Abstract

Background

Setting priorities for research requires engaging with technical and value-laden issues. Guidance developed by the James Lind Alliance (JLA) for priority setting draws on both formalised and tacit knowledge held by clinicians and service users. We aimed to assess how service users and clinicians interact when making collective-decisions about research, in particular how they interact and what makes some messages more persuasive.

Methods

An observational study of the Preterm Birth Priority Setting Partnership (PSP), including 13 meetings (12 steering group, one workshop) and two public consultations from 2011 to 2014. We used the Elaboration Likelihood Model of persuasion as a theoretical framework, and adopted an ethnographical approach with participant observation and discourse analysis. This included transcriptions, field notes and analysis of documentary records of meetings.

Results

The most frequently used route for persuasion was the 'central pathway'; health care professionals were more likely to use this route while service users were more likely use peripheral route pathways. Communication patterns depended on the stage of group development. The steering group showed typical stages for group development: forming, storming, norming, performing and adjourning. When new participants joined for the workshop, the group returned to the 'forming' stage. This may have influenced quality of the consensus

Conclusions

Understanding these interactions may explain differences between public voting and the final workshop, and suggests ways to improve prioritisation for research.

Background

Guidance developed by the James Lind Alliance (JLA) for clinicians and service users making decisions collectively about research [2] is unusual in drawing on both formalised knowledge about structures, resources and procedures and tacit knowledge about interpersonal communication and support.[3] We used the experience of the Preterm Birth Priority Setting Partnership [4] to assess how participants interacted and influenced each other.

What we know about how people interact in committees with members from across organisational boundaries that make decisions about highly technical matters comes from health research, from experimental 'laboratory' studies in social psychology, and from observations in business administration.[5] Larger groups allow greater diversity of membership, possibly enhancing the groups' credibility and acceptance of its decisions.[6] Varied membership brings more perspectives, alternatives and better performance. Increasing group size may offset the benefit of greater diversity, as reliability declines with more than six people, and there are diminishing returns over 12. Status is linked to participation in larger groups, and to influence in small groups. Formal methods appear to be better than informal methods, but the reasons are unclear. The role of the chair or group facilitator links to collective performance, being crucial for establishing inclusive practices, and an atmosphere of openness and trust.[6-9] Discussion allows sharing and evaluation of knowledge; when time is short, less knowledge is shared and decisions are more the result of negotiating between prior preferences.[10] When tasks involve judgments, rather than problem solving, status within the group influences decisions.[6]

This evidence is directly relevant to decision-making about research priorities. Two additional issues for research prioritisation involving service users and clinicians are i) the influence of different types of expertise, based on qualifications, experience or problem-solving skills[11], and ii) how arguments are framed and attitudes changed as consensus develops.[12,13] The roles of logic and emotion in changing attitudes through one-way communication, such as a broadcasted political campaign or advertisement, have been investigated with the Elaboration Likelihood Model.[14,15] This argues that messages to influence others take either a central route or a peripheral route. Central route messages include information, rational arguments and evidence. Peripheral route messages rely on receivers' emotional responses to 'authority', 'commitment', 'consistency', 'liking',

'reciprocation', 'scarcity' and 'social proof'.[16] This model, adapted for interactive communication, offers a framework for analysing group discussion of technical and emotive issues in the context of inequalities of knowledge and status. We aimed to use this model to assess how service users and clinicians in the James Lind Alliance (JLA) Preterm Birth Priority Setting Partnership interacted when making collective-decisions about research priorities. In particular, to determine how they communicated when deciding research priorities together, and what made some messages more persuasive than others.

Methods

The preterm birth priority setting process took place from March 2011 to March 2014. Methods are published elsewhere.[17] During this process, the partnership had two workshops (initial awareness, and final prioritisation), and 12 steering group meetings (nine face-to-face and three teleconferences). The study sample comprised those attending one or more of the steering group meetings, or the final workshop. We excluded the initial workshop, as it did not involve decision-making. The final workshop prioritised the top 30 research questions from public voting into a top 15. Meetings took place in either London or Nottingham, and involved three types of organisations: academic, clinical and charities.

