

## **The MMR vaccination debate – Analysis through the Schwarz and Thompson framework**

Kate Ho  
MSc Technology Management  
Coursework for Technology Assessment and Evaluation

### **Introduction**

The measles, mumps and rubella (MMR) vaccination was first introduced in the UK in 1988 [1]. Since then, cases of measles, mumps and rubella has steadily declined to very low rates [2]. Prior to its UK introduction, MMR has been in regular use in the US since 1972 and Scandinavia since 1982 [3] plus a number of European countries have adopted its usage. The wealth of experience that exists globally suggest that MMR is the best way to immunise children against these diseases. However, in 1998, Dr Andrew Wakefield published a paper linking the MMR injection with autism [4]. It caused public outcry which demanded the government to rethink its strategy to giving single vaccinations instead of the triple version. The debate between the risk of the MMR vaccination is still visible. Vaccinations of MMR has fallen to the rate of 82% - the lowest figure since 1989 [5].

This essay is split into three sections. First, we will explain the dynamics of the debate itself. Then we introduce the principles of the Schwartz and Thompson framework (STF), before mapping the different views in the debate onto the framework. We conclude with a discussion of whether the framework has helped us to understand the different perceptions within the debate.

### **The main debate – the risk involved**

In this section, we will give the background to the debate itself. In essence, we try to answer the questions of “What is autism?”, “What is the link between MMR and Autism?” and “What are the choices involved?”

#### **What is the central risk associated with the debate?**

The central risk is that the MMR vaccination could cause autism. The risk was first raised in 1998 following recommendations from Wakefield’s paper [4] on the use of single vaccinations over MMR. Whilst Wakefield’s paper is the most publicised study, several other studies have been conducted which agree with the risk [6]. The most recent claim is in an unpublished study by Paul Shattock suggesting that MMR could be “causing 1 in 10 cases of autism” [7].

#### **What is autism?**

Autism is a terminal and incurable disease. There was a rise in autism during the late 1980s but numbers has since levelled out throughout the 1990s. A formal definition is given as follows:

“Autism is a complex developmental disability that typically appears during the first three years of life. [...] Autism impacts the normal development of the brain in the

areas of social interaction and communication skills. Children and adults with autism typically have difficulties in verbal and non-verbal communication, social interactions, and leisure or play activities. “

Helping Autistics Realize Themselves (HART) [8]

### **What is the link between MMR and Autism?**

If there exists a link, then it is most likely to be caused by the measles part of the vaccine causing a reaction within certain children. Singh and Jensen[9] have published a paper which directly prove that the measles antibody levels were significantly greater within autistic children. Meanwhile the mumps and rubella antibodies remain the same. In addition, they also found an “unusual” protein linked with measles within the autistic children. They conclude that in some cases, the vaccine could cause an abnormal response within children’s immune systems.[10]

### **What are choices involved?**

There are three choices for the parents. The first is to use the MMR vaccinations, the first one at 15 months old and the booster vaccination at 3 years old. The second is to use single vaccinations for each measles, mumps and rubella. However, they have to be administered months or even years apart. This would also result in 6 vaccinations – which might be very distressing for the child. The third option would be not to vaccinate children at all.

### **Basic Facts and Figures**

- MMR is used in over 90 countries, and more than 500 million doses have been given. [11]
- No country recommends single rather than combined vaccines. [11]
- In America, children are only allowed to attend school if they have had their vaccinations, including MMR. There is a 99% uptake in the US by school entry. [11]
- More recent research suggested that the apparent rise, which occurred through the 1980s before MMR was introduced and levelled off between 1992 and 1996, was, in fact, down to better and earlier diagnoses. [12]
- MMR immunisation rates have now fallen to as little as 60% in some areas, and 84% nationally.[13]

### **Brief overview of the Schwarz and Thompson framework**

The Schwarz and Thompson framework {Schwarz, 1990 #18} combines the four myths of nature with the typology of social relationships developed by Mary Douglas. The framework presents four different views that attempt to explain the different ways groups and individuals assess the risk that certain technologies contain. These views are:

- **Fatalist (individualized and external restrictions on choice).** The fatalist views the world as completely random. Instead of attempting to learn, understand or control the external world, they see it as just something they have to cope with.

