

'Hesitant Compliers': Qualitative analysis of concerned fully-vaccinating parents

Authors

Stephanie L. Enkel^{1*}

Katie Attwell^{2,3}

Thomas L. Snelling^{2,4,5}

Hayley E. Christian^{1, 6}

¹ School of Population and Global Health, The University of Western Australia

² Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, The University of Western Australia

³ School of Social Science, The University of Western Australia

⁴ Menzies School of Health Research and Charles Darwin University, Darwin

⁵ Princess Margaret Hospital for Children, Subiaco, Western Australia

⁶ Telethon Kids Institute, The University of Western Australia

*Address for correspondence: Stephanie Enkel, School of Population and Global Health, The University of Western Australia, M707, 35 Stirling Hwy, Crawley, WA 6009. Email: stephanie@enkel.com.au, Telephone: +61 431 714 896

Keywords: Immunisation, Vaccination, Vaccine Hesitancy, Qualitative, Compliance

Abstract

Objective: Some parents are hesitant about vaccines and yet still vaccinate their children. Vaccine behaviours are not fixed and parents who are concerned but nonetheless adherent to standard schedules could switch to an unconventional schedule, delaying or cherry-picking vaccines. There is a need to better understand vaccine hesitancy in specific contexts, acknowledging cultural and geographical variation, to ensure interventions targeting hesitancy are well directed and received.

Methods: To identify the behaviours, knowledge and attitudes of ‘hesitant compliers’ in Perth, Western Australia, nine one-on-one in-depth interviews were conducted with vaccinating parents of children (<5 years) who were identified as being hesitant. Interview transcripts were analysed qualitatively and themes developed inductively, following a constructivist paradigm.

Results: Parents saw vaccination as important for themselves and their community, despite their limited knowledge of vaccine preventable diseases. Parents reported concerns about potential side effects, and worried about the safety of the measles-mumps-rubella (MMR) and seasonal influenza vaccines. Concerned about the role of anti-vaccination information in the community, some sought to isolate themselves from parents who did not vaccinate, although others were concerned that this could entrench non-vaccinators’ behaviours. Parents’ views were all underlaid by two pivotal ‘vaccine-related events’ that had occurred in the community: the severe injury of a baby from seasonal influenza vaccination in 2010, and the death of a baby from whooping cough in 2015.

Conclusions: Parents interpreted pivotal vaccine-related events in the community as requiring them to take personal responsibility for vaccine decisions. Their reports of continued vaccine fears (evident in international studies in recent decades) demonstrate that vaccine scares have long lasting effects. With vaccine rates high and stable, current strategies

appear to have little impact on addressing parental vaccine concerns. Further research is required to determine the prevalence of hesitancy amongst vaccinating parents and identify critical points for intervention.

Introduction

Childhood vaccination provides direct protection while also helping to maintain protection against disease across populations through community immunity [1]. Although most people accept vaccination as necessary, it may cause concern for varied religious, safety or political reasons [2]. In the last decades, community concern about vaccination has grown internationally, with debates about its safety [3] and movements against vaccination maintaining traction in the digital age [4]. This is occurring despite efforts of healthcare providers and policymakers to address parental anxieties both in the clinic and the community, with recent reviews finding a lack of evidence for successful interventions in either setting [5, 6]. Parental perceptions lie along a spectrum [7] with around one quarter of parents categorised as ‘vaccine hesitant’ in international studies [8]. Given that vaccine uptake internationally is high, a significant proportion of parents are accepting all vaccinations for their children despite unease about the vaccination process. [9, 10].

The hesitancy experienced by individuals regarding vaccination can develop over time, and parents can change their minds about vaccinating. A US study of 228 postpartum mothers found that while 29% worried about vaccinating their infants for reasons like safety, poor efficacy and mistrust, 96% nonetheless planned to accept recommended vaccinations [11]. Another US study found that one third of parents currently following alternative vaccine schedules had previously adhered to the standard schedule [12]. This suggests that vaccine behaviours are not fixed, and parents who are concerned but nonetheless adherent to standard

schedules could switch to an unconventional schedule, delaying or cherry-picking vaccines. Consequently, these parents constitute an important target group for health professionals and policymakers seeking to maintain high and stable vaccination coverage rates.

