



“Do-it-yourself”: Vaccine rejection and complementary and alternative medicine (CAM)

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ABSTRACT

In this article, we elucidate a symbiotic relationship between complementary and alternative medicine (CAM) and rejection of, or hesitancy towards, vaccination. In Fremantle, Western Australia, and Adelaide, South Australia, we conducted in-depth interviews from September 2013–December 2015 with 29 parents who had refused or delayed some or all of their children's vaccines. Our qualitative analysis found that for many, their do-it-yourself ethic and personal agency was enhanced by self-directed CAM use, alongside (sometimes informal) CAM practitioner instruction. Reifying 'the natural,' these parents eschewed vaccines as toxic and adulterating, and embraced CAM as a protective strategy for immune systems before, during and after illness. Users saw CAM as harm-free, and when it came to experiences that non-users might interpret as demonstrating CAM's ineffectiveness, they rationalised to the contrary. They also generally glossed over its profit motive. CAM emerged as part of an expert system countering Western medicine. CAM's faces were trusted and familiar, and its cottage capitalism appeared largely free from the taint of "Big Pharma." A few parents employed a scientific critique of CAM modalities – and a minority were dubious of its profit motive – but others rejected the epistemology underpinning biomedicine, framing CAM as a knowledge not poisoned by avarice; a wisdom whose very evidence-base (anecdote and history) was demeaned by an arrogant scientific process only permitting belief in that which could be quantified. However, all parents engaged with Western medicine for broken bones and, sometimes, medical diagnoses. Our analysis suggests that pro-vaccination health professionals, policymakers and information-providers seeking to address the role of CAM in vaccine rejection face significant challenges due to the epistemic basis of some parents' decisions. However, we make some suggestions for professional practice and policy to enhance trust in vaccination.

1. Introduction

Acceptance of vaccination is a major driver of uptake, along with issues of access, affordability and awareness. Non-acceptance of vaccination is a phenomenon that concerns global agencies. In 2012, a World Health Organisation (WHO) working group was formed to address vaccine rejection – named 'hesitancy' – recommending expanded research to capture factors at individual, community, contextual and organizational levels (World Health Organisation, 2014). One factor that interrelates with individuals' vaccine rejection is use of complementary and alternative medicine (CAM) (Eve Dube et al., 2013; Wardle et al., 2016). A national survey of Australian parents found that

obtaining information from alternative health practitioners was strongly associated with self-reported non-compliance with the vaccination schedule (Chow et al., 2017). However, despite an unequivocal correlation, there has been little research that probes or challenges assumptions about causality in either direction. Causality may be obscured due to confounding factors; for example, income, education, and distrust of the medical system are associated with both CAM use and vaccine rejection (Gaudino and Robison, 2012; Wardle et al., 2016). So, too, are high levels of agency and autonomy (Browne et al., 2015; Ernst, 2001). How, then, can we best understand the relationship between CAM use and vaccine hesitancy or rejection? How might this inform action by government, policymakers and health professionals who seek

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to address the latter via policy, practice or campaigns? This paper addresses this knowledge gap by exploring how vaccine rejecting and hesitant parents in two Australian cities present their use of CAM *vis a vis* their vaccination decisions.

Wardle et al. define complementary medicine as ‘a diverse group of healthcare practices not generally considered part of the conventional medical curriculum’ (2016, 2). Their literature review explored modalities including (but not limited to) acupuncture, aromatherapy, Chinese medicine, chiropractic, homeopathy and naturopathy. Pedersen (2013) describes alternative medicine as ‘treatment not usually offered within the ordinary health service and without public support or control, but offered on a fee-for-service basis by non-authorised practitioners with varying types of training and certification.’ (p.56). While Pedersen’s definition makes a useful reference to the political economy of CAM – to which we will return – it is restrictive in focusing only on delivery by practitioners. By contrast, Wardle et al. (2016) distinguish between CAM as employed under the guidance of a specific practitioner, and CAM as self-prescribed and utilised, paying attention to both. The Cochrane collaboration definition extends to considering “accompanying theories and beliefs” that travel with “healing resources” outside the “politically dominant health system” (Zollman and Vickers, 1999, 693). We employ a very broad definition to describe both the modalities of specific practitioners and parent-directed use of supplements and traditional remedies. We focus specifically on parental perceptions and experiences of CAM, whilst recognising that parents undertake a much wider variety of activities to promote the health and wellbeing of their children. Finally, although CAM and biomedicine are distinct paradigms (or, as we will go on to characterize them, part of distinct expert systems), CAM is often a supplemental form of health care, rather than an alternative; many CAM users also use biomedicine (Browne et al., 2015; Stokley et al., 2008). An Australian study found that 69% of a representative sample had visited a CAM provider in the last 12 months (Xue et al., 2007), yet we know from Australia’s vaccination coverage of 93% that most of the parents amongst this sample would still be vaccinating their children. Nevertheless, Australian data clearly shows that seeking vaccination information from CAM providers makes parents more likely to be vaccine hesitant or refusers (Chow et al., 2017), hence the relationship invites deeper analysis.

A spectrum of vaccine acceptance extends from active demand and full vaccination to complete rejection of all vaccines. Vaccine hesitancy falls in the middle, where people may experience doubt and uncertainty and either fully or partially vaccinate. Parents in this study range from vaccine hesitant to vaccine rejecting. In a previous paper, we analysed how such parents view and (dis)trust expert systems pertaining to vaccination. This amounted to, in many cases, a rejection of Western medical epistemology itself and, consequently, some or all vaccines (Attwell et al., 2017). This article explores the flipside of this. Intimate with parents’ *distrust*, we instead seek to understand their trust in alternative modalities. Accordingly, we have reanalysed the data to investigate how and why parents used CAM, why they considered it beneficial or trustworthy (unlike Western medicine) and how – if at all – they digested the notion that CAM, like pharmaceutical companies, operates for-profit. We explore these factors in relation to individual parents’ rejection of some or all scheduled vaccines.

