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## **Beliefs underlying UK parents' views towards MMR promotion interventions: A qualitative study**

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This study sought to extract underlying beliefs towards measles, mumps and rubella (MMR) vaccination from UK parents' views towards potential motivational and organisational interventions to boost MMR vaccination. Thematic analysis of transcripts of five focus groups identified five underlying psychological themes: parents' information needs, distrust of government sources, trust of other parents, attentional biases towards risk information and problems of achieving "balance" in MMR information provision. These are likely to represent important psychological barriers to or facilitators of the effectiveness of MMR promotion interventions.

**Keywords:** measles; mumps and rubella; vaccination; beliefs; intervention; social cognition

### **Introduction**

Vaccination offers the safest means of protection against measles, mumps and rubella (MMR). Two doses are required: the first, given at around 13 months of age, affords approximately 90–95% protection, which increases to 99% after the second dose, given before five years (Salisbury, Ramsay, & Noakes, 2006). Ninety-five per cent coverage is needed to achieve herd immunity (i.e. population resistance due to immunity of a large proportion of that population) (WHO Europe, 2005). The mid-1990s UK national coverage rate of 90+% declined following prolonged adverse publicity surrounding the safety of the vaccine (Friederichs, Cameron, & Robertson, 2006), and has halted at around 85% (National Statistics, 2008). Increased susceptibility to and incidence of measles has prompted calls for urgent intervention (Donaldson, Beasley, & Ridge, 2008; Friederichs et al., 2006).

Considerable evidence is available regarding modifiable predictors of MMR vaccination decisions (Gardner, Davies, McAteer, & Michie, 2008; Tiliopoulos & McVittie, 2007). These can be grouped into motivational factors, which culminate in parents' willingness to vaccinate (e.g. concerns around vaccine safety and misperceptions of a link to autism; Casiday, Cresswell, Wilson, & Panter-Brick, 2006; Guillaume & Bath, 2004), or organisational factors, which affect the extent to

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<http://www.informaworld.com>

which parents willing to vaccinate are able to do so (e.g. access; Macdonald, Henderson, & Oates, 2004). Of these, parental motivation may be the more powerful obstacle to vaccination: around 75% of non-vaccinating parents have consciously decided not to vaccinate (Pearce, Law, Elliman, Cole, & Bedford, 2008).

Few interventions to promote MMR vaccination uptake have been suggested (Gardner et al., 2008), and responses to potential interventions have rarely been documented (but see Jackson, 2007; Martin & Samson, 2003). Intervention effectiveness may be undermined if the target population is unwilling or unable to engage with it (Craig et al., 2008). Examination of views towards interventions among the target population can reveal underlying patterns of beliefs which may act as barriers or facilitators to vaccination uptake and intervention effectiveness.

The present study aimed to identify and describe beliefs underpinning parents' responses to possible MMR uptake interventions.<sup>1</sup>

## **Method**

### ***Participants***

Focus groups were conducted with five groups of London-based parents in summer 2008. Parent-and-toddler groups were randomly selected from lists on five local council websites. Group leaders were approached by telephone. Group leaders who permitted focus groups to take place during regular group sessions were sent flyers and posters to distribute to group members advertising the date and time of the focus group. Participation was voluntary. In two instances group leaders did not allow us to conduct focus groups, and so alternative parent-and-toddler groups from the same locality were randomly selected.

Focus groups were conducted in five different Primary Care Trust areas, each of which reported MMR uptake levels below the 95% rate required for herd immunity and the 2007/08 UK average (85%; National Statistics, 2008): Greenwich (Group 1; 64% uptake); Westminster (Group 2; 2007/2008 data unavailable, but 81% uptake in 2006–2007; National Statistics, 2007); Sutton and Merton (Group 3; 78%); Brent (Group 4; 76%); and Camden (Group 5; 63%).

The five groups comprised a total of 28 parents, who reported a total of 49 children below 16 years. Nine (18%) of these children were not vaccinated, because the child was too young (six children), or parents had chosen to delay (two children) or not vaccinate (one child). The majority of parents were: White British (14 parents) or other White ethnicity (3 parents); married (17 parents); and, educated to degree level or above (17 parents) (see Table 1).