This was a semi-ethnographical study[18] with participant observation[19] and discourse analysis[20] of steering group meetings and the final workshop. We used digital recording and transcription of discussions, field notes (for instance of non-verbal communication), and analysis of documentary records of meetings and steering group activities. At each event, participants were reminded about the recording and all consented. Voice recorded data were imported into software for qualitative data analysis (NVivo 10), transcribed by an independent researcher, and coded using an analytical framework based on the Elaboration Likelihood Model[15] with peripheral cues adapted.[16] Analysis therefore sought two different pathways of persuasion (central or peripheral) and their cues (authority, commitment, consistency, liking, reciprocation, social proof or scarcity).

Results

Use of central and peripheral pathways at steering group meetings and the workshop

At steering group meetings, members used the central route (n=281) more often than the peripheral route (n=221). This was consistent (table 1), regardless of timing of the meeting or type of discussion, supporting the assumption of the Elaboration Likelihood Model[15] that

individuals with good cognitive ability (such as these steering group members) employ central routes for persuasion. Amongst peripheral cues, 'social proof' and 'consistency' were the most popular. During the workshop, 'social proof' was the most frequent cue (table 1); this relies on peer pressure, arguing 'we do this in our group'.

Table 1: Persuasive pathways used during the steering group meetings and final workshop

	Frequency of use	
	Steering Group meetings	**Final workshop**
Peripheral route	**221**	**40**
Authority	18	6
Commitment	15	-
Consistency	39	5
Liking	2	1
Reciprocation	10	2
Scarcity	23	6
Social proof	42	23
Central Route	**281**	**48**

At the final workshop, health care professionals used central route pathways[33] more often than people effected by preterm birth (table 2). The association between type of speaker and the persuasive pathway was statistically significant (p=0.017, Pearson's Chi-square test). In other words, health care professionals were more likely to use central route pathways than service users, while service users were more likely to use peripheral route pathways.

Table 2: Association between type of speaker and use of persuasive pathway at the workshop

	Persuasive pathway		***Total***
	Central	**Peripheral**	
Health care professional	33	17	***50***
People effected by preterm birth	15	23	***38***
Total	***48***	***40***	***88***

At the workshop, for the peripheral route both types of speaker used 'social proof' more than other cues. They used this more often at the beginning of discussion, and more often by people effected by preterm birth than health care professionals (table 3). Some participants used 'reversed' social proof to persuade others, using arguments based on 'we do not do it normally in our group so we should try it next time'.

Table 3: Peripheral route cues used at the final workshop, by type of speaker

	People effected by preterm birth	**Health care professionals**	***Total***
Peripheral route cues			
Authority	3	3	*6*
Commitment	-	-	*-*
Consistency	2	3	*5*
Liking	1	-	*1*
Reciprocation	-	2	*2*
Scarcity	2	4	*6*
Social proof	17	6	*23*
Total	***23***	***17***	***40***

Different contexts for discussion

Preliminary analysis of the first two steering group meetings suggested the patterns of persuasion differed depending on the context of discussion. When the discussion was about medical information (for example, prevalence of pre-eclampsia), participants were easily persuaded by information based on evidence. When it was about decision-making based on values (for example, the scope of the partnership), participants used different ways of persuasion. To investigate communication behaviour in different contexts, we needed to look at the types of discussion. It has been argued that there are four types of discussion; informational, dialectical, problematical and reflexive.[21] During informational discussion, the facilitator encourages participants to speak, defers controversy, and lets participants know their ideas will not be evaluated. In problematical discussion, a problem-posing query has the participants consider the information and/or values needed to address the issue intelligently. In dialectical discussion, participants are requested to state opponents' views accurately and

sympathetically. In reflexive discussion, participants discuss their own discussion in order to learn from the process.