Accordingly, there is a need to better understand vaccine hesitancy in specific contexts, acknowledging cultural and geographical variation, to ensure interventions targeting hesitancy are well directed and received appropriately. This exploratory study fills a research gap with regards to qualitative studies exploring parental vaccine hesitancy in Australia; we only know of one other recent published study [13]. In seeking to provide a better understanding of the cohort of parents who vaccinate despite concerns, we focused on the behaviour, knowledge and attitudes of parents who self-reported compliance with the Australian vaccine schedule despite expressing moderate concerns about childhood vaccinations – so called ‘hesitant compliers’[14]. We conducted this study in Perth, Western Australia (WA), which had recently been impacted upon by two pivotal events – the injury of a baby from seasonal influenza vaccination, and the death of a baby from pertussis disease (whooping cough). At the time of this study, vaccination in Australia was not compulsory but was linked to federal government financial incentives. In Australia, there are seven time points for vaccine delivery from birth to four years, plus an annual seasonal influenza vaccine. The latter is funded in Western Australia for children under five years but is not formally part of the national incentivised childhood vaccination schedule [15].

Methods

To collect and analyse our data exploring the views of hesitant compliers, we employed a qualitative approach theoretically guided by the paradigm of constructivism. Constructivism accepts the idea of multiple realities, recognising that knowledge is generated through the

relationship between the investigator and participant.[16] Accordingly, in-depth semi-structured interviews were employed to facilitate a participant-driven discussion (see Table 1 for guide questions). We recruited parents who fit the study criteria detailed below. The study was approved by The University of Western Australia Human Research Ethics Committee (RA/4/1/7447) and conducted by a trained qualitative researcher under supervision.

Purposive recruitment was conducted through the non-governmental organisation Playgroups WA. Researchers posted study information on the Playgroups WA Facebook page, monthly newsletter, and directly invited 97 playgroup coordinators to disseminate recruitment information. This initial information was framed broadly as seeking the views of parents with a child under 5 years old with regard to vaccination. Parents who responded were then screened via email to ascertain eligibility, based upon a) *currently observing the recommended vaccination schedule for their child/ren*; and b) *reporting concerns or apprehensions about vaccines or the vaccination process*. Previous studies conceptualizing parental vaccine hesitancy have used a range of questions on a range of parents to arrive at classifications of parents as ‘hesitant,’ ‘accepting’ or elsewhere on the continuum [8, 17]. For this study, we sought to capture hesitant parents, thus the screening technique involved utilizing framings of concerns (also doubts, uncertainties, apprehensions) as used in existing quantitative surveys [8, 17]. In addition to meeting the age requirements of the youngest child, participants required English proficiency. All interviews were audio recorded with permission, transcribed verbatim, and analysed thematically using NVivo 10 [18], as per inductive inquiry methods [19]. The first author identified initial themes and coded the data; themes were discussed between co-authors to ensure consistency.

Results

Of the 15 parents who expressed interest in participating, 10 were eligible. Nine were female, 4 also had children aged over 5 years old, and 2 had more than one child under five years. Nine interviews were conducted (one interview with both parents), with recruitment continuing until the research team agreed that data saturation had been achieved.

Six main themes emerged; these built upon the initial question guide but also reflected the agency and direction afforded to participants in the interview process. Hesitant compliers were characterised by their belief in personal and social responsibility; poor knowledge of diseases; their sources and use of vaccination information; their fear of vaccine risks and side effects; their critique of what they called the ‘anti-vaccination movement’ and parents who did not vaccinate; and their belief that vaccination should be a choice.

Personal and Social Responsibility

Overwhelmingly, all parents viewed vaccination as a way of preventing illness in their children. Parents believed that if their child contracted a preventable infection, the ramifications would be worse than any possible vaccination side effect. Recent local media around the death of baby Riley Hughes¹ from whooping cough [20] had put the consequences of vaccine preventable diseases (VPDs) into the public sphere.

