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Opportunity in Action: Neurodiversity in a STEM Career

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Abstract

In this article, I utilize a reflexive ethnographic approach via lived experience as a gifted student with attention deficit hyperactivity disorder (ADHD). Regarded as "lazy in math," I describe my journey to a Doctor of Business Administration (DBA) labeled twice exceptional (2e) 27 years later due to undiagnosed math learning disability dyscalculia.

Keywords: neurodiversity, innovation, hireSTEM, ADHD, dyscalculia, dyslexia

Opportunity in Action: Neurodiversity in a STEM Career

I grew up in Pennsylvania (PA) as an only child. My dad was a machine operator at a local factory and my mom was a licensed practical nurse. I loved learning but hated school. I excelled verbally, but had issues with tying my shoes, reading an analog watch, and understanding basic math concepts. I loved reading, science, bike riding, martial arts, writing plays, short stories, books, and screenplays. When I was 11, in 1982, my parents received an envelope from Johns Hopkins University's Office of Talent Identification & Development (OTID) indicating I had an opportunity for early college. I scored extremely high on the Scholastic Aptitude Test (SAT) practice exams that were administered in seventh grade. As part of this college opportunity, I had to pass one last assessment administered by a psychologist.

My parents thought it would be a good idea for me to meet with the psychologist. After all, I scored in the top 1% on the Gates-MacGinitie Reading Test, reading on a college freshman level, and scoring "gifted" on the intelligence test. During the in-person assessment, I cussed the psychologist out on the math questions, which deemed me ineligible for college due to my emotional immaturity. The psychologist labeled me “gifted but lazy,” due to my math scores. For me, the only good that came out of the meeting with the psychologist was the ADHD diagnosis. ADHD is characterized by various behavioral symptoms such as inattention, hyperactivity, and impulsivity, which pretty much described me to a “T.”

In high school, I was in honors classes and tried to avoid math like the plague. However, I was a math tutor. I knew the answers to the math questions but could not show my work. Helping others helped me pass pre-calculus. Even though math tanked my grade point average (GPA), I still graduated with honors. I was still writing screenplays in high school. A passionate *Buck Rogers in the 25th Century* fan, I wrote nearly everyone in Hollywood to get a “Buck Rogers” script made, including Donald Bellisario, producer of

Magnum PI, *Quantum Leap*, and *NCIS*. Bellisario rejected my script but told me to set my sights on film school.

Following his advice, I went to film school. I was accepted to the University of Southern California's (USC) Filmic Writing Program. Ironically, Bellisario did write one of my recommendation letters. I was in the thematic option honors classes. I had an academic and three-year Army Reserve Officer Training Corps (ROTC) scholarship. In my junior year, I failed a core class in practical filmmaking with a D+. I needed to retake the class or quit. My junior year was a year of re-evaluation. I dropped out of thematic option. I also quit ROTC. I had a medical disqualification due to my vision and lost my scholarship. I then became a party major. I took a six-month break and did my work-study job as a projectionist.

I changed majors from filmic writing to social science and communications during my senior year. I could leverage my three years of film school, take one year of anthropology, and two classes at summer community college. Yes, one was algebra. The class was challenging, but I survived. It took me five years to graduate with a four-year degree but I did it.

My first job out of college was working for the late 80s action star Sho Kosugi of *The Master* series with Lee Van Cleef. Sho found I had an aptitude for budgets, finance, and accounting, so I got promoted to development. I also wrote his English dialogue for his Japanese movies and TV shows. However, a woman then could not write dialogue for a Japanese man, so I created the alter ego, "J.A. Steel." I got bored (of course) working for Kosugi, so I started my own production company, Warrior Entertainment. If I could help make his films, why not make my own? Unfortunately, having your own entertainment company and making money is more complicated than it seems.

I took up many odd jobs to make ends meet, including as a coffee shop barista. There I met Richard Mueller, a writer for a kids' cartoon called *Double Dragon*. He was impressed with my background in computers. I hadn't given any of my computer skills a thought until he loosely based the Megabyte character for the episode "Virtual Reality Bytes" on me. I had compelling experiences with computer "hacking" before the government passed hacking laws. I also served as a beta tester at the computer lab for fun during my time at USC. For me, computer language is just another language at which I excel. Seeing myself as the Megabyte cartoon character (Mueller, 1994) with my blonde hair, baseball cap backwards, glasses, and a long-sleeved collared shirt was the first time I realized computers were the way of the future.