### ***Procedure and discussion materials***

Focus group discussions lasted between 45 and 90 minutes. Discussions were informed by a booklet (available from the authors) describing six potential MMR promotion interventions (three motivational, three organisational), as identified by a previous literature review (Gardner et al., 2008) and discussion with experts. Descriptions were based on published reports and documentation obtained from intervention developers.

The three motivational interventions were primarily information-based: a website outlining vaccination benefits and risks (National Centre for Immunisation Research

Table 1. Participant characteristics.

Parent	Age	No. children under 16 years	Education	Ethnicity <sup>a</sup>	Marital status	All children aged >2 years immunised with MMR?
Group 1						
Mother	21	3	No formal education	White British	Cohabiting	Yes
Mother	26	2	Further education (FE): Degree level or above	African	Single	Yes
Mother	24	2	FE: Degree or above	Pakistani	Married	Yes
Mother	38	2	Certificates or diplomas	White other	Married	Yes
Mother	25	3	FE: Degree or above	White and Black Caribbean	Married	Yes
Mother	NR	2	FE: Degree or above	African	Single	Yes
Mother	35	3	FE: Degree or above	White British	Married	1 child not immunised (decided to delay)
Group 2						
Mother	32	1	FE: degree or above	White other	Married	Yes
Mother	30	2	FE: degree or above	White other	Single	Yes
Mother	28	1	Higher education (HE): A Level/GNVQ	White British	Single	Yes
Mother	25	1	FE: degree or above	White British	Married	Yes
Group 3						
Father	36	2	FE: degree or above	White British	Married	Yes
Father	38	1	HE: A Level/GNVQ	White British	Married	Yes
Father	36	2	FE: degree or above	White British	Married	Yes
Father	43	1	FE: degree or above	White British	Married	Yes
Father	45	1	FE: degree or above	White British	Married	Yes
Group 4						
Mother	28	NR	No formal education	Indian	NR	NR
Mother	NR	2	FE: degree or above	Caribbean	NR	Yes
Father	41	3	GCSE/O Level	White British	Cohabiting	1 child not immunised (decided to delay)
Mother	35	1	HE: A Level/GNVQ	White other	Single	Yes
Mother	40	2	NR	Bangladeshi	Married	NR
Mother	NR	2	HE: A Level/GNVQ	White and Asian	Married	Yes
Mother	36	2	FE: degree or above	White and Black African	Married	Yes
Group 5						
Mother	44	3	FE: degree or above	White British	Married	Yes
Mother	36	2	HE: A Level/GNVQ	White British	Cohabiting	Yes
Father	36	1	FE: degree or above	White British	Married	1 child not immunised (decided not to vaccinate)
Mother	20	1	HE: A Level/GNVQ	Black other	Single	Yes
Father	30	1	FE: degree or above	White British	Married	Yes

NR, not reported.

<sup>a</sup>Ethnicity measured using UK census categories.

and Surveillance, n.d.); an information pack for health professionals to inform discussions with parents (Martin & Samson, 2003); and parent-led group MMR discussions (Jackson, 2007). Two organisational interventions entailed restructuring provision of MMR vaccines: “immunisation champions”, i.e. healthcare workers who coordinate vaccination procedures and liaise with staff and parents (London Assembly, 2007); and mobile vaccination units to increase awareness and access (NHS Institute for Innovation and Improvement, n.d.). The third organisational intervention concerned legislative change to withhold child benefit payments (incentivised vaccination; Macara, 2008) or school attendance from non-vaccinators (compulsory vaccination; Creagh, 2008).

The focus group began by asking parents to describe their initial responses to each intervention. Discussion progressed with minimal facilitator involvement, though prompts were used where the following areas were not spontaneously addressed in relation to each intervention: perceived usefulness, feasibility, ease or difficulty of implementation, awareness of similar interventions. Audio-recordings of discussions were transcribed verbatim. The study was given ethical approval by the UCL Psychology Department Ethics Committee (ref STF/2007/8/007).

### ***Analysis***

Thematic analysis was used to extract latent psychological themes observed to recurrently underpin discussions (Braun & Clarke, 2006). Initial coding assigned conceptual labels to topics. Labels were refined and organised into discrete themes, the validity of which was reviewed in relation to the wider data set. Our analysis adopted a realist epistemological stance, and was inductive in that coding and analysis were not constrained by pre-existing coding frames or theoretical predispositions (Braun & Clarke, 2006). Analysis was undertaken by BG, with emergent themes and data interpretation regularly discussed with the research team (AD, JM, SM) and verified with recourse to transcripts and/or comparison with quotations elsewhere in the data.