“That was the main reason why I do it. For [my child’s] safety... [I]f his generation is vaccinated, then they’re safe.” (*Participant 7*)

¹ Permission to name Riley Hughes in this manuscript was sought from his parents Catherine and Greg Hughes.

The benefits of vaccinating children were thought to outweigh the risks of refusing. While parents were cognisant of vaccine adverse events (e.g., illness, fever, convulsions, death), most reported that VPDs are more probable than vaccine injury.

Most parents also reported that their decision to vaccinate was based on a desire to conform with societal expectations of vaccination. This was in keeping with the strong view of parents that vaccination was a social responsibility, and their acknowledgement of the need for high community vaccination rates to reduce the risk of VPD outbreaks.

“...[Vaccines] are not bullet-proof. If there are enough people who are immunised, then the chances of that kind of thing [VPDs] swooping around the place is lessened.” (*Participant 9*)

Poor Knowledge of Diseases

Despite parents’ support for vaccination, for most their knowledge of vaccines and VPDs seemed limited. They were unable to list symptoms and complications associated with specific VPDs, and in some instances were unaware of the illnesses they were vaccinating against. Several stated that their lack of knowledge was due to the reduced presence of VPDs in the community.

Sources and use of vaccination information

Parents sought to build their knowledge by accessing information about childhood vaccinations from a variety of sources. Those who expressed greater concerns about vaccines were less likely to source information from medical professionals, instead relying on the internet or alternative health providers. Despite all parents having turned to health

professionals for information about childhood vaccination, with mostly positive experiences, many felt that the information they received was not sufficient or too partisan. While the internet was the second most reported source of information about vaccines, most parents who used this medium found it difficult to assess validity, with the information confusing and difficult to understand.

Parents saw scope for more information to be delivered in the form of educational campaigns, and specifically favoured the provision of more information about VPDs. Half felt there was not enough positive information to overcome the damage that the anti-vaccination movement has done with stories like the MMR-autism link and other vaccine ‘scares’.

“[P]erhaps they need to emphasise the side effects [*symptoms and complications*] of the actual diseases...a lot of people just think measles is just an itchy rash and, you know, a bit unwell. They don’t realise how severe it can be. Because, you know, no-one sees it these days, really.” (*Participant 5*)

A number of parents felt it was their personal responsibility to seek more information if they were unhappy with, or concerned about, the vaccination process.

Fear of Vaccine Risks and Side Effects

Despite their strong appreciation of the importance of childhood vaccination and their efforts to inform themselves, all parents displayed elements of apprehension towards vaccination. All reported being predominantly concerned about adverse events, e.g., fever, convulsions, and permanent mental or physical incapacitation. Parents’ apprehensions were higher for newer vaccines and influenza vaccine, which they felt lacked population wide safety

evaluation. Many reported that information sheets detailing rare complications (e.g., convulsions and permanent disability) distributed by providers during the consent process increased their anxiety.

“Every time that needle goes into your child, you’re not sure if your child is going to be the one that has the complication. There is that real fear that that could be your child.” (*Participant 3*)

Parents were more likely to focus on rarer and more serious side effects rather than common and relatively minor complications such as irritability, local inflammation and soreness. As a result, parents reflected that this affected their risk-benefit analyses.

“I get the papers, the information sheets and read them and read the possible outcomes and stuff, and then think – Hell!” (*Participant 9*)

A number of parents expressed apprehension about combined vaccines, perceiving this method of vaccine delivery to overwhelm the immune system, and reporting previous ill health in their children following these vaccinations. Half the parents had specific concerns about the measles-mumps-rubella (MMR) vaccine, despite almost all stating that they were aware that the research linking MMR to autism was fraudulent [21].

