

Autism: Common, heritable, but not harmful

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Abstract: We assert that one of the examples used by Keller & Miller (K&M), namely, autism, is indeed common, and heritable, but we question whether it is harmful. We provide a brief review of cognitive science literature in which autistics perform superiorly to non-autistics in perceptual, reasoning, and comprehension tasks; however, these superiorities are often occluded and are instead described as dysfunctions.

We appreciate Keller & Miller (K&M) grappling with the age-old evolutionary paradox of why certain human phenotypes are so common, so heritable, but so harmful. In their treatise, K&M provide several examples of what they refer to as mental disorders, clumping together numerous phenomena, including schizophrenia, bipolar disorder, depression, phobias, panic disorders, Tourette's syndrome, obsessive-compulsive disorder, low intelligence, anorexia, and autism. We – a cognitive scientist, a research psychiatrist, and an autistic (who conducts cognitive science research) – are most interested

in K&M's inclusion of autism. Therefore, we restrict ourselves to that exemplar, agreeing that autism is common and heritable but questioning whether autism is harmful.

Autism is definitely a common phenotype – even more common than K&M report. Current prevalence estimates are 200 per 100,000 for DSM-IV (American Psychiatric Association 1994) defined “autistic disorder” and around 600 per 100,000 for the entire autism “spectrum” (Chakrabarti & Fombonne 2005). A rash of public attention has spotlighted what are considered dramatic recent increases in autism prevalence, but our most reasoned logic suggests that the increases are due to purposely broadened diagnostic criteria, yoked with dramatically raised public awareness and conscientiously improved case finding (Gernsbacher et al. 2005). And when some lay spokespersons mistakenly suggest that autism first appeared in society only in the 1940s (Kennedy 2005), they are confusing the codification of the phenotype with its onset (see Frith [1989] for a convincing, albeit speculative, history of autism in society).

Autism is also a highly heritable phenotype, based on estimates from twin studies and sibling-recurrence rates. However, the existing heritability estimates warrant caution in interpretation. The twin-based estimates are derived from only a handful of studies, which are based on only a few handfuls of twins, and estimating sibling recurrence requires a reliable population prevalence rate.

But is autism a “harmful” phenotype? Primarily, K&M employ an evolutionary connotation of *harmful*, namely, lowered fitness (i.e., reduced fertility rates). Perhaps any extreme phenotypes will be less reproductively fit, be it the low levels of intelligence that K&M include as an example or the extremely high levels of intelligence found in adults identified during adolescence by their academic precocity

(Lubinski et al. 2006). Certain cognitive phenotypes might also lead to lowered fitness. The prolific inventor Nikola Tesla, who is reported to have been celebrate and whose life history reveals numerous autistic traits proclaimed:

"I do not think there is any thrill that can go through the human heart like that felt by the inventor as he sees some creation of the brain unfolding to success.... Such emotions make a man forget food, sleep, friends, love, everything.... I do not think you can name many great inventions that have been made by married men." (Pickover 1999, p. 35)

K&M also verge into the more vernacular meaning of "harmful." They refer to mental disorders as "harmful dysfunctions" (sect. 1.2, para. 2), which are "disabling" and "debilitating" (sect. 1, para. 2), which cause "human suffering" (sect. 1.1, para. 4), and which are "disastrous to survival" (sect. 1.2, para. 6). K&M view "mental disorders" such as autism as "glaring exceptions" to the "awesome power of natural selection" (sect. 2, para. 1.).

However, whereas K&M assert that Darwinian psychiatrists and evolutionary psychologists "often go to torturous lengths to find hidden adaptive benefits" (sect. 1.1, para. 3), we assert that cognitive scientists often go to torturous lengths to occlude obvious adaptive benefits. The empirical literature is replete with demonstrations of autistics' superiority in numerous perceptual, reasoning, and comprehension tasks: Across a wide range of age and measured intelligence, autistics perform significantly better than non-autistics on block design, a prominent subtest of Chrysler-type scales (Shah & Frith 1993); on embedded figure tests, which require rapid visual identification of a target figure amid a complex background (Shah & Frith 1983); on recognition memory (Toichi et al. 2002); and on sentence comprehension (Just et al. 2004); and autistics are more impervious than are non-autistics to memory distortions (Beverdors et al. 2000) and misleading prior context (Ropar & Mitchell 2002). Such superiorities are not isolated phenomena; some

theorists argue that such superiorities abound in autism (Motttron et al. 2006).

Quite compellingly, each of these statistically significant demonstrations of autistic superiority is labeled by its authors as a harmful dysfunction. Autistics' superior block-design performance is labeled "weak central coherence," symptomatic of dysfunctional "information processing in autism" (Shah & Frith 1993, p. 1351). Autistics superior performance on embedded figure tests is considered "consistent with the cognitive-deficit theory proposed by Hermelin and O'Connor (1970) ... due to a central deficiency in information processing" (Shah & Frith 1983, p. 618). Autistics' superior recognition memory performance is attributed to deleteriously "enhanced attention to shallow aspects of perceived materials" (Toichi et al. 2002, p. 1424); their superior sentence comprehension is described as being "less proficient at semantically and syntactically integrating the words of a sentence" (Just et al. 2004, p. 1816); their superior imperviousness to memory distortions is explained by "representations in the semantic network [that] may be associated in an aberrant manner" (Beverdors et al. 2000, p. 8736); and their superior resistance to misleading prior context is attributed to their perception being "less conceptual" (Ropar & Mitchell 2002, p. 652).

Disorders are defined by criteria that vary with cultural, societal, and medical values. As K&M write:

"Mental disorder categories may reflect a mix of historical convention, diagnostic convenience, innate categorization biases in person perception, and common final pathways of partially overlapping yet distinct dysfunctions. This suggests that the number of loci affecting a mental disorder depends in large part on the way human minds categorized behavioral symptoms." (target article, sect. 6.5, para. 6; emphasis in original)

We couldn't agree more. As autistic Suzanne Shaw opines:

“People say that in the world of the blind the one-eyed man is king, but I think they are mistaken. In the world of the blind the one-eyed man would be a freak, and his eye might even disable rather than enable him. Eyes are wonderful things to be sure, but they are only useful in a society that is build to require them.” (<http://www.as-if.org.uk/discrim.html>)

We would add that they are only useful in a society that is open to appreciating them.