2. Methods

Data were collected in Fremantle, Western Australia (WA) and Adelaide, South Australia (SA). The data arose from the collation of two, originally independent qualitative research projects, conducted by researchers who subsequently joined forces after identifying common project aims and methods (during the final phase of data collection in SA). Both studies employed semi-structured interviews with parents who were not vaccinating, partially vaccinating or had delayed some vaccinations for their children. All participants’ reasons related to

personal choice rather than access, practical or logistic barriers. Among other site-specific questions, both studies explored perceptions of vaccinations, vaccine preventable diseases, healthcare professionals and social systems, with a specific focus on factors influencing parents’ decisions. All parents were asked about vaccine related information sources, family attitudes and their social milieu. In-depth, face-to-face interviews of more than an hour provided rich accounts of parents’ specific views, experiences and practices. Participants were incentivised with a \$25 gift card (WA) and \$30 cash (SA) and are referenced here with pseudonyms.

Fremantle parents were interviewed by the lead author between September 2013 and April 2014 from postcodes surrounding the City of Fremantle, which at the time recorded full vaccine coverage rates at below 87 per cent for children under five, compared to the Australian average of just over 90 per cent (National Health Performance Authority, 2014). Parents with a child aged five or under were recruited through posters, newspaper advertisements, social media and snowballing, and screened to meet inclusion criteria of delay or refusal of recommended vaccines. Where possible, WA parents were interviewed twice – before and after a local vaccination social marketing campaign – but this was only possible for half the sample; one declined to be re-interviewed and three were recruited later. Adelaide (SA) parents were interviewed by PR once between October and December 2015. PR approached potential participants at a suburban organic market and organised initial interviews. On completion of interviews, which took place mainly in their homes, PR asked participants to share information leaflets within their social networks. The snowballed participants subsequently contacted PR, who were screening to check they had delayed or refused vaccination for their children. At both sites the informal snowballing method was a challenge for documenting self- and criteria-based exclusion. Researchers had aimed for 10 participants in WA and 20 in SA with these figures almost reached (9 and 20). The University of Western Australia and Flinders University Social and Behavioural Research Ethics Committee provided ethical approval for the projects under permit RA 4/1/5890 and project number 6976 respectively.

Four differences between the research sites and studies affected the data; points two and three will be revisited. Firstly, WA parents were screened on whether they identified themselves as ‘alternative lifestyle’, while the SA individuals were not asked this, but were recruited predominantly through an organic market. Secondly, WA parents were asked another screening question to rule out those who identified as anti-vaccination, whereas the SA sample included several parents who rejected all vaccines. On this basis, the SA sample was a broader spectrum covering hesitant parents to anti-vaccination campaigners, while WA parents were more towards the hesitant/fence-sitter middle of the spectrum. Thirdly, while some SA interviews probed for CAM use and trust, CAM emerged spontaneously in WA both as a source of trust and distrust. The fact that CAM was a significant feature in both sites justified the re-examination of relevant data. Fourthly, but less significantly, while initially targeting parents of young children, those with older primary-school age children were later included in SA, skewing the age of participants *vis a vis* WA participants.

The lead author (WA) and research assistants (WA and SA) transcribed the interviews verbatim. Following in-depth reading, the lead author developed an initial coding tree using QSR International’s NVivo 10 Software. A broad CAM node was broken down to explore specific theoretical insights arising from the literature exploring the relationship between trust and CAM, notably the work led by Pedersen (2013; Pedersen and Baarts, 2010; Pedersen et al., 2016). This way, we extracted data elucidating current theories and also generated new insights. Transcripts of participants who reported distrust in aspects of CAM were reviewed with the aim of identifying differences between them and CAM users, with attention paid to all parents’ vaccine trajectories. Frequent discussions within the research team guided coding and recoding. This involved developing a visual representation of vaccination expert systems (as constructed by participants) that would

go on to inform a representation of the counter-expertise utilised and developed by vaccine-rejecting parents. These visual representations informed the analysis of expert systems in both the previous study (Attwell et al., 2017) and this one. Personal reflection and open discussion during team meetings facilitated reflection on how our knowledge, experiences, beliefs and backgrounds influenced our reading of the data, and the conclusions we reached.

3. Results

In total, 29 parents were interviewed: 9 from WA (by KA) and 20 from SA (by PR). The majority were women ($n = 26$). The age range was 25–50 years; 19 were between 36 and 42. Over half of the parents held a university qualification. Participants included 13 parents who had never vaccinated (NV), 5 who had ceased (CV), 7 who were delaying or partially vaccinating – ‘incompletely vaccinated’ (IV), and 4 who had delayed, but who were now up-to-date (V). Three participants were qualified or student CAM practitioners: Steve (chiropractor, SA/NV); Charlotte (homeopathy student, SA/NV) and Ariana (doula, WA/V). Including these practitioners and students, seventeen participants used or referred positively to CAM in the interviews. Eight did not mention it at all (five were from WA where CAM was not probed). Six said they did not use or trust particular modalities (though some used and trusted others, hence this cohort included both skeptics and users). Those who did not use, trust or disclose use included individuals from all vaccination categories (from NV to V).

In our previous paper (Attwell et al., 2017), the process of coding how parents talked about the expert systems responsible for vaccination had simultaneously identified an ‘Other.’ This ‘Other’ had emerged as an initially hazy, but then ultimately clearer, set of practices, beliefs, institutions, modalities and epistemologies. As the dominant vaccine expert system emerged – characterized by government, Western medical professionals and research ‘tainted’ by the grasping hand of Big Pharma – so, too, did its mirror image. Parents constructed – and placed trust in – an opposing expert system that rejected what the dominant system stood for, even as parents retained relationships with doctors, pharmaceuticals and government. Notably, in the opposing system (the focus of this present article), parents’ own expertise was emphasized. The existence and operation of this expert system was a crucial finding of our study, and the parents constructed it as distinctly oppositional to biomedicine. Drawing from this counter-expertise, parents employed CAM both under the direction of specific practitioners and as part of a self-guided pick’n’mix. We elaborate this through an examination of parents’ engagement, forms of usage, accounts of the role CAM use plays in decision-making, perceptions of trust, and their ultimate engagement with competing epistemologies.