Based on this classification, we coded transcripts based on whether the discussion was: informational, problematical or reflexive. We did not use 'dialectical' as it was not clear whether participants were taking a position to provoke thoughtful debate, or genuinely challenging an opponent's views. Throughout the partnership process, informational (n=104) and problematical (n=169) were the main types of discussion, with problematical increasing as the partnership developed. For the first 18 months, during the first phase of partnership working (up to preparing the long list for public voting), there were no reflexive discussions. Reflexive discussions were identified later (n=9), but were few.

Persuasive pathways used for different types of discussion

For both informational and problematic discussion, people used more central route than peripheral route pathways (table 4). When using peripheral route messages to persuade others for informational discussion, participants tended to use all the peripheral cues (table 4). For problematical discussion, they used mostly 'consistency' or 'social proof'. At steering group meetings 'consistency' was used more, while 'social proof' was used during the workshop. 'Scarcity' was used more frequently during the second phase of the priority setting process, when there was more time pressure.

Table 4: Persuasive pathways and cues, by type of discussion

	Type of discussion		
	Informational	**Problematical**	**Reflexive**
Central route	85	134	1
Peripheral route	39	79	3
Authority	6	9	1
Commitment	3	5	-
Consistency	5	23	-
Liking	-	1	-
Reciprocation	5	3	-
Scarcity	7	8	1
Social proof	4	24	1

Final prioritisation workshop

New participants joined the group for the workshop. They required explanation, information, time to understand the process of priority setting, and time to ask questions. Steering group members actively advocated the partnership process. They often responded to queries before facilitators could do so. As service users and clinicians themselves, steering group members were effective at providing credibility to the wider group. Participants at the workshop used 'reciprocation' during the consensus process. For example, for a topic with conflicting views, some people wanted to place it at the top of the list while others wanted to put it at the bottom. Often the group decided to place the topic in the middle of the list, to compromise.

It took time for new participants to contribute to discussions. There were four small groups in the morning, and three in the afternoon. Facilitators in the small groups began with introductions, and reminded participants of the purpose of the prioritisation and invited them to express their views. In the morning, for the first 15 minutes participants did not initiate discussion, they only responded to the facilitator. This was especially so for newly joined service users. During this time participants did not express strong views on a particular topic, rather they used 'cushion words' such as '*if I understood correctly, […]*' or *'this is only my personal experience, […]*', and social proof cues, such as '*in my charity (or in clinic), we do this in this way therefore […]*', appeared more frequently.

Subsequently, participants actively engaged, and often there were lively debates with conflicting views on a particular issue. When they came back after the lunch break and met different people in another small group, participants engaged immediately with the task. They were involved more actively in the topics they had failed to persuade others about in the morning. They came back with more developed arguments, and often paraphrased their opponent's earlier argument.

Discussion

Throughout the partnership working process, participants were more likely to accept messages with a central route than those with a peripheral route. This supports the Elaboration Likelihood Model, which argues that if participants are 'highly motivated' and 'have enough knowledge to understand the information', messages with a central route are

more persuasive. Participants in the partnership were assumed to be 'highly motivated' and 'have enough cognitive abilities' to understand the process, as they had experience (either direct or indirect) and were willing to advocate for the group they represented.

The impact of peripheral route message is weak compared to central route messages.[15] For example, participants might be persuaded for the short term but change their decision change later;[22] hence for a lasting impact, central routes are better than peripheral routes. During the final workshop, sometimes participants were assisted to use more central route (or evidence–based) arguments. For example, in one small group discussion, participants considered 'how can infection in preterm infants be better prevented?'. Initially they decided not to prioritise this topic based on the assumption that 'infection would be limited to the hygiene issues'. After clarifying that infection is also associated with brain injury, the group decided to prioritise the topic. If a peripheral route message was supported by a central routed message from another speaker, it became more persuasive. If logical arguments supported the peripheral route, it was more likely to be accepted.

At the workshop, participants had access to information about the public vote for that question; overall, and by service user and health care professional. After accessing this information, they used more central route arguments, rather than peripheral route ones. When participants could clearly state that the topic was an unanswered question, it became more persuasive. For example, questions on 'Group B Strep' and 'environmental issues' were prioritised within the small group discussions. However, topics such as 'kangaroo care' and 'breastfeeding' were moved down the ranking because participants thought that they were (partly) answered or being actively investigated.