- **Individualist (individualized and no external restrictions).** The individualist's main aim is to "make money". They are willing to exploit natural resources if they view it as an opportunity to make a speedy or considerable profit. Most characterised by the manner in which they attempt to control the world and others around them.
- **Hierarchist (collectivized and external restrictions).** The typical hierarchists are multi-national companies. These companies attempt to balance risk with the technologies involved. There are risks associated with each technology, and boundaries to which risks and what are acceptable limits of these risks, but once these boundaries are set, the hierarchist would argue that they can do anything it desires within those limits.
- **Egalitarian (collectivized and no external restrictions).** The egalitarian views the world as a fragile environment. Rather than encouraging innovation, it questions why technology is needed at all. They argue that the smallest knock to the natural world could cause destruction.

### Debate – can it be understood through Schwarz and Thompson?

#### Identifying the four perceptions

The simplicity of this debate is simple. Either give the child the MMR vaccination or not. Unlike other controversial technologies such as mobile phones, the risk is either present or not and there is no in-between (they cannot be *slightly* at risk). Which makes the debate into rather heavy two-sided affair.

After the BBC programme Panorama was broadcast on 3<sup>rd</sup> Feb 2002 on the debate of MMR, a number of correspondence flooded onto the BBC website (<http://www.bbc.co.uk>). As a result, a selection of views was published and these views from sixty different members of the public shall form the basis of our analysis of the debate through the framework. We will take the views available and attempt to map them onto the framework in order to demonstrate its suitability in relation to this debate<sup>1</sup>.

#### *Egalitarian*

In one view, certain scientists view the risk – no matter how small – unacceptable to take. They are seen as the **egalitarians** of the debate. One advantage of the Schwarz and Thompson framework is that it is seen as a map rather than four separate categories, therefore, we can identify those closer to the middle in the framework as having weaker – more diluted – versions of the same view. The weaker type of egalitarians state that if there is a possibility of the smallest link, should result in a ban of MMR until such time that it can be proven to be completely safe. The more extreme type processes the view of a ban in vaccination itself. These extremists call into question the need of childhood vaccinations.

---

<sup>1</sup> Note that we recognise that the views may be biased towards the content of the programme. Also some of the views do not have much scientific grounding. However, public perception of the risk is more of interest to analyse since ultimately, they will determine (en masse) whether the MMR vaccination remains in use.

“The success of vaccination is based entirely on assumption. Improved sanitation and hygiene, housing, better nutrition and isolation procedures have occurred coincidentally at the same time that vaccines have been introduced.” [6]

“Saying that "there is no evidence to link MMR with autism" is not the same as saying "there's evidence that MMR is not linked to autism" There is no evidence until there is evidence and then it is too late.” Roy Silcock [14]

“...in medical science it is very difficult to prove anything, many things are discovered many years later- we should not compromise the safety of individuals whether they be children or adults for the sake of politics.” Ann Shillam [14]

They argue that the government uses MMR as a “quick fix” instead of considering separating vaccinations into later stage vaccinations:

“Surely it is only necessary for small children to be immunised against measles. As I understand it, mumps is only dangerous for boys past the age of puberty, so why could boys not be vaccinated at school at the age of, say, nine. Rubella is not a serious childhood disease and only dangerous for the unborn child, so girls could be vaccinated, say, when they start secondary school. I realise that the government probably wants blanket vaccination to wipe out the disease, but in the face of growing concern and controversy, and diminishing uptake of the triple vaccination, surely it would be better for the government to rethink whether blanket vaccination is desirable - you cannot remove all risk from life.” Nicola Chambury, Crathes, Banchory [14]

### *Individualist*

In the other view, the producers of the vaccines claim that the risks are minimal and that the link between MMR and autism is non-existent. They are the **individualists** of the debate. We identify them with the view that the MMR vaccination will help humanity and eradicate three fatal diseases. The purest (and extremist) would be those who identify that MMR as minimal risk, with no objections to the vaccine:

“There is overwhelming evidence of the safety of the combined MMR vaccine. No study has shown a link between MMR vaccine and autism and bowel disease, whereas a number have produced evidence that there is no link.” *David Elliman, Consultant, St George's Hospital* [14]