“... I know the myth has been debunked many times but the whole autism link. I didn’t delay it but I was very nervous about everything surrounding it.” (*Participant 5*)

The seasonal influenza vaccine was a significant concern for parents. All recalled the episode in 2010 when a number of Australian children had serious adverse reactions to a locally manufactured vaccine, leaving one child with permanent physical and mental disability [22]. Parents stated that they, and others they knew, were still apprehensive about getting the influenza vaccine for their child.

“The Fluvax thing five years ago really hurt...there’s a lot of people still traumatised...” (*Participant 5*)

Despite these concerns, all parents said that adhering to the vaccine schedule was their preferred choice, and that the benefits of preventing illness outweighed any risks. Furthermore, half accepted the recommended and funded seasonal influenza vaccine for their children.

The ‘anti-vaccination movement’ and non-vaccinators

All parents had strong concerns about the ‘anti-vaccination movement’ damaging the public health gains achieved through population-wide vaccination programs. Most were concerned for the children of non-vaccinating parents, whom they felt were let down by their carers.

“...[T]here are children out there that have an opportunity to be protected against vaccine preventable diseases, and through misinformation and through scare campaigns, these parents are not vaccinating.” (*Participant 3*)

Parents were also concerned about the potential impact of falling vaccination rates and weakening of community immunity on their family.

“I’m having another baby; it sounds really bad, but I will just slightly disassociate myself with them [*non-vaccinators*] because I don’t feel comfortable.”

(Participant 7)

Parents also believed that the messages delivered by the anti-vaccination movement were too ‘loud,’ noting their own exposure to “negative” vaccination stories made arguments for the benefits of vaccines difficult to hear.

However, parents were not all convinced that social exclusion of non-vaccinators was a good thing. Some reported experiencing peer pressure to vaccinate that made them reluctant to voice their own concerns in public. Two parents explicitly stated that social exclusion could entrench vaccine rejecters’ deviation from the vaccine schedule by polarising and isolating them.

Vaccination as a choice

Despite their critique of non-vaccinators, participants believed that vaccination should not be compulsory. Many were critical of the (then pending) Australian Government vaccination policy, ‘No Jab, No Pay,’ which withdrew childcare subsidies and financial assistance from registered conscientious objectors [23]. Parents commented that the policy was too coercive and that the Government needed to consider alternative supportive options for parental decision-making. Furthermore, a number felt the current system was too inflexible in not allowing any deviation from the vaccine schedule, given that in some cases an adverse reaction in a sibling drove parents to pursue varying the timing and delivery of vaccines.

“I think we’re a choice society, where people want to make choices. And that would be another way of advertising: you have two choices to vaccinate your kids. You can vaccinate them all at once or you can vaccinate them a bit at a time. And that gives some people, oh, I have a say in this, I have a choice, I’ve got some control in this.” (*Participant 4*)

Discussion

The desire of hesitant compliers in this study to prevent illness in their children was the primary motivator for adhering to the standard vaccine schedule. By their own accounts, parents’ reduced exposure to VPDs meant that they had a reduced understanding of their nature and severity. These findings are consistent with research showing that hesitant parents frequently fail to recognise the need for vaccines for their children [24, 25]. Nevertheless, even though parents in this study had poor knowledge, they were still highly concerned about VPDs and perceived them to be severe. Future public health campaigns could highlight the severity of VPDs and the particular susceptibility of children, while better presenting the rare but potential risks of vaccines. However, this should be pursued with caution as ‘scare campaigns’ can result in increased rejection [26].

Participants felt that their decision to vaccinate was as much for the community as it was for the wellbeing of their children. This is in line with an international review finding that protecting the community was a non-trivial factor in parental decisions to vaccinate [27]. Parents in our study felt it unfair that anti-vaccinators can simply use community immunity for protection, a sentiment captured in previous studies [28-30]. Yet among our parents, this sentiment extended to action, specifically driven by the well-publicised death of a Perth baby from whooping cough [20]. The death brought home to parents their vulnerability to infection

in their own homes through unvaccinated visitors; as a result, many stated that they would be prepared to isolate non-vaccinating families for the health of their own children. However, they believed that government policies withdrawing eligibility for financial assistance to vaccine refusers were overly coercive. Further research is required to determine whether such policies are acceptable in the eyes of the public. Given the current uncertainty around this policy strategy [31], alternative methods are needed to increase vaccination uptake [28]. These may include enhanced support for healthcare providers in engaging with hesitant parents, and improving vaccine reminder systems to include motivational cues [7]. Additionally, having parents act as ‘local champions’ to assist with communicating accurate vaccination messages to the community may complement formal healthcare provider directed interventions [32].