The James Lind Alliance Guidebook highlights the importance of the facilitators' role.[2] Throughout the prioritisation process, facilitators often paraphrased someone's claims by using central route expressions, and these claims were likely to be accepted. Facilitators focused on the prioritisation process, particularly when time was short. When there was less time pressure, facilitators were able to explore further. Participants were able to review the outcomes of their collaborative work as they went along, and could ask questions. During these reflective discussions, participants mostly used central-route pathways. These claims were more effective, supporting the Elaboration Likelihood Model.

After the first 15 minutes of discussion, workshop participants were more likely to engage actively, and used more central-route messages. During the afternoon discussion, many used what they agreed in the morning as a cue to justify or support their arguments. In this way, participants used 'social proof' of the morning group. Participants reflected what they discussed in the morning, although they were reluctant to change the existing order because it was based on consensus from the small groups.

What factors made arguments more or less persuasive?

An argument was less persuasive when: a) it lacked a central-route pathway, b) it lacked urgency, c) broader questions subsumed narrower questions, d) participants thought that they knew the answer, e) participants did not like the answer they thought might ensue, and f) when survival was not at stake. An argument without a central-routed pathway was less likely to be accepted. When an argument did not have a central-routed pathway, discussion was more likely to move to another topic.

When the topic (research question) did not address either immediate investigation, or a serious health conditions, it was more likely to be rejected. Participants tended to treat physical conditions (such as brain injury) as more serious, while they tended to conceptualise psychological conditions (such as emotional impact, attachment and bonding) as less serious. With similar reasoning, workshop participants combined two questions with themes of 'emotional and practical support', and 'attachment and bonding' (table 5). For the first, original submissions from the public consultation focused on emotional impact for mothers experiencing preterm birth, how to offer them adequate support, and communication between parents and health care professionals, especially at the time of birth. For the second, original submissions were about communication between mother and infant caused by preterm birth, which could be related to health care professionals and hospitals, but mostly focused on long-term problems and consequences. In the public voting these two questions were both supported mainly by service users, the first ranked 28/104 and the second 25/104.[17] The merged question was ranked 9 at the workshop (4) '*What emotional and practical support improves attachment and bonding, and does the provision of such support improve outcomes for premature babies and their families?'.* Although some service users still argued that the two questions differed in nature and origins, other participants were not convinced.

Table 5: Original submissions for the two questions merged during the workshop

What emotional and practical support should be included in a care bundle that aims to optimise outcomes of preterm birth?	**Which treatments improve attachment and bonding and does the promotion of appropriate attachment and bonding improve outcomes?**
• 'The emotional effects on the mother of *having a* preterm baby' (mother) • 'More information available to parents *before the child is born and emotional* support for while the child is in ICU' *(*parent) • *'Communication with parents: do parents who receive regular communications (both written and verbal) feel better prepared and supported during the* hospital stay?' (father) • 'The only problem I experienced was the lack of support for me […]' (mother of twins)	• 'Impact of early parental separation to emotional development' (service user) • 'Long term impact of being preterm on *later communication and feeding development - particularly social communication development long term impact on attachment and bonding in* parents with preterm infants' (carer & speech/language therapist) • 'Lacking in bonding with mother, being left *alone for periods of time without nurture or* comfort' (mother) • 'the area in a whole, time spend with family just after birth to bond' (service user) • 'Attachment issues between mother and baby during this traumatic experience' (mother)

Some workshop participants were more likely to rank a question down if they felt that a similar or broader question was already high on the list. For example, screening for the placenta was considered covered by 'general prevention'. Others pointed out the risk of de-prioritising questions because of an overarching question. Participants were more likely to move a question down if they personally did not have uncertainty. For example, a health care professional who argued against support for breastfeeding as a priority used the argument their hospital knew what to do and it worked.