3.1. Engagement with CAM

Biomedically-attuned outsiders might assume that parents who choose not to vaccinate their children would replace vaccines with a perceived disease prevention alternative such as homeopathic immunisation. On the contrary, parents in this study approached CAM much more broadly: as “a set of practices of health care and body maintenance” (Pedersen, 2013, 57). Hence, while several spoke supportively of homeopathically immunising, only Natalie (SA/NV) had done so, and only for her eldest child. Several others had entertained the idea, with some buying kits, but did not proceed. Parents who spoke positively considered homeopathic immunisation “an alternative that’s safer” than vaccination (Dianne, SA/NV), providing immunity without being “full of rubbish” (Natalie, SA/NV). Charlotte (SA/NV) would consider it if “we were going to a country where they really did need protection.” Natalie concurred, but “by the time my second one was born, it’s like, well, I don’t know if I even need to do that. It’s like, as long as I look after them and keep them healthy ...” Thus, while homeopathic immunisation might be useful, safe and effective, they would

still not see it as necessary.

The homeopathy profession itself is divided with regard to its usage as a vaccination replacement, and this may have affected our participants’ uptake (Golden, 2007; Vithoulkas, 2008). Nevertheless, the fact that they did not follow through with usage demonstrates that CAM is not merely a replacement for Western medicine, but rather what Pedersen (2013, 57) characterizes as a “regimen” or a “whole art of living.” As we have reported elsewhere, many parents in this study showed tremendous faith in the capacities of their children’s bodies to avoid or withstand illness. Some also saw disease as being beneficial in terms of conferring ‘natural immunity,’ which in turn was seen to bring greater bodily strength and a more robust immune system for overall physiological functioning (P. R. Ward et al., 2017b). Accordingly, CAM was part of a suite of health practices that replaced the ‘prevention and cure’ dichotomy with a more general notion of *protection*. Parents perceived that they could navigate and mitigate ill health before or after it arose with ‘immune boosting’ (for which Alice, [SA/V] used Chinese medicine), addressing perceived issues with gut health (Sally [SA/V], Cally [SA/NV]), auto-immune conditions (Roz [SA/NV]), and heavy metals in the body via chelation (Charlotte [SA/NV]).

If ... basically, the energy running through your body is ... good ... basically, then, you’re not going to have pain. You’re going to have health. You’re not going to have symptoms of ‘dyshealth.’ (Roz)

Parents also used CAM to treat infections, employing homeopathy, probiotics and fermented vegetables (Charlotte [SA/NV]), “natural antibiotics” prescribed by naturopaths (Natalie [SA/NV]), and garlic and essential oils (Kavita [SA/CV]). A seamless framing of vaccines as a source of “dyshealth” meant that CAM could resolve these problems too: Vanessa’s (SA/CV) naturopath blamed her child’s gut problems on vaccines and used CAM remedies to treat it.

Utilising CAM – whilst not directing it towards prevention of specific infectious diseases – enabled parents to feel that they were managing risks by taking responsibility for them. (For an in-depth discussion of how parents in this study parsed risk with regard to vaccine rejection, see P. Ward et al., 2017a). This did not necessarily mean avoiding infection, but rather being able to manage it. Questioned whether she would be worried during an outbreak of measles or diphtheria, Kavita (SA/CV) would trust in her son’s “body to be strong enough to fight that” and “probably just do some probiotics and some colostrums and some bone broth and a bit of Reiki and some hippie stuff, apple cider vinegar in the bath ...” Occasionally, risk calculations were more nuanced; Darlene (SA, NV) said “vitamins and holistic sort of things ... feel ... less risky” because of the dangers of antimicrobial resistance.” She continued: “I’m well aware that the more you take [antibiotics], the more resistant your body becomes to them. So when I do become thoroughly, really sick sometime in the future, I want them to be effective.”

Darlene employed a ‘body as temple’ reasoning, whereby a body kept free of toxins is a body able to handle what nature throws at it (and even antibiotics). Roz (SA/NV) believed that her children’s bodies had not “been interfered with” or “compromised in any way by Western medicine,” such that “their response to homeopathics, their response to ayurvedic treatments, are almost instant.” Parents depicted nature as a sacred equilibrium one should not interfere with. This translated not only to a preference for natural immunity, but also a preference for oral vaccines over injections (see also Byström et al., 2014; E. Dube et al., 2015; Reich, 2016; Rogers and Pilgrim, 1995). Chiropractor Steve (SA/NV) provided a practitioner’s take on how the body’s natural mechanisms need only fortification from nature.

I also believe strongly in the body’s own innate capacity to withstand effects, like illness and infection, when given the right means to do so, so you know, using things from nature: herbs.

CAM use was entirely congruent with such a theory of the body, whereas the “chemicals” of Big Pharma – and vaccines “full of rubbish”

(Natalie, SA/NV) – would appear defiling.

3.2. Self-directed and practitioner led use

CAM use went beyond simply visiting and trusting a practitioner. It involved CAM providers being information sources (for example, Sally [SA/V] subscribed to a naturopath's free newsletter), applying friends' CAM advice, or personal study. In these ways, parents came to see themselves as proficient in navigating the right path to ensure the health of their children, including the selection of treatment as well as sources of information. They demonstrated self-trust: "the competence of the self and expectations about how one will be motivated to act in the future" (McLeod and Sherwin, 2000). Reliance upon friends fit with what we identified as a DIY (do-it-yourself) ethic of the participants, whereby they invested time and energy into learning how to manage life and health choices themselves, including learning from others who were already doing so. (For more on how parents in this study rationalised their lifestyle habits and non-vaccination, see P. R. Ward et al., 2017b). Friends were also cheaper than practitioners, as Anna (SA/CV) explained.