While tragic outcomes from vaccine preventable diseases can galvanise parents’ support for vaccination, adverse events from vaccines and the associated media attention can have a countering effect on parents’ perceptions. Participants reported that side effects seemed more ‘real’ after seeing a Perth child injured in 2010 by influenza vaccination. This would augment the ‘worst-case scenario’ thinking that already saw the parents focusing on serious side effects over more common minor ones [33]. Local and social media, peer groups and unreferenced information sources also influenced their apprehensions. Most children of participants in this study were not born at the time of the influenza vaccine scare, but their parents were acutely aware of it through high profile media coverage and discussions with family and friends. If we consider this in light of parents’ fears around MMR – generated almost two decades earlier – the perpetuation of fear and distrust across generations is evident. Local and international vaccine scares have long lasting effects. To address this,

clear, accurate and concise information, backed by quality evidence, must be provided to parents, ideally as early as pregnancy [34].

Parents' exposure to the effects of disease *and* vaccine injuries in these two well-known local cases reinforced a sense that it was their personal responsibility to inform themselves and make appropriate decisions about vaccination. Given that the fears generated by both events could theoretically inspire parents to pursue opposite courses of action, they could not rely on others to resolve this for them. They accepted that they were faced with choices and risks either way, and that their role as parents was to navigate and then act. Interventions to sustain vaccination rates should reflect upon this dominant paradigm of 'neoliberal mothering,' wherein one does not simply follow health professionals' recommendations, but is exhorted to use agency to make responsible decisions [35]. Given our participants' reported fears generated by vaccine consent documents provided prior to immunisation, further attention should also be given to more positive framing in these documents.

Study Limitations

Despite achieving data saturation, this study was limited by a small sample size in a discrete city that may affect the generalisability of our findings to the broader population. Furthermore, although eligibility criteria were included in the recruitment protocol, self-selection bias cannot be discounted. In a repeat of this study we would collect more detailed demographic information on participants to provide context. It was beyond the scope of this study to quantify the prevalence of hesitancy or the beliefs and attitudes discussed.

However, to our knowledge, this is the first study in Australia – and one of the first internationally – aiming to define and inductively understand the views of parents who

comply with the vaccination schedule despite concerns. Future studies should determine the prevalence of vaccine hesitancy in vaccine-complying parents in large representative samples. This will assist to identify times during the vaccine schedule when hesitancy is most likely, thus highlighting critical windows for intervention [15].

Conclusion

This study has highlighted the views of hesitant compliers, an important but under-studied group.⁷ Participants were adherent to the vaccine schedule for personal safety and social responsibility reasons, but had limited understanding of VPDs and were highly concerned about vaccine risks. It is important that these factors – as well as parents’ social milieu and exposure to vaccination and VPD events – are considered when developing interventions aimed at supporting them to continue fully vaccinate their children on par with the relevant schedule.