Priorities from the public voting 'lost' during the workshop

Four research questions ranked in the top 10 after public voting were not included in the final top 15 (Table 6). Three (2-4 in table 6) were moved down because participants thought they were included in the overarching question on prevention of preterm birth ("*which treatments, including diagnostic tests, are most effective to predict or prevent preterm birth*?"), whereas the fourth (1 in table 6) was moved down because some participants argued 'it sounded too similar to another question'. For two (1 and 3), participants raised questions about the effectiveness or adverse impact of the intervention. For example, arguing that if stress and physical work does cause stress, why cause additional stress by raising women's concern about it, and the potential stress of screening.

Table 6: Ranking during prioritization for questions in the top 10 after public voting which finished outside the top 15

		Public voting	**Final workshop**		
			am	**pm**	**final***
1	How do stress, trauma and physical workload contribute to the risk of preterm birth, are there effective ways to reduce those risks and does modifying those risks alter outcome?	3	22	19	19
2	What treatments can predict reliably the likelihood of subsequent infants being preterm?	4	27	27	27
3	Can screening of the placenta be effective to detect placenta abnormalities associated with preterm birth?	7	16	17	25
4	Which treatments are effective in preventing spontaneous preterm birth in women with twin and triplet pregnancies, especially in those at high risk of preterm birth?	9	18	18	18

*final ranking before two questions were merged

The question about 'stress and physical workload' remained controversial. Although ranked third after public voting, at the final workshop it ranked 22nd in the morning and 19th in the afternoon, and was not included in the final top 15. Some participants had difficulty accepting

this was a 'research question' because stress and physical workload do not have conventional treatments. Others commented it is difficult to define or standardise 'stress' and 'workload', potentially making research difficult. For example, one service user commented stress would be difficult to define as it is different for different people. Others argued that interventions to reduce physical workload, such as rest, are hard to accept as 'treatment'. Some questioned whether stress and physical workload are associated with preterm birth. Service users who argued against this question referred to their own experiences, arguing either 'I had stress and/or physical workload but I was fine' or 'I had preterm birth but did not have physical workload'. For example, one service user said '*as a parent, I've been pregnant five times, lost the baby, had a miscarriage, had ectopic pregnancy so I can tick all of those things, […], you are going to get lots of people saying yeah I had stress, the wider the question more than likely to get them voting, so for me, it is, can we identify these physical workload things? Having had an extremely stressful time, I still put it further down.'*

This tendency to relate to their own experiences risks over-estimating the accuracy of and/or relevance of past knowledge potentially leading to 'hindsight bias', also known as the 'knew-it-all-along effect'.[23,24] When someone clarified the issues by offering definitions or methods for the intervention, or outlining a group who might be high risk, participants tended to rank the question higher.

The final list of priorities combined outcome from two types of public consultation (Delphi survey, and workshop), designed to counterbalance each other. The 'lost priorities' reflect views from the wider public consultation, which may reflect views from a more representative population of those at risk of preterm birth than was possible to involve in the face-to-face workshop. The top ranked question throughout was an overarching question on prevention and prediction of preterm birth. Participants at the steering group meetings and the workshop discussed whether to keep this overarching question. The consensus from both discussions was to keep it, as it scored so high in the public vote. A consequence was that questions about specific interventions tending to be ranked down, based on the argument they were covered by this overarching question, contributing to the 'lost priorities'.

Delphi versus Nominal Group Technique

The preterm birth prioritisation used methods[2] which combine two iterative techniques for achieving consensus: Delphi and the Nominal Group Technique. The Delphi method involves

