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### **Autistic language abnormality: Is it a second-order context learning defect? – The view from Latent Semantic Analysis.**

Laudauer and Dumais in *Psychological Review* (1997) proposed a computer simulation of word meaning acquisition called Latent Semantic Analysis (LSA). This showed that the learning of word meanings by children depended upon second-order (indirect) context associations rather than first-order (direct) ones. However, if normal language depends upon second-order context associations then neurological-based mental handicaps should exist in which they are impaired. Such afflicted individuals should show first-order dependent -- and so profoundly abnormal -- notions of word meanings. Such a deficit only appears to be found in one condition: autism. Kanner (1946) noted that autistic children in language learning relied upon direct associations. For example, a child that had heard the phrase, 'Peter eater' when a saucepan dropped ever afterwards made a direct link between the two so that 'Peter eater' meant 'saucepans'. Frith and Happe (1994, p. 98) likewise note autistic people "use single words in a simple, associative way, so that 'Apple' always means 'Give me apple'. According to Happe there is "an autistic impairment in extracting meaning in context" (Happe, 1997). I review autistic language abnormality as what happens when a child attempts to learn word meanings without the aid of second-order context. This conjecture is testable since LSA is a computational simulation model and so can be 'lesioned'. Interestingly, underneath LSA is a general account of second-order context information processing that might be potentially used in many cognitive and other domains. This raises the possibility that autism might have links to a general deficit in second-order context information processing.

#### References

- Frith, U. & Happe, F. (1994). Language and communication in autistic disorders. *Philosophical Transactions of the Royal Society, London B.* 346, 97-104.
- Happe, F. G. (1997). Central coherence and theory of mind in autism: Reading homographs in context. *British Journal of Developmental Psychology.*
- Kanner, L. (1946). Irrelevant and metaphorical language in early infantile autism. *American Journal of Psychiatry*, 103, 242-246.
- Landauer, Th. K., & Dumais S. T. (1997). A solution to Plato's problem: The latent semantic analysis theory of acquisition, induction, and representation of knowledge, *Psychological Review*, 104, 211-240. available at <http://superbook.bellcore.com/~std/papers/PSYCHREV96.html>