Table 1: Semi-structured interview question guide

Question	Theme
Do you currently observe the recommended immunisation schedule for your child? What are your reasons for doing this?	Behaviour
Have you ever delayed your child receiving an immunisation? What are your reasons for doing this?	Behaviour
What is the most common information source you turn to for information about vaccines? Why?	Behaviour
Are you comfortable with discussing your vaccination concerns with your doctor? Why/Why not?	Behaviour
Has your child attended any places where vaccines have been required? If so, where? How does this influence your maintenance of immunisations?	Behaviour
Are vaccinations something you discuss freely with other parents? What do you talk about?	Behaviour
When you hear about a negative story related to vaccinations, what do you do?	Behaviour
Do you ever hear any positive vaccination stories? What are they?	Behaviour
Do you feel that there is adequate information provided to you about vaccinations?	Behaviour
Do you believe that childhood vaccinations are still important and why?	Knowledge
Which vaccinations do you think are the most important for children?	Knowledge
What has influenced your attitudes and beliefs towards vaccinations?	Attitudes
How have the vaccination experiences of your family and friends influenced your thoughts and decisions about vaccinations?	Attitudes
What are your main concerns regarding childhood vaccinations?	Attitudes
How safe do you think immunisations are for children?	Attitudes
Are you concerned that vaccinations will not work?	Attitudes
Do you believe that children receive too many immunisations?	Attitudes
Do you think it is preferable for a child to have multiple vaccines in one shot or individual vaccines?	Attitudes

Do you know anyone who has had a bad reaction to a vaccination?	Attitudes
How concerned are you that your child might get a serious side effect from a shot?	Attitudes
Do you think that the side-effects of vaccinations are less dangerous than the disease of which they inoculate against?	Attitudes
What are the reasons why you believe vaccination is important?	Attitudes
Are there any immunisations you would reconsider getting for your child?	Attitudes
Would you ever delay childhood immunisations for a specific reason?	Attitudes
Do you worry about the effects of under-vaccination in the community?	Attitudes
In your opinion, why do some people refuse to vaccinate their children?	Attitudes
Do you remember any events in the past that would discourage you from getting a vaccine for your children?	Attitudes
Do you trust the healthcare system in making decisions about which vaccines to provide?	Attitudes
Do you think vaccines should be compulsory? Why or why not?	Attitudes
What are your thoughts on the 'No Jab, No Pay' policy announced recently by the Federal government?	Attitudes

** closed ended questions were followed up with open ended probing questions

References

1. Ward, K., et al., *Strategies to improve vaccination uptake in Australia, a systematic review of types and effectiveness*. Australian and New Zealand Journal of Public Health, 2012. **36**(4): p. 369-377.
2. Wolfe, R. and L. Sharp, *Education and debate, anti-vaccinationists past and present*. British Medical Journal 2002. **325**(7361): p. 430-432.
3. Larson, H., et al., *Addressing the vaccine confidence gap*. The Lancet, 2011. **378**(9790): p. 525-535.
4. Kata, A., *A postmodern Pandora's box: Anti-vaccination misinformation on the Internet*. Vaccine, 2010. **28**(7): p. 1709-1716.
5. Saeterdal, I., et al., *Interventions aimed at communities to inform and/or educate about early childhood vaccination*. Cochrane Database Syst Rev, 2014. **11**: p. CD010232.
6. Sadaf, A., et al., *A systematic review of interventions for reducing parental vaccine refusal and vaccine hesitancy*. Vaccine, 2013. **31**(40): p. 4293.
7. Leask, J., et al., *Communicating with parents about vaccination: a framework for health professionals*. BioMed Central Pediatrics, 2012. **12**(154).
8. Stefanoff, P., et al., *Tracking parental attitudes on vaccination across European countries: The Vaccine Safety, Attitudes, Training and Communication Project (VACSATC)*. Vaccine, 2010. **28**(35): p. 5731-5737.
9. Leask, J., *Target the fence-sitters*. Nature, 2011. **473**: p. 443-445.
10. Chow, M.Y.K., et al., *Parental attitudes, beliefs, behaviours and concerns towards childhood vaccinations in Australia: A national online survey*. Australian Family Physician, 2017. **46**(3): p. 145-151.
11. Wu, A., et al., *Postpartum mothers' attitudes, knowledge and trust regarding vaccination*. Maternal and Child Health Journal, 2008. **12**: p. 766-773.
12. Dempsey, A., et al., *Alternative vaccination schedule preferences among parents of young children*. Pediatrics, 2011. **128**(5): p. 848-856.
13. Attwell, K., et al., *Vaccine rejecting parents' engagement with expert systems that inform vaccination programs*. Journal of Bioethical Inquiry, 2017. **14**(1): p. 65-76.