I would go to a naturopath a whole lot more if it wasn't so expensive. So I end up doing lots of research on my own, or talking with friends, or trying out this or that. I've got a few friends that have been doing it longer than me, so I'll call them and say, 'Okay, what would you do?'

Several participants described relying upon the health advice of influential friends who were CAM practitioners or experienced users; Natalie (SA/NV) had worked in a chiropractor's office, while Cally (SA/NV) had worked for a naturopath.

Proficiency in CAM was evident in the way that parents would claim agency for treatment. Homeopathy student Charlotte (SA/NV) said, "I'm treating him [son] homeopathically through our very trustworthy and reliable and highly intelligent, like, homeopath." Charlotte presented the qualified homeopath as the conduit for her own expertise. Participants also described utilising medical professionals as the authority on diagnoses, but then seeking out alternative treatments such as homeopathy or "hippie stuff" (Kavita, SA/CV).

They'll [doctors] go, "Okay, your left nostril's got pus in it," or whatever, and then I'll call my homeopath and go, "What is it that I need to take? What is it that can help this?" I mean, I did that with my son who had tonsillitis. I gave him one or two doses of this homeopathic remedy – gone! (Charlotte, SA/NV)

Any time she gets sick, I go to the GP ... I don't sit there and try and diagnose every little thing that happens to myself and my daughter. But as far as treatment decisions ... I'll typically go to my naturopath, or figure out for myself a natural treatment regime ... (Darlene SA/NV)

Vanessa "[made her] own garlic oil" and Roz used "Arnica and Rescue Remedy" and "extra salts" to ease the pain of her daughter's broken arm, all examples of parental enactment of agency. Parents thus made decisions about how, and with what, to treat their children's illnesses by employing their own remedies, often scaffolded by the diagnostic expertise of doctors and treatment expertise of CAM providers.

3.3. CAM and vaccine decisions

Two types of accounts emerged pertaining to CAM's relationship to parents' vaccination decisions. In the first, parents were inclined to pursue CAM care due to their upbringings, or recommendations from within their social milieu, where vaccine questioning also featured prominently. In the second, parents or their children experienced specific health problems (not necessarily vaccine related), whereby Western medicine was viewed to 'hit a wall,' and CAM filled the

vacuum, generating questions around vaccines. Often, the two overlapped.

General exposure to CAM amongst the parents who used it was significant. Alice's (SA/V) father, whom she felt was "probably not pro-vaccination," had familiarized her with Chinese herbs. Dianne's (SA/NV) mother studied homeopathy, so Dianne "grew up almost in a very alternative thinking way." Steve (SA/NV) remembered "quite young, going to herbalists, homeopaths, acupuncture, chiropractor." Natalie (SA/NV) explained, "My parents always took me to a chiro as a child growing up, but they weren't anti doctors or anything ..." The visits were for "general health," but "the doctors told [her little brother] that he would have to have grommets in his ears, and two visits later at the chiro he was fine ..." Natalie added that she "sort of got the message from that," demonstrating the overlap between proximity to CAM and perceived unnecessary treatment and over-servicing via medical practitioners generating distrust in biomedicine. Through childhood experiences, familiarity, and reported positive past experiences, participants developed trust in and were oriented to see CAM as part of their suite of parenting practices, and with this came a disdain for vaccination's 'chemicals' and biomedicine's interference with the body's natural order.

Some participants' relationships with CAM were strengthened through perceived failures of Western medicine, which was also a motivating factor for Pedersen's Danish CAM users (2013, 58). However, familiarity or experience with CAM practitioners generally preceded this, rather than frustrated parents simply turning from Western medicine to CAM (though this did happen for Bettina [SA/V]). A more common example was that of Kavita (SA/CV), whose son was unwell after his two-month vaccinations.

The doctor said 'Oh, it's a virus,' and at that point I thought, "What does that mean? What is a virus? Oh, it means that they've got no idea what it is, so they're just going to call it a virus ..."

Kavita took her son to a naturopath "who said, 'He is just reacting to all of the preservatives in the vaccinations.'" Kavita had "always seen naturopaths" due to "tummy issues," showing the overlap between previous exposure and CAM practitioners being available to explain using accessible language, or resolve the issue. This experience informed Kavita's ultimate rejection of further vaccines.

Familiarity with CAM also influenced Sally (SA/V), who sought counselling following her premature high risk birth with a counselor who was also a naturopath. When Sally mentioned her daughter's night terrors and eczema, which her GP had been unable to resolve, her naturopath-counselor and friends directed her towards researching and practicing gut health, prompting Sally to delay her daughter's outstanding vaccinations.

These examples show how participants' engagement with CAM providers could sometimes offer new options and solutions that allowed them to exercise agency, particularly for problems that Western medicine had been unable to solve. The superseding of Western medicine, and at times a discourse of direct blame for maladies, led the participants away from vaccination as they oriented to an alternative expert system. For some, engagement with the new expert system generated autonomy to make decisions in future without consulting a provider, biomedical or CAM.

Some CAM providers had indirectly influenced participants' vaccine decision-making, either by introducing a different way of thinking, as discussed above, or by reinforcing existing concerns. Many participants reported CAM providers' own vaccine questioning, ambivalence or rejectionism. When Clara (WA/IV) consulted a medical doctor who was also a homeopath:

He said he stood in the middle of the immunising discussion He said because we waited a year, it's done her a great turn. If you wanted to wait until she was two, it would be even better. But I think she is quite safe to immunise now.

