaluation to search for these over-reactions. This can help their caregivers make the child’s environment less “painful” for them and start the rehabilitation process for the auditory over-responsiveness.

Metacognition, Hypercorrection and Autism

Hypercorrection occurs when a person is highly confident of an answer, but later finds it is in error. The person is able to bare this in mind the next time the situation arises. This function requires good metacognition. Researchers compared those with autism to neurotypicals in hypercorrection and metacognition and found that those with autism have deficits in metacognition and hypercorrection.

Autism and Gender

Scientist recently found the symptoms of autism are somewhat related to the gender of the person with the disorder. Males have more difficulties with executive function, focusing on tasks, and cognitive flexibility. They had worse autobiographical memories and more hyperactivity than females with the disorder. Females had more difficulty with visual-spatial processing and impulsivity. Females have more gender related play behaviors as children than boys, but this pattern seems to reverse in adolescence. Boys tend to be externalizers in childhood than girls, but move toward internalizers in adolescence, matching the girls. The above differences account somewhat to the differing diagnostic rates by gender for autism.

Recently researchers discovered that repetitive restrictive behavior in girls lower the autism diagnosis in them when compared to boys. They also found that sensory sensitivity difficulties equally defined autism and girls and boys. Girls were also more apt to be diagnosed if they had emotional and/or behavioral problems.

Autism, AD/HD and Written Expression

Scientists found that children with autism have difficulty with written expression, but those with autism and AD/HD have significantly more difficulty with written expression than the former group.

Figurative Speech and Autism

It was found recently that children with autism have significant difficulty comprehending figurative language when compared to neurotypical controls. This deficit appears to be related to core language difficulties experienced by those with autism.

Reciprocal Behavior Gender and Autism

Girls with autism were found to have significantly more reciprocal behaviors than boys with autism. There is also a difference in the quality of reciprocal behavior with girls having a better quality of theirs. However, there was no difference in turn-taking behaviors in the two groups. Girls with autism appear to be motivated toward common goals in social relations than boys with autism.

Adults with autism were found to have difficulty integrating multi-modal social stimuli with prior intuition regarding theory of mind in real time situations when compared to neurotypicals. This is particularly true when more than basic emotional recognition is required.

Adolescents with autism rated themselves as having more behavioral and emotional difficulties than their neurotypical peers. Their parents also indicated this. It was found this was in fact true. Autistic girls had more difficulty with anxiety/depression, social problems and being withdrawn. Boys with autism had similar differences, but much more difficulty with social problems than girls.

Autism and Visual Skills

People with autism have faster visual reaction times and significantly stronger simultaneous discrimination of multiple visual stimuli.

Camouflaging and Autism

On a whole women with autism camouflage their symptoms more than men with autism. This is associated with better social skills in women and depression in men. Camouflaging is exhausting, however, due to cultural socialization for social interaction in females they may be better at doing it. Women with autism were found to have larger neurological volumes of their brains’ cerebellum, medial temporal lobe, para/hippocampus, and amygdala which give them an advantage in camouflaging.

Camouflaging in Children with Autism

Girls with autism were found to be able to better camouflage their autistic symptoms by staying on the periphery of play groups of other girls. Boys on the other hand, tend to play organized games and the boy with autism will tend to withdraw from the game. The isolation behaviors tends to set them apart and bring them to the attention of the teacher.

Children with autism were found 4 different reading difficulty profiles. They appeared to heterogeneously effect children across the autism spectrum.

German researchers found that adults with autism and sensory sensitivities have these sensitivities due to an unknown central brain process and not a periphery one.

In Australia it was found that adults with autism have sleep patterns related to circadian rhythm sleep disorder, but it may be related to problems in employment and anxiety.

Autism and Perspective Memory

British researchers conducted a meta-analysis of the literature related to autism and difficulty with prospective memory. This type of memory is the type that allows one to plan a behavior and carry it out in the future. The researchers found that those with autism have significant difficulty with event-type prospective memory, but not time-based prospective memory.

German scientists found that individuals with autism have significant difficulties with facial emotional categorization and social cognition, but not classically believed false beliefs when they were compared to neurotypicals. They thought the problem with face categorization could explain the problem people with autism have with facial emotion.