### **Results**

Five discrete themes were extracted: parents’ information needs, distrust of government sources, trust of other parents, attentional biases towards risk information and problems of achieving “balance” in MMR information.

#### ***Parents’ information needs***

Many parents’ felt under-informed and uncertain about risks of vaccination, and experienced barriers to accessing information to address these concerns. Some felt that the quantity of information available surrounding their child’s health made it difficult to isolate, and assess the quality and relevance of, MMR-specific information (“*I struggled to find the information that I wanted ... about autism and all the rest of it. [...] People don’t have time to wade through tons of stuff.*” Dad, Group 3 [i.e. DG3]).

This could be problematic where parents are exposed to conflicting or confusing messages (“*you hear about new research and you’re not sure how relevant it is*”; Mum, Group 5 [MG5]).

Parents often sought clarification from health professionals, but felt that general practitioners were too busy to offer advice (“*the GP is trying to rush you through the door*”; DG5). Some parents turned to unofficial sources, such as the internet, though lay websites were often regarded with suspicion:

You get so much information on the internet, but . . . it can be the wrong information. I mean, I could set up a website and give out what I know about anything and it might not be true. So it's really difficult and it's quite dangerous to get certain information from the internet . . . there are myths and scare stories out there. (MG2)

Perhaps as a consequence of difficulties in accessing and evaluating information, some parents were misinformed regarding the MMR-autism link, even where aware of evidence to the contrary (“*I know there's research both ways but . . . there's something in it*” MG5).

Parents appeared largely unaware of risks of not vaccinating, due in part to parents' own efficacious childhood vaccinations decreasing exposure to measles, mumps and rubella (“*What happens if you do get measles, mumps or rubella really badly? I don't think people know [because] we were all immunised for them.*” MG5).

Parents more aware of the seriousness of measles, mumps and rubella were more likely to voice support for MMR promotion efforts (“*I read in a Jamaican newspaper where this child came from England and came down with measles and . . . it caused an outbreak. [. . .] It should be mandatory that they are vaccinated.*” MG4).

### ***Distrust of Government sources***

Parents distrusted information from the Government, which was perceived to be biased towards pro-MMR arguments, possibly due to vested financial interests in vaccination (“*Obviously if it's people that are selling the MMR wanting people to [vaccinate], they're not going to give negative information on it, are they?*” DG1).

Some parents extended their reservations to health researchers and professionals, who were seen to be endorsed by the Government (“*We don't believe scientists any more, we don't believe doctors*” [DG3]).

Many felt that important anti-MMR information relating to vaccine safety and single vaccine availability is withheld by Government, researchers and health professionals:

Father: In London it is relatively easy to get single vaccines.

Mother: Although you're told it's not available if you ask. [. . .] It is obviously a message that people are being told to give you. (G5)

MMR information and interventions may be better received where not explicitly endorsed by the Government or the NHS:

The [immunisation champion] would need to be seen that they weren't just toeing the NHS line on it, because you could just say 'oh well, obviously it's the NHS, they're bound to say "have it" because they want to push it'. (DG5)

### ***Trust of other parents***

Parents empathised with and trusted other parents, who were seen to offer honest and unbiased advice unavailable from official sources (“*Parents trust advice from*

other parents ... [you] take it on board. You listen to them"; MG2). Reports that most parents had vaccinated without complications might portray MMR vaccination as safe and normative, and so reassure ambivalent parents ("If they can put, in the [decision aid web] site, the number of people taking the injection, I think that might encourage people to [vaccinate]." MG1).

Opportunities to share experiences with other parents were valued, particularly for new parents ("You could be having a problem with your child ... when [other mothers] talk to you, you feel like 'oh, okay, thank you, that's [normal]'. You take information from others and we all learn from one another." MG1).