However, they also argue that no vaccine is perfect and risks are always involved:

“No vaccine is 100% effective and 100% safe. A few vaccinated children fail to become immune, and a few develop side effects. Most often, the side effects are minor, such as pain at the injection site, an itchy rash, or a mild fever. Very rarely, there are more serious problems.” Merck and Co[15]

Rather surprisingly, it seems there is a timid response from MMR producers on this debate. Instead of active campaigns, they have taken a rather lax approach on this debate. They know there are flaws in vaccines and whilst the risks are low, perhaps to protect their corporate image, they have opted to remain out of the spotlight. With the British media ready to criticise anyone even hinting the possibility accepting of the risk that some children will turn autistic, for any company to do so would be suicidal. Another explanation is that the government's active campaign provides enough information for vaccine producers not to take an active role in the education of the view.

### *Hierarchist*

The **hierarchist** in this debate is the government. They are about balancing regulation and calculated risk. The government has to balance the risk of the autism with other factors. The government's main role in this has to be the setting of acceptable boundaries in the risk. In other words, *what percentage (if the risk exists) of children is it acceptable to turn autistic whilst the rest are immunised?* This, similar to the MMR producers would be far too controversial to disclose in public. However, it is the task they have to set.

The government's second role is to convince the public that MMR is safe and there are no "hidden agendas" such as with vCJD. They possess the view that despite the risk in using MMR, the risk is so small that they are within their "boundaries". Three main factors form their argument. These are costs, adoption rate and health of the nation.

In regards to costs, single vaccinations cost more than MMR. To give parents the choice of single vaccines and MMR would increase the vaccination costs considerably. They argue that if parents wish to have single vaccinations, they can do so privately. This tactic is used to force those reliant on the NHS to take up MMR. The adoption rate would be higher with MMR since single vaccinations require six injections instead of two (in MMR). The percentage of parents who would fulfil the full course of vaccination is, in the government's view, smaller than with MMR. The government argue that the risk in an epidemic of measles, mumps and rubella – which can be fatal far outweighs any risk between autism and MMR:

"Very rarely, children can have severe allergic reactions straight after any immunisation (about 1 in 100,000 immunisations for MMR)." [16]

"Road transport crashes are perceptible risks, the low risk of vCJD is an expert assessment, and the link between autism and MMR is, if anything, virtual." [17]

### *Fatalist*

Finally, we arrive at the **fatalists**. In this debate, the next quote demonstrates exactly what their viewpoint is:

"...it would appear to me that these children may have an inherited genetic viral profile that predisposes them to these reactions." **Nuno Bento, Windlesham**[14]

Meaning that the link between MMR and autism is genetic. Therefore, the problem remains if the single vaccination of measles is taken too. Which results in the paradoxical problem of giving the children a vaccination they might develop autism, and by not doing so, they might die from measles. As a result, the debate, in their point of view, is useless. Whatever happens, will.

They simply accept the situation. Very little opinion has been publicized from them due to their apathetic nature. Plus, very simply, they do not have much of an argument to make.

## **Result of analysis**

The framework presents the four differing views of the different companies, scientists and the government within the debate. This acts as our basic understanding of the conflicting evidence that parents are presented with when immunising their child. Each parent will align themselves if one or more of these perceptions. They could be slightly biased towards one over another, or have equally strong alignment with the four perceptions. However, depending on what view they are biased towards, will determine the choice in their child's vaccination strategy (i.e. give their child MMR, single vaccinations or none at all).

## **How appropriate is the framework?**

Overall, the Schwarz and Thompson framework is appropriate to this debate because the four different views can be identified relatively easily.

First and foremost, even through the simple process of analysing the debate, we can distil the views within the debate. By doing so, we can have a starting point in rationally understanding the differing ways in which risks can be perceived. Especially in a complicated debate with many factors such as this one, we can begin to map out the assumptions of each risk perception and begin the process of validating them sequentially. For example, to continue on the analysis, we would question the validity of the evidence in the egalitarian's perception, the boundaries set in the hierarchist's perception and the safeness of MMR in the individualist's perception.