Darlene's (SA/NV) naturopath was “very much on the fence” and “listed the top three [vaccines] that he thought would be most relevant in this local environment.” When Natalie (SA/NV) had initiated conversations with practitioners over the years:

It's not like they've ever said, ‘Oh, I want to talk to you about not vaccinating your kids,’ or anything. It's only if I happened to bring it up, and then they would very diplomatically say, ‘Well, I'm not qualified to give you any professional advice.’ But often they would say, ‘In my personal opinion, this is what I've done in my family.’ A few of them had commented on cases that they'd seen where it had caused reactions in kids.

Natalie's initiation of these conversations fits with Wardle et al's (2016) finding that patients are usually the ones to bring up the topic of vaccination with CAM providers.

While the accounts above pertain to parents' discussions with CAM providers, there were many more accounts of reliance on books, leaflets and newsletters authored and disseminated by CAM providers and containing vaccine skepticism. We note, however, that parents did not necessarily cite CAM providers' anti-vaccination messages as the cause of their hesitancy or rejection of vaccinations.

3.4. Why is CAM trustworthy?

It was very clear from our data that our participants who used CAM generally trusted it in a way that they did not trust biomedicine and vaccines, and that they conceptualized the two quite differently. Pedersen (2013) found that users of CAM were drawn to – and trusted – the treatments in part because they did not see them as having the same risks as biomedicine. Our participants echoed this. “I trust the naturopath who says, ‘Take a probiotic,’” said Kavita (SA/CV). When asked how that was different from trusting a doctor's vaccine recommendation, she replied, “Because I don't think there's any harm in taking a probiotic, but I think that vaccinations can potentially cause harm.” Charlotte (SA/NV) trusted homeopathy because “it's not chemicals and poison ... it's much more subtle ...”

When Pedersen (2013, 59) studied CAM user's perceptions that their treatments did not risk harm, she observed that they interpreted post-treatment symptoms like “dizziness, headaches, fatigue or fever as part of the cleansing or healing process.” In this way, their overall trust remained intact. For some participants in this study, CAM's perceived or real efficacy fulfilled expectations, fueling self-trust and consequential autonomy not just to reject vaccines, but to take full responsibility for their child's well-being. Such high stakes may have motivated reasoning to avoid cognitive dissonance. For example, when Charlotte treated her son's gut parasites with homeopathy, herbs, probiotics and fermented foods, “it *might have taken longer* than had we taken antibiotics, but we did it without antibiotics, so essentially we didn't have to put chemicals into their body” [*emphasis added*]. When Katie and her son acquired Bali belly (travelers' diarrhea), she saw the mix of herbs and essential oils they ingested as limiting the length of the illness to less than 24 h.

When unvaccinated children actually got sick with vaccine preventable diseases – Charlotte's (SA/NV) and Vanessa's (SA/NV) with whooping cough, Evan's (SA/NV) with whooping cough and measles – parents did not see this as a failure of CAM, which remained trustworthy. This may be because they did not view CAM as providing failsafe protection, so its reputation was not damaged by unmet expectations, in contrast to Western medicine. Also, the parents did not regard illnesses as terrifying. Charlotte described whooping cough as “a disease that can be vaccinated against.” Holly (SA/NV) used the term “childhood diseases.” The parents' beliefs that their children were healthy due to their own parenting practices – this included Evan's willingness to take as much time as required off work to nurture his sick daughter – appeared to inform a belief that CAM need not be as effective as a (biomedically attuned) outsider might expect. Rather, everything would be okay; to believe otherwise would buy into Big

Pharma's fear campaign, and biomedicine's contribution to “dyshealth.”

Parents were willing to wait longer for outcomes – or even endure preventable disease – when the alternative was ‘chemicals’ and the profit-orientation of pharmaceutical companies. On this basis, we were interested to see how they digested the notion that CAM, too, operates for profit. We found that parents did not see CAM as tainted by the profit motive, even though it operates in what Pedersen (2013) calls the “grey market” rather than being state subsidized, regulated and approved. Parents tended to read CAM quite differently from “Big Pharma” (Attwell et al., 2017). When Evan (SA/NV) learned how homeopathy ‘worked,’ he concluded that it was underdeveloped as a modality because there's “no money to be made in it.”

...[T]hey had some vials on one of the masters, one of the original people doing homeopathy, and they still had their original vials going. Because as long as they had some left in the bottom, they could put water in and recharge it, and then activate it again ... You can't make money out of selling the product, as you can recharge them.

This was further supported by Evan's perception that because homeopathic vials are not supported by “drug companies and manufacturers,” the field is free from vested interest – a key condition of trustworthiness (Luhmann, 1979). Parents perceived alternative practitioners as trustworthy because they lacked ties to the external pressures of industry. The industrial and impersonal scale of the expert system behind vaccination contrasted with ‘natural’ and ‘holistic’ practitioners, whom participants believed would be working in their patients' interests, rather than being driven by a profit motive.

However, not all participants shared these perceptions. Alice (SA/V) said: “I went to quite a few naturopaths, and I just felt it was similar to the medical establishment ... As they sell their products at the end of the day. ...” Vanessa (SA/CV) said, “A lot of the products come from the same industry, to be honest.” Akin to many participants limiting their use of Western medicine, this led her to try to limit her use of CAM. “I only take what I think's necessary.”

Meanwhile Anna (SA/CV) described a cost evaluation exercise her household had undertaken: “I haven't seen [alternative practitioners] as much, because it costs so much to go.” Though declaring that they would still be her first port of call in the event of illness, Anna made the point that underscored some other participants' scaled back use of CAM – her family was healthy enough to get by without it.

Most illnesses that come in our house go quickly, and we don't all get it, either ... I know a lot of times, families, when they get sick, the whole family gets sick. That doesn't happen to us very often.