Some respondents felt that the training procedure for parent discussion group leaders would involve pressure to give biased, pro-MMR information, thus compromising trainees' impartiality and credibility:

You don't want someone that's been trained, because then you're thinking 'are they trained to say it's a good thing?' You want them to be balanced. [...] [Through training] they're just going to become one of the experts aren't they, they're not then going to be just a parent. (MG2)

### **Attentional bias towards risk information**

Information on unlikely high-risk consequences of MMR vaccination appeared disproportionately more salient to parents than information on likely beneficial consequences ("[On this website] you've got disadvantages and advantages. We parents, we're looking at disadvantages"; MG1). Thus, high-threat information caused undue concern:

When somebody's afraid of something it becomes bigger than anything else, any of the other positive effects. [...] I think there should be a detailed explanation [on this website] about why one in a million should have [side effects from the vaccine] because we need to know why that should happen ... you could be the unlucky one. (MG1)

Avoiding negative outcomes may be a powerful motivator for parents:

Always you have to think 'it could happen to my child'. [...] If children are dying from it, or very severe illnesses, then everybody will say 'you know what, I'm going to run to the GP and do it'. (MG1)

### **Problems of achieving 'balance' in MMR information**

Parents wanted 'balanced' information about benefits and risks of MMR vaccination ("It has to be evenly balanced. As long as it's the truth, that's what you want"; DG4). An objectively balanced summary of scientific knowledge would favour MMR vaccination, but many parents rejected this as a dishonest account of the evidence. For these parents, "balance" required acknowledging and providing equal quantities of pro- and anti-MMR arguments ("If you ... weight it towards advantages then it's going to lose its ... truthfulness", MG1).

This questions whether parents can accept objective information as "balanced", especially where information is provided by official sources ("You won't get [all the relevant information] from someone whose job it is to give what they want you to



know”; DG4). Some felt that acknowledging risks of MMR could ultimately be unhelpful (“*I think talking about the disadvantages is kind of indulging certain crazy fears and giving a bit too much freedom than they deserve.*” MG2).

## Discussion

Five underlying themes were extracted from parents’ responses to potential MMR uptake interventions: needs for information on the risks and benefits of MMR vaccination; distrust of the Government, and by perceived association, researchers and health professionals; perceived trustworthiness of other parents; attentional biases towards risk information at the expense of information on vaccination benefits; and problems associated with achieving a desired “balance” in the presentation of MMR information.

Our findings echo previous research in showing that many parents question vaccine safety and so face conflict about whether or not to vaccinate (Casiday et al., 2006; Hilton, Petticrew, & Hunt, 2006). Also in line with past work, uncertainty around safety-motivated parents to seek additional information (Guillaume & Bath, 2004), and information from Government, healthcare researchers and professionals was perceived to be untrustworthy even when it objectively summarised the scientific evidence (Raithatha, Holland, Gerrard, & Harvey, 2003). Public distrust of UK Government health safety communications has been linked to the bovine spongiform encephalopathy crisis of the 1980s–1990s, whereby research pointing to a public health threat was withheld by the government (Bellaby, 2003). Further research is needed to evaluate whether distrust of government in the UK extends to international health bodies (e.g. the World Health Organisation), and whether non-UK populations distrust official health information surrounding vaccination. Nonetheless, our results suggest that information-based MMR promotion campaigns aimed at enhancing parents’ knowledge are likely to be better received and more effective where presented as separate from, and not endorsed by, the UK Government (Casiday et al., 2006).

Parents felt able to empathise and identify with other parents, and viewed them as trustworthy sources of information. This supports work which suggests that first-hand experience of making healthcare decisions may confer an expertise more highly valued by peers than professional medical knowledge (Abraham & Gardner, 2009). Other parents may therefore offer a largely untapped source of MMR promotion information, and positive feedback from parents who have vaccinated their children without incident might be most persuasive. A recent intervention evaluation study found that parent-led discussion groups were effective in reducing decisional uncertainty and subsequently increasing MMR uptake (Jackson, 2007). Given scepticism about safety and official information, group leaders should be seen to be impartial. However, this is complicated by parents’ misgivings about the integrity of the training undergone by group leaders. Ensuring transparency in the training process may go some way to alleviating parents’ concerns in this regard. Additionally, in the UK at least, training of group leaders might best be undertaken by the community-based healthcare workers (“health visitors”) with whom parents meet regularly and are most likely to develop rapport (Casiday et al., 2006; Pareek & Pattison, 2000).