I knew I could not keep up the odd jobs forever, so I applied as an office manager at the lighting company Sequoia Illumination. Sequoia Illumination was owned by Tom Stern, who provided much of the grip and electric services for Clint Eastwood's *Unforgiven* and other projects for Warner Bros., Disney, and Universal. Even though I applied as the office manager, I started as the bookkeeper and tracker of all the equipment. I created databases and spreadsheets to track the rentals. However, I wanted to train as a grip/electric worker and commercial truck driver. Stern eventually gave me the opportunity. However, three days before my final driving test, I got caught driving under the influence (DUI). No one would hire me to drive a truck with a DUI—so I had to pivot.

A friend of a friend had a friend who worked for an employment agency called Accountants on Call. I was hired as a temporary employee (contractor) for a startup that had just gone public, Leslie's Pool Supplies. I optimized their bank reconciliation system for dozens of stores using computer spreadsheets to hide my lack of math skills. After that, I went to work for Paul Orfalea’s Kinkos and did the same thing for their bank reconciliations

and the credit card reconciliations for all his stores. I then returned to Leslie's Pools to help with their JD Edwards AS400 software designs and implementation for their new production facility, point of sale (POS), and warehouse management system (WMS) barcoding.

Due to my time at Sequoia, I made a lot of studio connections. The studios also needed help optimizing their accounting and inventory processes. Suddenly, I had steady work and was highly sought after for my computer skills—something that I did not have a degree in or formal training in but was able to use for a very lucrative paycheck. As computer use became more of the norm in the mid-1990s, my paycheck grew with the increased market demand.

I got a call from Disney to head to Singapore and spearhead a new market opportunity. A traveling stage show, Disney Fest, failed in the United States (Matzer, 1997), but Disney wanted to reallocate the resources and test the Asian market. The time frame was tight, and execution was crucial. I picked up everything and left to join the Disney Fest tour, overseeing all the inventory and merchandise. I got there, got it done, and came home. I discovered I loved Asia and had taken up a new martial art called Muay Thai.

Back in the United States, I found myself bored and needing a career change, so I bought tickets to move to Thailand to kickbox and teach English for the rest of my life. However, Accountants on Call reached out with a big money opportunity. I had a working interview and would be paid biggish money. My flight wasn't for a few days, so why not? I walked into a seemingly unsolvable problem at Countrywide Securities, which I solved in fifteen minutes. I hung out to meet the Countrywide Securities team and was paid for the whole day. My boss asked me what I “needed” to stay as an employee. It was the first time someone did not ask me what I “wanted.” I gave him my list of what I needed and stayed.

During my tenure, I inadvertently designed a backup protocol for catastrophic systems failure in the banking industry.

By focusing on what I needed in a job, not what I wanted, I found a balance in consulting/contracting and resurrected Warrior Entertainment. Through consulting gigs, I could finance and make the movies with the stories I wanted to tell. Everything was going great, until I had a motorcycle accident that rendered me unable to drive and impaired the mobility in my left arm, so no more Muay Thai. I went from on top of the world to yet another pivot. My doctor suggested swimming to regain mobility. I then took up scuba diving, ultimately becoming a cave and technical diver.

California became boring after I had done most of the Los Angeles area AS400 to SAP computer systems transitions. So, I bailed for greener pastures in Utah. I felt societal pressure to settle down, so I did for a time, improved some more systems for companies that were not big enough for SAP, made a bunch more money, and found myself unsettled again. I headed back home to PA. I found myself part of a multi-million-dollar acquisition done by a local company, Kennametal. Ironically, Disney called and wanted me back, but I had to have a master's degree. Really? A degree, for my old job, that I already performed without a degree? While I was off having a secondary film career and traveling the world with Warrior Entertainment, I quickly found out that companies had changed culturally. To command the salary I once earned, I needed a master's degree.

Cue the move to North Carolina (NC), the land of opportunity and companies needing SAP systems transitions/fixes. NC also has some of the most affordable MBAs in the U.S. I ended up picking Fayetteville State University for school. Their admissions requirements were a Graduate Management Admission Test (GMAT) or experience. I took the GMAT. My math score was 8%, but my verbal score put me above the minimum requirements.

During my MBA, I was one of the few students who did a thesis paper instead of a capstone project. I learned from one of my professors that I may have something called dyscalculia. My MBA thesis, on entrepreneurs with ADHD and dyslexia, had no mention of this “math-dyslexia." I filed this dyscalculia information under "good to know." I got an automotive job in supply chain, which hit all my "needs" (not my wants). Life was good. I thought I was going to settle down and make a movie here or there on the side—then COVID occurred.