Thus, in some cases, parents' beliefs that their children were fundamentally healthy led them to see CAM as unnecessary, even if they were positively disposed towards it.

3.5. Duelling epistemologies

We suggest that when it comes to vaccine hesitant and rejecting parents' engagement with CAM, there are competing epistemologies at work. Recent scholarship suggests that there are distinct epistemic communities *within* scientific disciplines and *between* CAM modalities, complicating the notion of such a divide (Brosnan, 2016). However, Navin's (2016) work on epistemic communities explains how those practicing the scientific method engage in adversarial methods of reasoning to ensure that ‘truth will out’, while communities resistant to biomedicine reason differently. The latter employ supportive rather than challenging communicative practices, because friendship networks operate differently from academic communities. People validate their peers rather than challenging their views. They also assign expertise to CAM providers who offer similar validation. CAM providers' business model involves tailoring information, diagnoses and treatments to suit patients' pre-existing beliefs, which may also dovetail with the

practitioner's own philosophy of parental expertise. Hence vaccine rejecting parents who engage with CAM providers receive supportive augmentation of their agency. This enhances their perceived capacity to assign expertise without reference to processes like peer review, institutions like universities, and regulatory and licensing agencies. Navin thus depicts vaccine-rejecting CAM users employing reasoning that ultimately constructs knowledge differently from parents who accept vaccines. (Regarding the latter, he is clear that they do not possess innate superior reasoning capacities. Rather, their adherence to mainstream science and medicine exposes them to reasoning that is more robust.)

Our previous study exposed this epistemic divide in our participants. Most engaged in a specific construction of Western biomedicine as impersonal, massified and corruptible (Attwell et al., 2017). They could make detailed sense of the processes through which vaccines were designed and delivered, but saw the structures and interests as flawed and untrustworthy. Nevertheless, in line with Luhmann's (2000) conceptualization of trust, a subset consciously valued reasoning, evidence and science, as associated with Western Enlightenment epistemology. This enabled their cautious trust in Western medicine, and led some to explicitly reject homeopathy. Clara (WA/IV) told a homeopath/GP, "I don't believe in homeopathy as a means of protecting [my daughter]," and Meg (WA/IV) explained, "I didn't take the homeopathic route because it is not scientifically proven." Ariana (WA/V), herself a doula (demonstrating that CAM is far from monolithic), reported telling her doctor, who had pigeonholed her as an aspiring homeopathic vaccinator based on her concerns about vaccines, "I'm not into homeopathy and I don't think that's a viable alternative." Unlike many other parents in this study (who had eschewed or ceased vaccinating), these parents accepted some or all vaccines. We suggest that the epistemology underscoring their (hesitant) acceptance also informed their critique of homeopathy, whilst they did not necessarily write off all CAM practices.

It was a different story for some other participants, who framed their embrace of CAM as a rejection of biomedical epistemology. Evan and Dianne (both SA/NV), users of homeopathy, elaborated the theory behind it. "They're herbs so – actually, they're not just herbs, they're anything and this is why there's a lot of controversy about them, is that actually if you dissect a homeopathic pill there's nothing in it in terms of science," Diane explained.

... [A] scientist ... wouldn't find any of the original substance in there, but it's the memory of the water. It's the molecular memory of the water and the frequency. It's all about frequency. Things vibrate at different frequencies. We all are just energy ...

Going on to discuss crystal healing, Dianne continued with a passionate defense of personal experience, and a rejection of the epistemology that would itself reject her reasoning.

Because I experienced it myself, I can trust that, so I don't need scientific proof. I actually think scientific proof is very arrogant, because you're only scientifically proving something to the level of what we understand, and we think we're so clever ... But what about all the other things, you know, the things we can't see? Because we can't explain them, it's like we can't – you know, they say that it doesn't exist.

These differences between skeptics and devotees of homeopathy demonstrate a deep schism regarding what it actually means to know something. At one end of the continuum, some participants displayed continued connection to the Western medical system. At the other, participants critiqued positivism and embraced the knowledge acquired by paranormal lived experiences, reinforced by peers and practitioners who bolstered their self-belief to do so. Closer to the middle of this continuum, other participants drew heavily on self-trust and their DIY-ethic as they selectively used CAM while not ruling out Western medicine (a practice that may also apply to CAM users who vaccinate their children). Still others, predominantly incomplete vaccinators from WA,

did not mention CAM at all as an influence on their vaccine decision-making. For some parents, then, positions on CAM may have little or no bearing on vaccination decisions, though we cannot be sure, since we did not probe for it in WA. One thing was clear: *all* parents reserved a particular place for Western medical epistemology, as embodied in rationalist, mechanistic approaches to fixing broken bones, and sometimes for diagnoses. We suggest, therefore, that some participants may move between epistemologies in their daily lives, depending on the specific context and problem. However, the expertise they grant to Western medicine may remain decidedly limited.

4. Discussion

The relationship between CAM and vaccine refusal is not linear. While Navin (2016) suggests that vaccine rejecters replace biomedical expertise with more appealing and aligned CAM providers, it would be inaccurate to assume that CAM therefore neatly replaces vaccination. Some participants did not mention CAM at all in terms of their vaccination decision-making – and this included rejecters of all vaccines – while others rejected particular modalities. For those parents who embraced it, however, CAM functioned as a buttress to minimize perceived risk. They saw CAM protecting bodies built for challenges, honed through natural augmentations, and maintained as temples – free from toxins and adulterants – to be ready to fight disease. As Pedersen (2013, 61) notes: "The body is considered healthy *per se* and by using alternative medicine as a means of health promotion or prevention of illness, the users believe the body will stay healthy." CAM users in this study saw it as maintaining healthy children who did not need vaccines, but who sometimes also did not need CAM. In several instances, parents decided they were 'too healthy for CAM,' whether to justify stepping away from it for financial reasons, or to explain why they would only use homeopathic vaccines if they were travelling to sites that they perceived as risky in terms of acquiring and fighting infection. Parents also viewed CAM as helping their children to fight sicknesses that would be brief and mild, particularly because they had maintained immune systems as temples free from "toxic" vaccines.