Researchers from Australia found that children with autism has significantly less motor proficiency, legible handwriting and writing attention than neurotypical children. The scientists determined autistic children have significant difficulties with handwriting that is caused by motor control and attention problems.

Professors from the University of Alabama put students with autism and neurotypicals in driving simulators and measured their response times to social hazard stimuli (pedestrians) and non-social hazard stimuli (cars). The neurotypicals responded significantly faster to social hazard stimuli.

American scientists compared students with autism to neurotypical in state and trait anxiety. The biometric data they collected indicated autistic students had significantly higher trail anxiety, but not state anxiety. They speculated their higher trait anxiety may dampen their response in situations where they may experience state anxiety.

European investigators found that people with autism when forced to make their own behavioral decision exercise significantly more behavioral rigidity than neurotypicals. They suggested understanding internal behavioral control mechanism of those with autism may shed light on behavior rigidity.

Autism and Faces

Scientists from Belgian found that adolescents with autism had significantly more difficulty facial expressions than neurotypicals. This was not found when they categorized faces by gender.

American researchers conducted a national survey of children and adults with autism and found that approximately 8.6% of those with autism have epilepsy comorbidly. Those with autism are more at risk for autism as they get older, if they are female, if they have intellectual disability, speech difficulties and/or come from a economically depressed background.

Scientists from the United States found that adults with autism have significantly higher blood pressure, perceived stressful lives, and more stressful life events than neurotypicals. This was significantly associated with their social disabilities.

Swedish scientists found those with autism and no comorbidy had twice the chance of having a substance abuse disorder than neurotypicals. The highest rate was for those with autism and comorbid AD/HD.

Researchers from Austrailia and Norway reviewed the literature regarding the use of oxytocin spray to treat autism. They concluded the following, “...The evidence to date, including reviews of preregistered trials, suggests a number of critical considerations for the design and interpretation of research in this area. These include considering the choice of ASD outcome measures, dosing and nasal spray device issues, and participant selection. Despite these limitations in the field to date, there remains significant potential for oxytocin to ameliorate aspects of the persistent and debilitating social impairments in individuals with ASD.”

German scientists found those with high functioning autism have a significant deficit in the recognition of voices. This was particularly true in vocal pitch perception. Also, they had significant problems recognizing novel and unfamiliar voices. They speculated this was related to anatomical differences in the posterior superior temporal sulcus/gyrus brain area of those with autism.

Miscellaneous
Bonobos View Eyes More than Chimpanzees

Japanese and British researchers evaluated Bonobos and Chimps for eye gaze behavior. Chimps tend to be more behaviorally biased toward foraging for objects (i.e., food, etc.), and Bonobos tend to be more biased toward showing affection and social activities. When eye tracking was done with members of both species the Bonobos looked into the eyes of members of their species much more than Chimps did to their own. The scientists said this represented species specific behaviors and happened in a relatively short time evolutionarily.

Kano, F. et al. (June 15, 2015). Social Attention in the Two Species of Pan: Bonobos Make More Eye Contact than Chimpanzees. PLOS One. DOI: http://dx.doi.org/10.1371/journal.pone.0129684.
Empathy, Bonobos, and Chimps

Franz De Waal was recently interviewed by Adrian Bye recently and De Waal said regarding empathy, "..." In my discussions about empathy in animals we get the same process going because when I say chimpanzees have theory of mind people would object to it. But if I say they have empathy they say, oh, that is a more basic feature that you are sensitive to the emotions of others, that you adopt the emotions of others. People can understand that chimpanzees and many other mammals may have that capacity. Your average dog has that capacity to be sensitive to your emotions. So we are now looking at these much more basic features of where do things go wrong in autism, so to speak. Is it sort of a cognitive process, like theory of mind? Or is it more an emotional process, like empathy? And I think we are coming down on the emotional side at this point."

Bye, A. (No Date). http://meetinnovators.com/2013/05/12/frans-de-waal-emory-university/.
Italian scientists investigated play, play motivation, rapid mimicry, and social modulations in dogs and determined dogs possess the building blocks of empathy of rapid mimicry and emotional contagion.