Our participants perceived information on the MMR vaccine to be more “balanced” and honest where risks and benefits are given equal weighting. Yet,

scientific evidence overwhelmingly supports MMR vaccination. This creates a dilemma from a policy perspective: parents may be more receptive to scientifically inaccurate communications which overstate risks of MMR. Such communications would however likely cause further public confusion and uncertainty (Wroe, Bhan, Salkovskis, & Bedford, 2005). Concerns for “balance” in MMR vaccination information may perhaps be allayed if evidence-based vaccination information were communicated by, and seen to originate from, parents themselves, rather than official government sources. Pro-MMR campaigns fronted by parents who are high-profile and trusted public figures might be useful in this respect. More empirical work is however urgently needed to comprehensively explore this dilemma and how it might best be resolved.

We found that, when processing information on the risks and benefits of MMR, parents’ attention was more likely to be directed towards unlikely high-threat risks of vaccination than likely beneficial consequences. This may be linked to uncertainty surrounding vaccine safety: previous research suggests that where messages regarding a high-threat risk are contradictory, individuals may overestimate the probability of the risk (Calman, Bennett, & Coles, 1999). Past research suggests that parents may attend closely to risk information because child vaccination decisions are made on behalf of a vulnerable and passive other, and making the “right” decision may be essential in defining oneself as a “good parent” (Casiday, 2007). Public health risk communications often assume that such information is rationally reviewed (Alaszewski & Horlick-Jones, 2003), but in making vaccination decisions under uncertainty, parents may be less motivated by rationality and more by anticipated regret at being responsible for a “wrong” decision (Wroe et al., 2005). Additionally, parents may assign greater weight to the negative consequences of choosing to vaccinate than of choosing not to vaccinate (Wroe et al., 2005). Information designed to allay fears about low-probability risks of vaccination may therefore cause undue concern. This poses a challenge to policymakers: acknowledgement of possible unintended negative consequences is necessary for informed choice, but parents are likely to be averse to any risk to their child, however small (Bellaby, 2003).

Participants were generally unaware of the potential adverse consequences of measles, mumps and rubella. Our findings concur with previous studies which suggest that previous successful vaccination programmes have led parents to underestimate disease severity when making vaccination decisions for their children (Hilton, Hunt & Pettecrew, 2006; Smith, Yarwood, & Salisbury, 2007). MMR promotion information might be made more persuasive through greater emphasis on the consequences of non-vaccination. Recent work suggests that messages focused on the dangers of not vaccinating may be more persuasive than those focused on achieving protection (Abhyankar, O’Connor, & Lawton, 2008). More work is needed to explore how to communicate both vaccination and non-vaccination risks effectively and sensitively so as to avoid being seen to be biased or otherwise causing undue concern.

A limitation of this study is that participants may not be representative; many were married, White British, and/or with higher education, populations well-studied in this domain (e.g. Flynn & Ogden, 2004; Pareek & Pattison, 2000). However, our sample achieved representation from less frequently researched groups including fathers, parents of non-White-British ethnic heritage, and lower SES parents. Additionally, our recruitment method did not allow us to assess how many parents

were aware of the study but decided not to participate. Consequently, we were unable to profile the socio-demographic characteristics or child vaccination status of such parents. Moreover, most participants had vaccinated their children, and so concerns raised in this study may not be pivotal in deciding whether to vaccinate. While there were similarities in reservations expressed by vaccinators and non-vaccinators (see Gardner et al, 2008), the small number of non-vaccinators in our sample precludes systematic comparison of beliefs according to vaccination status. Future work might benefit from more purposive recruitment strategies, and focus group stratification according to socio-demographics and vaccination status.

Our employment of focus group methods and qualitative analysis precludes quantification and systematic comparison of the strength with which participants held the beliefs we have documented. Further methodological research is required to quantify these beliefs. Such work would permit assessment of vaccination beliefs among target populations as a useful preliminary step in the development of tailored MMR promotion interventions.

Additionally, our approach assumes that parental motivation offer a potential route to increasing MMR uptake, yet organisational barriers (e.g. access) can prevent motivated parents from vaccinating. The likely efficacy of interventions in addressing these obstacles may be better revealed by surveying health professionals (Henderson, Oates, Macdonald, & Smith, 2004).

Nonetheless, our results highlight important psychological barriers and facilitators that may determine whether MMR promotion interventions are effective. Addressing these concerns is likely to be important in developing successful MMR uptake interventions.

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### Note

1. We do not seek to summarise reactions to the proposed interventions here, but rather to extract key beliefs about MMR vaccination which underlie these responses. We have described our participants' views towards the proposed interventions elsewhere (Gardner et al., 2008).

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