Agency is critical to many of our participants' usage of CAM in their maintenance of health, or treatment of ill health (and at times, diagnoses). Unlike Western medicine and – as they saw it – its more rigid and impersonal expert system (with perceived over-servicing and unnecessary treatment), CAM was something parents could actively do for themselves, to the extent that they chose, with a little help from their friends. Parents adhering to an expert system in competition to the biomedical could choose products and services they considered beneficial, rather than accepting the entire suite of options that a medical doctor would provide (including vaccinations). Participants also perceived that their previous engagement with CAM practitioners and self-directed use of "hippie stuff" had been successful.

Notions of self-trust and associated autonomy were central, too (McLeod and Sherwin, 2000). Many parents made decisions outside of consultation with providers – CAM or medical. They perceived themselves as competent, believing that their actions would lead to the expected outcome of maintaining healthy children. CAM providers along the way may have empowered or enhanced this self-trust, as Navin suggests (2016), but participants' own self-directed CAM use also contributed. Rejecting or delaying some or all vaccines would thus be another health decision they would feel competent to make.

We therefore suggest that the relationship between CAM use and vaccine hesitancy, cherry-picking or rejection is *symbiotic*. Vaccine hesitancy and CAM exist and function separately, but when combined, provide each other with 'resources' that enable them to thrive together. CAM might negate the perceived need to vaccinate; it might prompt reliance upon its 'protective' properties; or empower one to rely on one's own expertise supported by CAM practitioners and skilled friends, but in all these instances it is not essential. Vaccine rejection and CAM both derive legitimacy from a larger expert system that elevates parents'

own expertise, unlike the biomedical expert system. Navin (2016) links parents' heightened perceptions of their own expertise to a flawed epistemic process whereby they gravitate to communities that affirm it, and shut out dissent. Once parents assign themselves the expertise to be experts and *anoint* experts, this sets in train a series of cognitive processes that distance them from other types of expertise (Navin, 2016). CAM providers, lay 'experts' and parental experimentation provide resources – information and empowerment – that are central to this. They bolster parental agency to make vaccine decisions, using the available frames of 'health' and 'nature.' As noted, such information and empowerment resources may sometimes support parents' self-trust to conclude that that the family is 'too healthy for CAM.' This may seem like a perverse outcome for CAM, until one recalls that both agents in a symbiotic relationship can easily function independently. CAM does not rely upon vaccine refusal in order to be appealing, and nor do all refusers rely on it.

For those participants who utilised CAM, their decision was underscored by trust, not just in themselves, but in the expert system of which CAM was a part. While others have identified the importance of trust in CAM providers as a factor of vaccine rejection (Benin et al., 2006), we have identified how trust in both providers and modalities links a deeper epistemic divide that, at its most extreme, rejects the empiricism that characterizes the Enlightenment. CAM's expert power has an epistemic basis distinct from Western medicine (even if sometimes parents use both for different reasons). Consider the naturopath newsletter to which Sally subscribed, compared to the kind of advocacy of Western empiricism and rationalism that pro-vaccination experts advance. Both are methods of outreach for specific expert systems in competition with each other. Crudely, they could be seen to compete for economic reward, but competition occurs in the realms of trustworthiness, efficacy and epistemology. It is no coincidence that our participants who were critical of CAM modalities' efficacy (as opposed to CAM's profit-motive) were also more accepting of vaccination. Meanwhile, those who embraced CAM saw it as a knowledge which had not been poisoned by avarice; a wisdom whose very evidence-base (anecdote and history) was demeaned by an arrogant scientific process only permitting belief in that which could be quantified. Finally, skeptics of both vaccines and CAM did not critique the latter's efficacy, but rather were conscious that both practices might simply be about making money.

Considering this last point, from a CAM industry standpoint, participants' self-reliance and DIY-ethic (linking to conditional and sporadic uptake of practitioner-led CAM) could be a weakness of the business model. The fact that CAM's expertise is disaggregated, however, may work in its favour as part of an expert system that anoints parental expertise and autonomy as king. CAM providers described in this study seemingly accepted clients' decisions to seek diagnoses through doctors and treatment through CAM. Such openness to parental expertise and a DIY approach to treatment and prevention may reinforce trust in the modality. Moreover, the perceived small-scale business model and personalized approach of CAM, as distinct from "Big Pharma," seemed to offer some reassurance that external financial or business pressures did not motivate providers. Despite being a profit-driven industry, CAM maintained an image of trustworthy benevolence. To the extent that industrial machinery underpins a CAM practitioner – whether in terms of factory production of supplements or cash rebates from a state-supported private healthcare system (and even direct government rebates for chiropractic care in Australia) – it is mediated by the proximity and immediacy of the care, and the practitioner's values and standpoint in relation to the patient's. Pedersen (2013) considered that users of CAM practitioners are aware that they operate in "grey market consumerism" but suggested that the "grey market" aspect is 'hidden' by recommendations from trusted others, and further in the treatment process by ... positive experiences" (61). Our CAM user's experiences and faith were not facilitated or enhanced merely by trusted others, but by *trusted others with whom they shared an epistemic community* (Navin,

2016). When it came to the purchase or self-directed use of natural products, one could sense a DIY-ethic resistance to profit (with the home production of products like garlic oil), but to the extent that money changed hands in such scenarios this, too, was disguised, precisely because such transactions were normalized within the parents' milieu.