It also helps us to identify the stakeholders involved in the debate. It is essential we identify who and what part they play in order to help us to understand where the perception of risk stems from. It is only then that we can begin to manage it. Within this debate, it is easily identifiable that the two opposing views are between the egalitarians and the hierarchists. Therefore, by studying the arguments between the two – i.e. the significant of the evidence proposed in research on the link between MMR and autism – we can see where the conflict stems from.

We can also use the framework as map in discussing the varying degrees of risk perception. We demonstrated earlier in the discussion of the idea of strong and weak egalitarians. In addition, we can see how the same evidence/statistic are twisted in order to fit different perceptions of risk e.g. Wakefield's study in relation to egalitarians and hierarchists. The framework also helped us to understand which view was the most popular - the hierarchist – since the most views on the BBC website represented this.

Despite the general usefulness of the framework, there are some drawbacks. During the analysis, whilst we tacitly know what the most popular opinion is, however, there is no way of explicitly plotting the most popular view. We can then analyse the changing shift in risk perception. If we use the analogy of the framework as a map, the need to plot which country (which might be slightly bias towards one perception over another) is the most popular – i.e. we could potentially link the opinion figures in

the framework to the number of immunisation figures and hence see which assumptions were most influential in the backing of the MMR campaign.

The second disadvantage is that whilst we can gather evidence for each of the views, there is no way of distinguishing between which one should have more weight than the others – i.e. which is more anecdotal and which is more proven.

## **Conclusion**

In this essay, we provided the background to the debate involved, presented the Schwarz and Thompson framework plus analysed the MMR debate through the framework. The framework allows us to map out four differing views; egalitarian – *“we should stop using MMR even if there is the slight risk of it causing autism”*, individualists – *“the risks associated with MMR is minimal compared to others”*, hierarchists – *“the government is giving us the best option”* and the fatalists – *“the cause might be genetic, so its lose-lose anyway”*.

The Schwarz and Thompson framework can be appropriately applied to this debate and it can be used to help our understanding surrounding the risks involved in MMR. By identifying the four types of players, the ease of which we can to identify the dynamics and power struggle between each one is significantly increased.

The MMR debate has lingered for five years and there still seems to be no solution to the problem. No matter how much the government attempts to reassure the egalitarians, they seem to keep fighting back. From analysing this debate, our views are that the risks posed in MMR are too little to cause a debate of this scale. Indeed, the underlying debate here is not really about the risk, more about choice and external, governmental control over our lives. This problem will always present itself in any other controversial technology.

## References

1. Health, D.o., *Measles, Mumps and Rubella Vaccine (MMR)*. 2003.
2. Health Education Board of Scotland, *Has MMR made a difference?*, in *The MMR discussion Pack*. 2001: Edinburgh.
3. McTaggart, L., *The MMR Debate: Expert vs Expert*. 1998.
4. Wakefield, A.J., et al., *Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children*. *The Lancet*, 1998. **351**(9103): p. 637-641.
5. BBCNews, *MMR uptake falls to record low*. 2003.
6. McTaggart, L., *Debate: The case AGAINST immunisation*. 2003.
7. Meikle, J., *MMR "may cause 1 in 10 cases of autism"*, in *The Guardian*. 2002.
8. HART, *Basic information on autism*.
9. Singh, V. and R. Jensen, *Elevated levels of measles antibodies in children with autism*. *Pediatric Neurology*, 2002. **28**(4).
10. Boseley, S., *New study suggests MMR link with autism*, in *The Guardian*. 2002.
11. BUPA Health Information Team, *MMR vaccination - why have it?* 2002.
12. Meikle, J., *Facts and figures*, in *The Guardian*. 2003.
13. Goldacre, B., *Never mind the facts*, in *The Guardian*. 2003.
14. Misc, *Your comments on MMR: Every Parent's Choice*. 2002.
15. Merck Co., *Vaccinations*. 2003.
16. UK Department of Health, *Measles, Mumps and Rubella Vaccine (MMR)*. 2003.
17. Bellaby, P., *Communication and miscommunication of risk: understanding UK parents' attitudes to combined MMR vaccination*. *BMJ*, 2003. **327**(7417): p. 725-728.

## Appendix A – MMR uptake vs number of cases of MMR

Source: [2]



