# The Role of Cheese in the Acquisition of Abstract Lexical Items

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A series of recent articles (Wallace & Gromit 1999, 2000, and Gromit 1998) have made the strong claim that the kind of cheese consumed by infants can affect the rate at which they acquire abstract words like "sincerity" and "happiness". In particular, they have claimed that feeding children hard cheeses such as Cheddar and Parmesan correlates directly with increased speed of acquisition of abstract words. By contrast, they claim, soft cheeses such as Brie and Cream Cheese, help in the acquisition of more concrete lexical items – count nouns (apples, trees, bunnies being typical examples). This proposal is not without its detractors; McGraw (2001) has argued that precisely the reverse correlation holds true: Proper hard English cheeses like Cheddar correspond to proper hard English notions like count nouns, soft *European* cheeses like Brie and Camembert only lead to soft European notions like abstract "happiness". In response to both these positions, Shaun (2002) claims that the kind of cheese eaten by children has no affect on lexical acquisition. Shaun presents a series of experiments that show the "Jelly effect": He shows that the amount of sugar consumed by a child directly influences their language acquisition, cheese playing no role whatsoever. In this short paper, I will survey the arguments in favor of each of these positions, and conclude that the "Cheese Effect" on child language acquisition may be epiphenomenal, and is perhaps really due to the quantity of sugar found in soft cheeses as compared to hard ones.

The Cheese Effect was first noted in a series of experiments by Wallace and Gromit

and their team of researchers in England (Wallace & Gromit 1999, and Gromit 1998). In a series of controlled experiments, young infants (1-2 years old) were fed exclusively either hard cheeses or soft cheeses. The children were then exposed to a monotonous computer generated voice which randomly uttered terms from two lists: a list of abstract terms , and a list of concrete count nouns. The children were then closely observed. If the children burped during the utterance of a word, then they were assumed to have acquired its meaning. A correlation between burping and cheese hardness was observed. Children fed hard cheeses burped 50.5% of the time when exposed to abstract terms. By contrast, those children fed only soft cheeses, burped only 49.5 percent of the time when exposed to abstract terms. This is summarized in the following bar chart:

Wallace and Gromit claim that this spiffy graph clearly shows an effect, as the left hand column is much taller than the one on the right.

In a follow-up article (Wallace and Gromit 2000), these authors show that it is not the actual consistency of the cheese that is the guiding factor in determining acquisition. Instead it is the type of cheese. In this experiment, the researchers ground up hard cheeses and mixed them with milk so they were soft, they also took soft cheeses like Brie and left them out for a week or two until they got hard and crusty. The 2 year old children in this experiment still seemed to exhibit the cheese effect, those fed the ground up hard cheeses were still better at burping when they heard abstract terms than when they heard concrete nouns (50.1% of the time). Similarly, children fed dried hard crusty brie, still did worse at identifying abstract nouns at 48.2%. However, as Wallace and Gromit themselves note, most of these children had tummy sickness (from the moldy cheese), so this result may be

suspect.

In a strongly worded reply to Wallace & Gromit's work, Feathers McGraw (2001) claims that these authors' methodology is terribly flawed. He claims that it is gurgling, not burping, that is the key to identifying whether or not a child has acquired the meaning of a term. McGraw uses two methodologies to support his analysis. First, he conducts a controlled experiment like Wallace & Gromit's using gurgling instead of burping. He found that soft cheese eaters do slightly better (50% vs. 49.9%) at abstract noun gurgling than hard cheese eaters. McGraw also does a survey of children around the world, he groups the children into three categories based upon their country of origin:

*Hard Cheese Countries*:
England: (Cheddar)
Holland: (Gouda)

*Soft Cheese Countries:*
France (Brie, Camembert)
Switzerland (Cheese fondue)

*Mix of Soft and Hard Cheese Countries*
Italy (soft: Mozzarella, hard: parmesian)
USA (soft: cottage cheese, hard: American Cheese)

I would like to note that, in my opinion, this classification is quite arbitrary. I am not convinced that American Cheese is hard, but Brie is soft. The criteria for assigning these cheeses to these categories are obscure, and do not seem to be motivated by any empirical evidence. Consider for example, the characterization of Fondue as soft. While it is true that Fondue is soft, it is actually made from melted hard cheeses.

These objections aside, McGraw -- somewhat subjectively-- observes that Hard Cheese countries are a filled with hard-nosed down to earth concrete people, soft cheese countries, are filled with what he calls "spacy incoherent poets". Results from the mixed

cheese countries were, unsurprisingly, mixed. McGraw characterizes Italians as either down to earth Mafiosi or dreamy lovers. Needless to say, these characterizations are based on totally unsubstantiated stereotypes. With respect to the American children, McGraw observes that neither burping nor gurgling result from the consumption of American processed cheese. Instead, uncontrolled flatulence muddies the results.

It thus seems that neither McGraw's nor Wallace and Gromit's characterization of the cheese effect is accurate. Both are based on dubious results. This is the conclusion reached by Shaun (2003). This author suggests that any significant result actually follows from the Jelly effect. Children who are force-fed large quantities of gooseberry jelly burp *and* gurgle more frequently (52% of the time burping, 53% of the time gurgling) when exposed to abstract terms, no matter what cheese they are fed. He thus concludes that it is sugar that really affects the acquisition of abstract terms. I would add to Shaun's analysis the following observation: soft cheeses often contain more sugar than hard ones, thus perhaps contributing to any observed "cheese effect" (in the sense of Wallace and Gromit, contra McGraw).

In sum, I have presented evidence from a variety sources on the issue of the role of cheese and sugar in the acquisition of abstract lexical items. Wallace and Gromit present some results (which may be statistically inconclusive) on the basis of burping that point towards a correlation between hard cheese and abstract lexical items. McGraw presents contradictory evidence, using gurgling and farting surveys and experiments to show that hard cheese correlates to abstract lexical items. McGraw's results are suspect on a number of levels including gross stereotyping and arbitrary classification of cheeses. I follow Shaun, in concluding that neither set of results is conclusive, both suffering from serious

experimental and theoretical flaws. Instead, Shaun shows that it may be sugar (the so-called "Jelly effect") that is the true correlate for increased acquisition of abstract lexical items.

References:

Gromit (1998) "Woof". *Journal of Curdology* 98.1: 1-998.

McGraw, Feathers (2001) "No, I am *not* a penguin". *Time magazine* March 21, 2001 issue: 5-10.

Shaun the Sheep (2002) "Jelly and Wool: a tasty combo" *Journal of Language and Yogurt* 29.3: 78-102.

Simpson, Bart (2003) "Butterfingers, Jam, and Butter, DOH!" *American Journal for Hyperactive Children* 52:67-92.

Wallace & Gromit (1999) "Please! Don't sneeze on the Cheese!" *Journal of child Language and Yogurt* 27.1: 21-22.

Wallace & Gromit (2000) "Spread it or cut it: the cheese effect on children". in Boyardee, Chef (editor), *An Epicurean's guide to Cheese Stores*. Cambridge: No Pants Press.