14. World Health Organisation. *Strategic Advisory Group of Experts (SAGE) on Immunization*. 2015 13th March 2015]; Available from: <http://www.who.int/immunization/policy/sage/en/>.
15. Government of Western Australia. *West Australian Immunisation schedule*. 2014 24th March 2015]; Available from: <http://immunisationcalculator.sahealth.sa.gov.au/WANov2014.pdf>.
16. Guba, E. and Y. Lincoln, *Competing paradigms in qualitative research*, in *Handbook of qualitative research*, N. Denzin and Y. Lincoln, Editors. 1994, Sage: Thousands Oaks, C.A. p. 105-117.
17. Gust, D., et al., *Immunization attitudes and beliefs among parents: Beyond a dichotomous perspective*. American Journal of Health Behavior, 2005. **29**(1): p. 81-92.
18. QSR International. *NVivo 10 for Windows*. 2015 21st September 2015]; Available from: http://www.qsrinternational.com/products_nvivo.aspx.
19. Creswell, J., *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. 2007, Thousand Oaks, New Jersey: Sage Publications.
20. Bembridge, C., *Family of Perth baby who died of whooping cough hope to raise awareness, prevent further deaths*, in *ABC News*. 2015: Perth, Western Australia.
21. Rao, T.S.S. and C. Andrade, *The MMR vaccine and autism: Sensation, refutation, retraction, and fraud*. Indian Journal of Psychiatry, 2011. **53**(2): p. 95-96.
22. ABC News. *Brain damaged girl's family seeks compensation*. 2011 3rd October 2015]; Available from: <http://www.abc.net.au/news/2011-04-18/brain-damaged-girls-family-seeks-compensation/2611326>.
23. Klapdor, M. and A. Grove. *No Jab No Pay' and other immunisation measures*. Budget Review 2015–16 Index 2015 6th September 2015]; Available from: http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/BudgetReview201516/Vaccination.
24. Gilkey, M., A.-L. McRee, and N. Brewer, *Forgone vaccination during childhood and adolescence: Findings of a statewide survey of parents*. Preventive Medicine, 2013. **56**(202-206).
25. Luthy, K., R. Beckstrand, and L. Callister, *Parental hesitation in immunising children in Utah*. Public Health Nursing, 2010. **27**(1): p. 25-31.
26. Nyhan, B., et al., *Effective messages in vaccine promotion: a randomized trial*. Pediatrics, 2014. **133**(4): p. e835-42.

27. Quadri-Sheriff, M., et al., *The role of herd immunity in parents' decision to vaccinate children: a systematic review*. Pediatrics, 2012. **130**(3): p. 522-530.
28. Dubé, E., et al., *Mapping vaccine hesitancy - country specific characteristics of a global phenomenon*. Vaccine, 2014. **32**: p. 6649-6654.
29. Dubé, E., et al., *Vaccine Hesitancy*. Human Vaccines & Immunotherapeutics, 2013. **9**(8): p. 1763-1773.
30. Austin, H., et al., *Parents' difficulties with decisions about childhood immunisation*. Community Pract, 2008. **81**(10): p. 32-5.
31. Beard, F.H., J. Leask, and P.B. McIntyre, *No Jab, No Pay and vaccine refusal in Australia: the jury is out*. MJA, 2017. **206**(9): p. 381-383.
32. Bell, S., A. Hindmoor, and F. Mols, *Persuasion as Governance: A State-Centric Relational Perspective* Public Administration, 2010. **88**(3): p. 851-870.
33. Senier, L., *"It's Your Most Precious Thing": Worst- Case Thinking, Trust, and Parental Decision Making about Vaccinations**. Sociological Inquiry, 2008. **78**(2): p. 207-229.
34. Evans, M., et al., *Parents perspectives on the MMR immunisation: a focus group study*. British Journal of General Practice, 2001. **51**(472): p. 904-910.
35. Reich, J.A., *Neoliberal mothering and vaccine refusal imagined gated communities and the privilege of choice*. Gender & Society, 2014: p. 0891243214532711.