COVID blew everything out of the water. Early in December 2019, I spent my 50th birthday in Singapore. I was J.A. Steel at a film conference and visited some of the pieces of Disney that were built on my original framework from 1997. I became deathly ill after Singapore, and members of my team got sick as well. We all recovered, but the world shut down, and I was furloughed, waiting to be recalled. I was recalled to my automotive job. However, extenuating circumstances arose and I quit.

The PIVOT—I was bored, so I decided to get my doctorate and expand on my master's thesis. Like I did with my GMAT, I decided to go through the steps for disability accommodations. Testing at the University of North Carolina (UNC) revealed a longitudinal diagnosis of ADHD, but also dyscalculia. The doctor who signed off on my forms had to inform me that my progress through the educational system was statistically improbable, due to my level of disability. Excuse me, my what? Apparently, I am gifted and disabled, which is called twice exceptional (Klingner, 2022; Koifman, 2024), “2E.” I also learned my ADHD symptoms had been mitigated all those years by my participation in martial arts and the extreme sports of cave and technical diving. The most recent studies have shown mitigation of ADHD symptoms through extreme sports (Woodward, 2009; Verma & Bagchi, 2020).

I completed my dissertation entitled *An Examination of the Combined Relationship of Attention Deficit Hyperactivity Disorder and Dyslexia with Entrepreneurial Intention* (Ruffner, 2023). It was the culmination of self-discovery for the kid who was labeled lazy by a psychologist who went on to design computer systems for the world's biggest companies. As memories of the shutdowns fade in the past, I find myself back in supply chain for a manufacturing company in North Carolina. It has the appropriate amount of production and an ever-changing landscape.

Instead of focusing on money, like I did in my early years, I'm focused on the potential my experiences can have to improve the quality of life of the people around me. This last job started as an accounting contractor. I left to make some money as a finance director but returned to my current company. I wanted supply chain work, and my boss asked me what I needed. I also found a great team, who, if my ADHD starts to get the best of me, uses the code word “coffee”—indicating I may be getting a bit excitable.

Over the years I learned that I am not an office person, even though society would have me believe that. I needed to do what would make me happy. I did not learn anything in my advanced degrees, except to better communicate with the people who seek to make the world a more innovative and profitable place for all people, even if it is not all about the money.

Person-Environment Fit Theory

Here is where the concepts I learned from the books intersect with my reality. The most important theory I learned as a post-secondary student was the Person-Environment Fit Theory (PE). This is the relationship between a person and their environment. Complementary fit provides something the other wants or needs, whereas supplemental fit happens when an employer hires persons with similar characteristics or accepts another into a

team (De Cooman & Vleugels, 2022). During my review of Boston Consulting Group's (2020) innovative companies, I learned that most CEOs do not possess advanced degrees. This ties into DeAngelis and Dills (2020), noting that while degrees are becoming more prominent in business, innovation is declining.

Changes in Business and Education

The simple yet effective PE fit theory had a profound effect on me as I realized many things about my career choices and the "why" behind my own internal and external choices. In the current business landscape, Disney now requires an MBA for the same job that I had nearly 20 years earlier. An MBA degree is now needed to "fit in" with the ever-changing business environment, and master's degrees are now needed for job advancement into the ranks of more senior management. While I made more money earlier in my career, with a degree in screenwriting and anthropology, I did not have an accounting class until my MBA classes in 2017. This followed more than two decades in the workforce doing accounting and programming. I have yet to take a formal computer programming class.

Boston Consulting Group (2023) recognizes the need to hire diverse talent to gain the competitive market edge. However, early business disruptors highlighted the need to challenge the status quo, before we had MBAs for every discipline. A qualitative study of innovative CEOs without advanced degrees by Fisher and Koch (2008) became a book, *Born, not made: The entrepreneurial personality,* challenging the perception that innovation was a learned trait. The ADHD studies by Johann Wiklund and others (Wiklund et al., 2015, 2016, 2017, 2018) furthered how neurodiversity, specifically ADHD, may deter degrees, but may help innovation by supporting "out of the box" neurodivergent thinking. People like my old Kinko's boss, Paul Orfalea (Orfalea & Marsh, 2007), made their way in the business world despite their neurodiversity.

