Public Understanding of Neuroscience

Key points from a review of the literature

Public interest

- Compelling images of the brain and the apparent ability to 'see thoughts' have aroused interest from the public and the commercial sector[1].
- Brain-related research topics with implications for everyday life, such as memory and emotion, elicit more public interest than do topics such as brain diseases and therapies [2].

What the public knows/believes

- Brain research offers knowledge that can be applied to improve life quality [3].
- The mind is a product of the brain [4].
- The brain can be compared to a computer [5].

Mistaken beliefs about memory and the brain

- Many "neuromyths" are accepted by the general public and by K-12 educators. Educators with more general knowledge about the brain are *more* likely to believe in neuromyths.[6]
- In general, the public[7]
    - fails to associate learning to modifications in the brain, more specifically in its connections
    - fails to acknowledge the existence of different types of memory
    - believes that we use only 10% of our brain
    - thinks that "human memory works like a video camera, accurately recording the events we see and hear so that we can review and inspect them later"

Neuroscience in the media

- Neuroscience is among several scientific disciplines that are particularly prone to misinformation and inaccurate reporting.[8] Neuroimaging metaphors seem to favor oversimplification.[9]
- Coverage of neuroimaging technologies in the mass media is mostly positive[10,11].
    - Few articles address limitations or societal/ethical implications.
    - Articles particularly likely to have positive viewpoints included those on marketing (77%), biosecurity (57%) and employment (60%), whereas articles on lie detection were most likely to have a neutral or skeptical view point (74%).
    - Many (41%) of media articles gave little or no technical detail of the neuroimaging methods; this was particularly notable in articles on marketing (77%) and diagnosis (73%).[12]

- Three major themes[13] are present in media coverage:
    - The brain as capital, a resource to be optimized
    - The brain as an index of difference, using neuroscience to delineate boundaries between categories of people
    - Brain research as biological proof of the legitimacy of particular phenomena or beliefs

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[1] Judy Illes et al., "Neurotalk: Improving the Communication of Neuroscience Research," *Nature Reviews Neuroscience* 11, no. 1 (2010): 61–69.
[2] Suzana Herculano-Houzel, "What Does the Public Want to Know about the Brain?," *Nature Neuroscience* 6, no. 4 (2003): 325–325.
[3] Suzana Herculano-Houzel, "Do You Know Your Brain? A Survey on Public Neuroscience Literacy at the Closing of the Decade of the Brain," *The Neuroscientist* 8, no. 2 (2002): 98–110.
[4] Ibid.
[5] Alessandra Sperduti et al., "'Do Octopuses Have a Brain?' Knowledge, Perceptions and Attitudes towards Neuroscience at School," ed. Frank Krueger, *PLoS ONE* 7, no. 10 (October 17, 2012): e47943, doi:10.1371/journal.pone.0047943.
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[7] Ibid.
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[9] Eric Racine et al., "Contemporary Neuroscience in the Media," *Social Science & Medicine* 71, no. 4 (August 2010): 725–33, doi:10.1016/j.socscimed.2010.05.017.
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[13] Cliodhna O'Connor, Geraint Rees, and Helene Joffe, "Neuroscience in the Public Sphere," *Neuron* 74, no. 2 (April 2012): 220–26, doi:10.1016/j.neuron.2012.04.004.

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