While our participants report a generally negative framing of vaccination from their CAM practitioners, it may be that other factors influenced their vaccine decisions, or that their social networks of non-vaccinators (epistemic communities) specifically placed them in the realm of vaccine skeptical CAM providers. The strong anti-vaccination perspectives of practitioners reported in the parents' accounts should be interpreted with this in mind, as should the over-representation of these views *vis a vis* Wardle et al's (2016) finding that "the majority of CM practitioners do not appear to be active in making recommendations around vaccination," with a minority actively promoting it (12).

Our data provide empirical support for Peretti-Watel et al's (2015) thesis, which reconceptualises what it means to be vaccine hesitant. Rather than an ambiguous 'catchall' phrase, the authors present hesitancy as a decision-making process that "depends on people's level of commitment to healthism/risk culture and on their level of confidence toward health authorities and mainstream medicine" (5). Our participants appear to be "rationalised hesitant," meaning that they had reflected on their decision not to accept one or more scheduled vaccines. Their actions are indicative of 'healthism,' wherein the rhetoric of self-empowerment "praises enterprising and entrepreneurial individuals who exercise control over their own behaviours" (Peretti-Watel et al., 2015, 5) This dovetails with a medical and public health paradigm that emphasises the role of the informed patient in health decision-making (Rogers and Pilgrim, 1993). Our participant accounts of engagement with CAM would seem to facilitate such involvement in one's own (family) care. For both ethical and public health reasons, then, one might argue that CAM can play a role in facilitating such agency, providing information that assists individuals to make informed medical decisions. What remains in question, however, is the extent to which the information provided in such encounters lowers acceptance of vaccination. If the advice of CAM providers goes against the scientific consensus on vaccination's individual and collective benefits and negligible risks, one might query whether it is truly facilitating *informed* decisions, and is instead contributing to epistemic vice (Navin, 2016).

This study's findings cannot be generalized to the entire vaccine rejecting and hesitant populations in Australia, but rather represents a rich account of the practices of parents in two regions. While Australia's healthcare and socio-cultural milieu is similar to other high income countries, nuances may impact upon how CAM use plays out, which would differ from other settings. Parents in this study also had differing stances towards vaccination, compounded by differences between the combined studies. Whilst this could render the findings diffuse, we have shown how different stances towards vaccination can affect attitudes towards CAM and Western medical epistemology in ways that we believe justify combining the data. Other potential limitations relate to the design and conduct of one or both studies (for example, not documenting all exclusions) or from combining two projects that, whilst complementary, were not identical. Finally, neither study was conducted specifically with CAM in mind; factoring CAM use into the study design would have enabled greater depth of questioning and responses, in particular allowing us to more clearly unpack the doubts about CAM and vaccination in some of our participants. Yet we were able to observe that CAM use arose spontaneously for many parents when talking about vaccination and child health, thus showing its importance in signifying a wider set of beliefs, practices and attitudes towards expert systems.

5. Conclusion

This article sought to understand the relationship between CAM use

and vaccine hesitancy or refusal, considering CAM as part of an expert system running counter to Western medical epistemology. We found a symbiotic relationship between CAM and vaccine rejection – for DIY-minded parents who value their agency and ‘reify the natural,’ the two practices prove interactive and complementary, but neither is responsible for the other. CAM was not a replacement for vaccination; instead, it was a buttress for child health and wellbeing. Many parents trusted CAM because they perceived it as natural, not harmful, non-industrial, and because it appeared to work *for them*. They appeared to embrace intuitively CAM’s alternative epistemology because its faces were trusted, familiar and reinforced, and because its cottage capitalism did not appear to be tainted by “Big Pharma.” They kept a place for Western medicine, but they also kept it *in its place*.

Our participants’ accounts suggested that their CAM use did not cause their vaccine hesitancy or rejection. However, some did receive negative vaccination advice. From a public health perspective, this may point to a need for better engagement in the education sector. Curriculum requirements for disciplines taught in universities, such as chiropractic, could include a component on the evidence base for vaccination. Regulating CAM professionals is unlikely to reach vaccine refusing parents because CAM is associated with, but does not appear to cause, their decisions. A more sustainable solution could lie in measures to bridge the gulf between the modalities, especially given the ‘healthism’ overlap we have noted above. Wardle et al. (2016) suggest utilising pro-vaccine voices within CAM professional communities, which would certainly add to the ‘informed’ capacity of their clients.

Vaccination messaging that employs CAM-critical discourses sometimes explicitly rejects CAM as not being effective, or a suitable replacement for vaccination. However, parents in our study were not so concerned with efficacy in disease prevention; they did not fear disease or have high expectations about preventing it. A more salient alignment could be to reframe vaccination as complementary with health, wellbeing and agency. The ingredients inside vaccines – so often maligned as ‘chemicals’ – are predominantly there to create a ‘memory’ in the immune system, to ‘strengthen’ it so it will not break and need fixing. Adjusting vaccine language to address parents’ preference for natural processes (including real diseases) could assist in reframing.

There are lessons here for clinical practice, too. In the clinical encounter, an outright rejection of CAM will not address the central rationale for a parent’s use of it. Health professionals may be tempted reflexively to reject the use of CAM as a prevention measure, assuming that they can ‘right’ the wrong thinking. This communication practice will often backfire and further drive a wedge between epistemologies. We suggest that practitioners adopt a tone of curiosity and partnership, seeking to better understand the core concerns with vaccination and whether there is any room for change in position or compromise. Further studies are required to determine the most effective ways to engage with parents who choose not to fully vaccinate and use CAM.

We note that strong movements within medicine who are opposed to CAM might limit scope for a mainstream interaction. Indeed, given the fundamental epistemic divide that we highlight here, those who seek to bridge it will face significant challenges. But crucially, those seeking to develop consumer information about vaccines and CAM use should take to its development an understanding of how parents interact with it. This should start with an acknowledgement of CAM’s values proposition, its salience, and how its use rests upon assumptions about disease prevention, severity and treatment, particularly as these pertain to enhanced parental agency.

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