Market Disruption and Neurodiversity Hiring

Early in my career at Disney, we had a deaf person in accounts payable, so I thought every company had deaf people in accounts payable. I only learned later that this was not the case. Working in manufacturing, I have had persons with autism completing repetitive tasks as noted in studies such as Costello et al. (2021). However, a Dutch study by Goldfarb et al. (2024) showed fewer persons with autism worked in industry than the general workforce. Persons with mobility issues (wheelchairs, walking aids, etc.) were also present where I worked. I could not find literature on utilizing blind persons in quality control, but I worked at a manufacturing company where we outsourced to a local company. The blind persons provided better quality control than computers, resulting in fewer quality claims for inferior products. Smit and Brand (2011) showed potential safety risks for deaf persons in loud processing environments. However, my experience has been different.

During my MBA and DBA classes, I learned that government contractors require 7% of the workforce to identify with disability (Monod, 2020). Early in my career, I was unaware of literature or governmental regulations to cite. Now, I proudly check the box—more so for my ADHD, because I'm still embarrassed that I can't add 2+2. I am now better able to communicate with more educated (book smart) rather than street smart managers than when I worked in the industry. Saying "studies have shown" can be much more effective than anecdotes.

In my experience with market disruption, hiring neurodiversity is more than a mission statement. It increases profitability. SAP is a good example. The company hires persons with autism and can train and retain them, resulting in less monetary loss because of turnover (Costello et al., 2021). Krzeminska & Hawse (2020) also noted that hiring neurodiverse individuals resulted in a sustainable workforce.

As part of the neurodiverse workforce, I always focus on my strengths. My inner dialogue always contains questions and answers:

Q1. What do I want?
A1. I want enough money to pay my bills and not be in debt.

Q2. What do I need to be happy?
A2. I need enough vacation to travel and see the world – or make a movie or two if I get bored.

Q3. Is my boss supportive?
A3. Am I open to the feedback he gives? Is he open to giving feedback? Is my team supportive? Do we complement each other's strengths and lift each other's weaknesses?

During my time as a consultant and hiring manager, I gathered some tips from a human resources perspective for market disruption:

- Rethink the interview process.
- Utilize practical examples of a real-life situation at the current employer.
- Understand the needs of the job seeker.
- Match the individual needs with the company's needs.
- Use agencies so both parties can do a "test drive."
- Offer internships.
- Conduct panel interviews/task interviews/individual interviews.
- Utilize outside resources to supplement the integration of people with disabilities.

In NC and PA, we had state support for persons and transportation. Utilizing all the support services available as both an employer and a job seeker can result in more profitable outcomes.

Tomorrow and Beyond

Through reading about my experiences today and some cool notes from the academic literature, I hope some insights have been gained into the opportunities my neurodiversity has

afforded me. I often wonder if I had an earlier diagnosis of dyscalculia, would I have contributed to the world of technology like I did.

I would challenge those today with some encouragement:

- Don't be afraid to advocate for yourself and others.
- Ask, "Why not me?" not "Why me?"
- If the U.S. governmental policy calls for only a 7% disability hiring minimum for federal contractors, why not strive to have more?

I see my diversity as my "superpower"—my greatest weakness is also my greatest strength. I can leverage my uniquely creative ways of thinking to solve complex problems. Many companies today focus on people, planet, and profit initiatives—the Triple Bottom Line (Varghese & Chandramana, 2021). If you can present your case as a neurodiverse person or as an advocate in hiring, I can guarantee the rewards will be much more than monetary gain. Newer studies have shown significant productivity gains (and hence profit) in teams led by a manager with a disability (Cole et al., 2024), including that disabled members in work teams increases productivity (Narayanan & Terris, 2020).

Conclusion

Reflecting on a doctoral class, I did a poll on the Whova App for the members of the 40th Annual Pacific Rim International Conference on Disability, mirroring a class research question.

At a fictional company, a research and development (R&D) management position is available to persons with 20 years' experience. Your final decision is between two managerial candidates. Who do you hire?

Candidate A. Climbed the ladder at a Fortune 50 company

Candidate B. 7 jobs over 20 years in various countries

In my doctoral class, most of the respondents answered Candidate A. At the conference, most respondents would hire Candidate B. This polling demonstrates a gap in hiring perception, depending on the audience. While this question was not generated using a formal hypothesis, scientific method, or approach generalizable to a population, it does highlight a potential direction for future research. This gap suggests that more research into the area of STEM is needed, particularly in the areas of entrepreneurship and innovation needed in business today.

Insights and lessons can be learned from my reflections based on personal experiences as a twice-exceptional person in the STEM field and as a lifelong learner. As we collectively move forward into the future, our voices carry weight as we can help amplify others' research and experience to drive success for all in the STEM fields.

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