

## Comment on Priming Skills of Autistic Twins and Yamaguchi (2006) Letter to the Editor: “Questionable Aspects of Oliver Sacks’ (1985) Report”, *Journal of Autism and Developmental Disorders*

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Dear Editor,

Oliver Sacks’ 1985 piece “The autistic twins” remains to this day the most compelling account of savant numerosity skills. Sacks broke the bewildering code of number communication that existed between autistic twins by identifying the numbers as being special. They were in fact primes!

Yamaguchi (2006) has recently questioned the method Sacks used to come to his conclusions. However, in my opinion, Dr Sacks’ story remains consistent with his having a book with a limited number of “large” primes, e.g. containing at least one 8 and one 10 digit prime. In re-reading his account, I see nothing that contradicts this.

Sacks did not say he verified the 8, 9 or 10 digit primes offered by the twins, only that the twins responded to them as they did with 6 digit primes. He did verify their 6 digit responses as primes.

So, although Yamaguchi’s (2006) observations are of interest, I do not think they detract from Sack’s original account. Rather, they highlight his ingenious observations and technique used to extract a general conceptual story from limited available information. This is an example of science at the frontier, requiring daring to advance new interpretations of partial data.

Savants, like the autistic twins discussed by Sacks (1985), are provocative exceptions to our understanding of intellectual ability. They can’t tell us how they perform feats like recognising primes. How do they do it?

One view argues that savants acquire their skills like any normal person, through repetitive practice. The idea is that brain damage fuels obsessional interest and the capacity for pathological concentration (Howe, 1989). But this explanation does not fit well with the fact that savant skills can sometimes emerge ‘spontaneously’ (Treffert, 2000; Miller, Boone, Cummings, Mishkin, & Read, 2000; Miller et al., 1998) and do not improve qualitatively with time, even though the skill might become better articulated (O’Connor, 1989). Nor does it explain why savants coincidentally possess the same peculiar skills across cultures.

At the other extreme, we have argued that savant skills are a form of mimicry, requiring little or no practice (Snyder & Mitchell, 1999). Savants simply tap into information and mental machinery that resides equally in us all but cannot normally be accessed. For example, our brains possess algorithms for calculating the shape of an object from subtle shading across its surface or perspective from gradient. We are not normally conscious of this, for otherwise we would all be able to draw without training. But brain impairment enables savants to have privileged access to this raw, lower level, sensory information before it is packaged into holistic concepts or meaningful labels (Snyder & Mitchell, 1999; Snyder, Bossomaier, & Mitchell, 2004). Interestingly, such access has been artificially induced in healthy, normal people by directing low frequency repetitive transcranial magnetic stimulation (rTMS) to the left anterior temporal lobe (Snyder et al., 2003; Young, Morrell, & Ridling, 2004), a site implicated in the savant condition (Miller et al., 1988).

This same procedure has recently been found to improve the ability of healthy normal participants to accurately guess the number (say 100) of discrete elements distributed randomly (Snyder, Bahramali, Hawker, & Mitchell, 2006).

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Curiously, Sacks (1985) reported that the autistic twins correctly guessed the number (“111”) of match-sticks that had just fallen on the floor, consistent with earlier observations of autistic savants (see Treffert, 2000).

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