Dogs Empathy, Love and Humans

Japanese researchers recently found when humans bond emotionally they gaze into each other’s eyes. This raises the level of the hormone oxytocin in both individuals. The scientist discovered when humans gaze into a dog’s eyes it raises the level of oxytocin in the humans and when dogs sniff oxytocin spray it raises their. However, when wolves sniff oxytocin it does not raise their oxytocin levels. Wolves rarely look into other members of their species eyes. The human dog eye gazing causes a loop of affection. The researchers speculated this loop may have contributed to the survival of both species.

Brazilian and British researchers recently discovered, “...The findings are, we believe, the first evidence of the integration of heterospecific emotional expressions in a species other than humans, and extend beyond primates the demonstration of cross-modal integration of conspecific emotional expressions. These results show that domestic dogs can obtain dog and human emotional information from both auditory and visual inputs, and integrate them into a coherent perception of emotion. Therefore, it is likely that dogs possess at least the mental prototypes for emotional categorization (positive versus negative affect) and can recognize the emotional content of these expressions. Moreover, dogs performed in this way without any training or familiarization with the models, suggesting that these emotional signals are intrinsically important. This is consistent with this ability conferring important adaptive advantages.”

Suggestions Regarding Learning a New Language

- Pay attention to nonverbal behavior of native speakers.
- Get a good nights sleep soon after studying to automatize learning.
- Improve your accent by recording your pronunciation and listening to it.
- Listen to recordings on a native speaker of the language in the background while you do other things.
- Constantly hear and repeat words and phrases.
- Immersion works fastest.

Those with specific learning disability-reading/dyslexia and autism spectrum disorder have been found to have significant weaknesses in phonological working memory. American and Chinese researchers found children with these disorders have the same anomalies in their left temporal-parietal and their right temporo-occipital areas that cause these difficulties. They speculated the differences in the right hemisphere may have developed somewhat to compensate for those in the lefty hemisphere.

American researchers found that adults with higher N400 event related potentials when processing English had better syntax and vocabulary learning in a second language. Higher P600 signals indicated better syntax learning.

Nightmares and Suicide

A group on recent studies have demonstrated that having nightmares is significantly more associated with suicide attempts and suicide than is having depression, anxiety and/or PTSD. Additionally, treating sleep disturbances has been shown to significantly improve depressive symptoms. There is some evidence that “Image Rehearsal Therapy” (IRT) where the patient with repeated nightmares writes out the story of the troublesome dream with a new ending may be helpful.


A recent meta-analysis of research conducted with exercise as a treatment for depression and major depressive disorder found large and strong antidepressant effects with the use of aerobic exercise. They concluded that exercise is an evidenced based treatment for depression and major depressive disorder.

Genes Related To Specific Cognitive Functions Found

A team of 60 international scientists found, “…a few specific genes related to cognitive ability, the team also showed a significant genetic overlap between risk for several psychiatric disorders and reduction in cognitive ability. Impairments in general cognitive ability, such as reasoning, problems solving, learning, and memory, are critical components for a number of serious mental illnesses, including schizophrenia.” They found, “…we found robust polygenic correlations between cognitive performance and educational attainment, several psychiatric disorders, birth length/weight and smoking behavior, as well as a novel genetic association to the personality trait of openness.”

Northwell Health. Genetic discovery provides new insight into cognitive disorders: Findings could ultimately lead to new treatments for disorders such as schizophrenia, ADHD. ScienceDaily. www.sciencedaily.com/releases/2017/01/170117084032.htm.

Researchers from the University of Alabama used low current tDCS stimulation of the left intra-parietal sulcus and training to significantly improve math and statistics abilities in test subject when compared to controls.

Female Brains and Stress

- Females tend to suffer from stress disorders twice as much as males.
- “It turns out the most basic cellular processes involved in the stress response differ between the sexes.” (p. 60)
- When an animal is stressed it releases corticotropin-releasing factor (CLF) into their blood streams. Females brains respond faster to this chemical.
- Those with PTSD have high levels of CRF. This may explain why females suffer significantly more from PTSD and depression than males. We need to do more research on depressed females and those with PTSD.