



Polio Survivors and Problems with Attention Is it Caused by ADHD?

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Polio survivors are certainly familiar with fatigue causing difficulty concentrating. But we have to be very cautious about turning patients' symptoms into formal diagnoses. This caution needs to be applied when polio survivors' difficulty paying attention is taken to be a diagnosis of attention deficit hyperactivity disorder (ADHD).

The [CDC](#) outlines 12 criteria that may lead to a diagnosis of adult ADHD

(Source: cdc.gov/ncbddd/adhd/diagnosis.html):

- Problems focusing on a task
- Excessive activity or restlessness
- Impulsiveness
- Disorganization and problems prioritizing
- Poor time management skills
- Trouble multitasking
- Poor planning
- Low frustration tolerance
- Frequent mood swings
- Problems following through and completing tasks
- Hot temper
- Trouble coping with stress

Of these symptoms mentioned above, two that are often associated with PPS, match the CDC criteria:

- Problems focusing on a task (and)
- Excessive activity (think Type A behavior)

Therefore, merely problems focusing and excessive activity do *not* a diagnosis of ADHD make.

This doesn't mean that polio survivors, adults and as children, did not have attention deficits (1). During the epidemics there were reports of brain "deactivation" from the first days of the poliovirus attack. Polio patients were described as lethargic, drowsy, sleeping constantly and being difficult to awaken. Some polio survivors were even in coma, the ultimate result of failure of the brain's activating system.

In B.H. Holmgren's study of Swedish polio patients at least one-third, whether they had paralytic or non-paralytic polio, had "disorientation, apathy, and pronounced sleep disorder." These symptoms of brain deactivation were associated with abnormal slowing of polio patients brain waves measured using an EEG, the electroencephalograph, which we saw an adult polio survivors reporting fatigue and impaired attention. (2)

In 1947, psychologist Edith Meyer studied American polio survivors ranging in age from 18 months to 14 years old. For 3 years Meyer followed these children's performance in school and measured their "mental abilities." She discovered that "a high percentage of children clinically recovered from poliomyelitis insofar as motor disability is concerned, had qualitative difficulties in mental functioning which, as a rule, do not appear in the conventional type of intelligence test." Using special psychological tests, or merely by observing their performance in school, Meyer found that the children had "fatigability and fleeting attention" for months after the polio attack. When tested she discovered that the children had short attention spans, difficulty concentrating and poor memory for visual designs. These problems were "present in cases in which the medical history notes drowsiness, severe headache, and, in some cases, only nausea" during the polio attack. Both Holmgren and Meyers found that even children who had "non-paralytic" polio – having no paralysis or even weakness – had "fatigability and fleeting attention".

(continued . . .)

It's fair to ask if polio survivors had attention deficits, if not ADHD, how is it that they did so well in school, went on to college and became teachers, lawyers, chief executives of international corporations, members of the British and Canadian Parliaments, the US Congress and Supreme Court and an American President? Here's where the psychology of being a polio survivor and developing Type A behavior superseded any problems with attention.

Another question is why it has taken polio survivors 40 years since polio to again show "fatigability and fleeting attention"? We can only speculate since the technology was not available in the 1950's to study the brains of young polio survivors. But it is likely that polio survivors' fatigue and fleeting attention improved for the same reasons that they were able to recover muscle strength: damaged brain attention and concentration neurons that survived the poliovirus onslaught may have compensated for the death of their compatriots by sending out new "sprouts" to stimulate orphaned neurons, eventually suffering themselves from overuse abuse. The notion of brain neurons "over sprouting" is supported by a 2021 MRI study of polio survivors that found an increase in the "volume" of neurons in the brain areas responsible for attention and concentration. (3)

References:

1. Bruno RL, et al. The Neuropsychology of Post-Polio Fatigue. Archives of Physical Medicine and Rehabilitation, 1993; 74: 1061-1065.
2. Bruno RL, et al. Elevated Plasma Prolactin and EEG Slow Wave Power in Post-polio Fatigue. Journal of Chronic Fatigue Syndrome, 1998;.
3. Stacey Li Hi Shing, et al. Increased cerebral integrity metrics in poliomyelitis survivors. J Neurol Sci. 2021 May 15;424:117361.

Check out [The Encyclopedia of Polio and Post-Polio Sequelae](#) on our website.

It contains all of Dr. Richard Bruno's newly published and updated: articles, monographs, commentaries, videos and "Bruno Bytes" (Q & A articles) and links to his book.

You can easily access it from Dr. Bruno's website as well: www.postpolioinfo.com