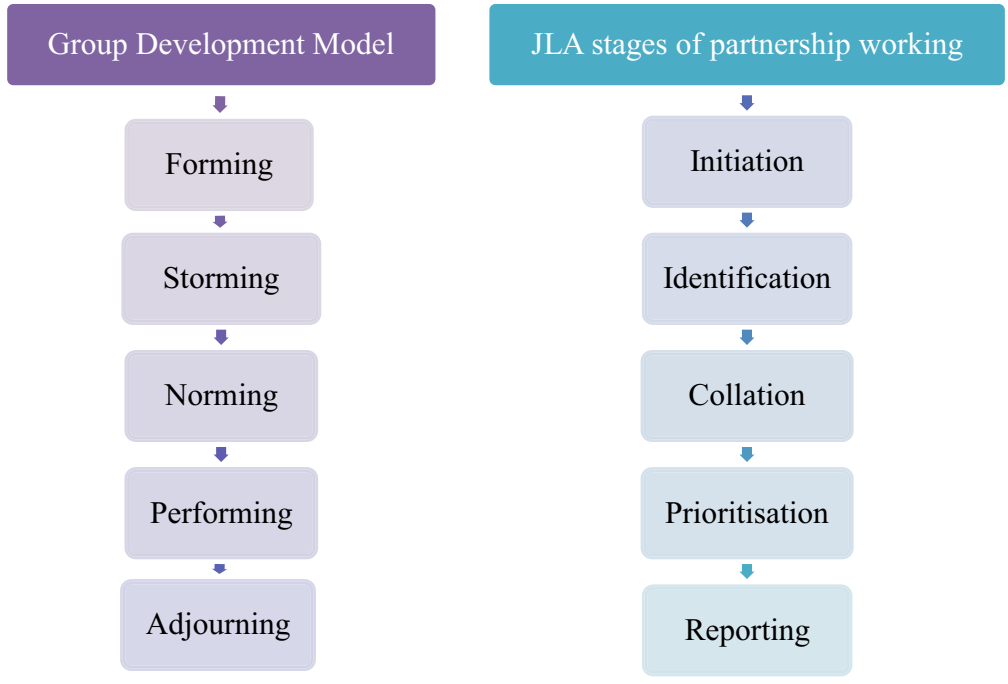
circulating questionnaires to individuals, sharing results with them, and then continuing to re-circulate and refine responses until consensus is reached.[25] The Nominal Group Technique prioritises within a group. Usually Delphi is used for forecasting. It takes longer to achieve consensus as data are shared over time,[26] but allows wide gathering views in different geographical areas. It is anonymous, preventing undue influence of individuals. Disadvantages were the difficulty of retaining participants, and that it may look less transparent than face-to-face meetings. A Delphi can be closed where a single set of individuals work toward consensus, or open where new people are brought in.[25] Nominal Group Technique requires members to meet face-to-face, giving opportunity for discussion and resolving differences of opinion, and is designed to ensure equal participation.[27] It can achieve consensus within a relatively short time, with members quantifying their opinions numerically. Sometimes smaller teams achieve numerical consensus, and these results are compiled.[10] Disadvantages are the lack of flexibility in time and geography, and that face-to-face meetings need planning and resources.

Public consultation (survey and voting) for this partnership adapted Delphi methods to perform forecasting, this required time to think and research the topic (i.e. what are the research priorities for preterm birth?). The Nominal Group Technique helped the process of initiating and developing the steering group, and the final prioritisation. The final workshop combined the two methods by using outcomes from the public consultation and bringing new participants to the face-to-face meeting. The aim was to maximise the advantages of both methods, whilst minimising the disadvantages. However, the 'lost priorities' suggest it may have weaken the benefits of each method. One factor may have been that in the public voting the reasons for ranking by participants were not known.

Process of consensus development in the Preterm Birth Priority Setting Partnership

To understand the process of consensus development, we compared the Priority Setting Partnership to the five stages in the 'Group Development Model'[28]: 'forming', 'storming', 'norming', 'performing' and 'adjourning'. This model argues that every group goes through these before becoming a self-reliant unit. At each stage, group dynamics change from inefficiency and uneasiness through to high performance. The five stages in the James Lind Alliance process have similarities to the Group Development Model. In particular 'forming' in the Group Development Model, is comparable to 'initiation', and 'adjourning'[29] is similar to 'reporting' (Figure 1).

Figure 1: Group Development Model versus JLA stages of partnership working



JLA=James Lind Alliance

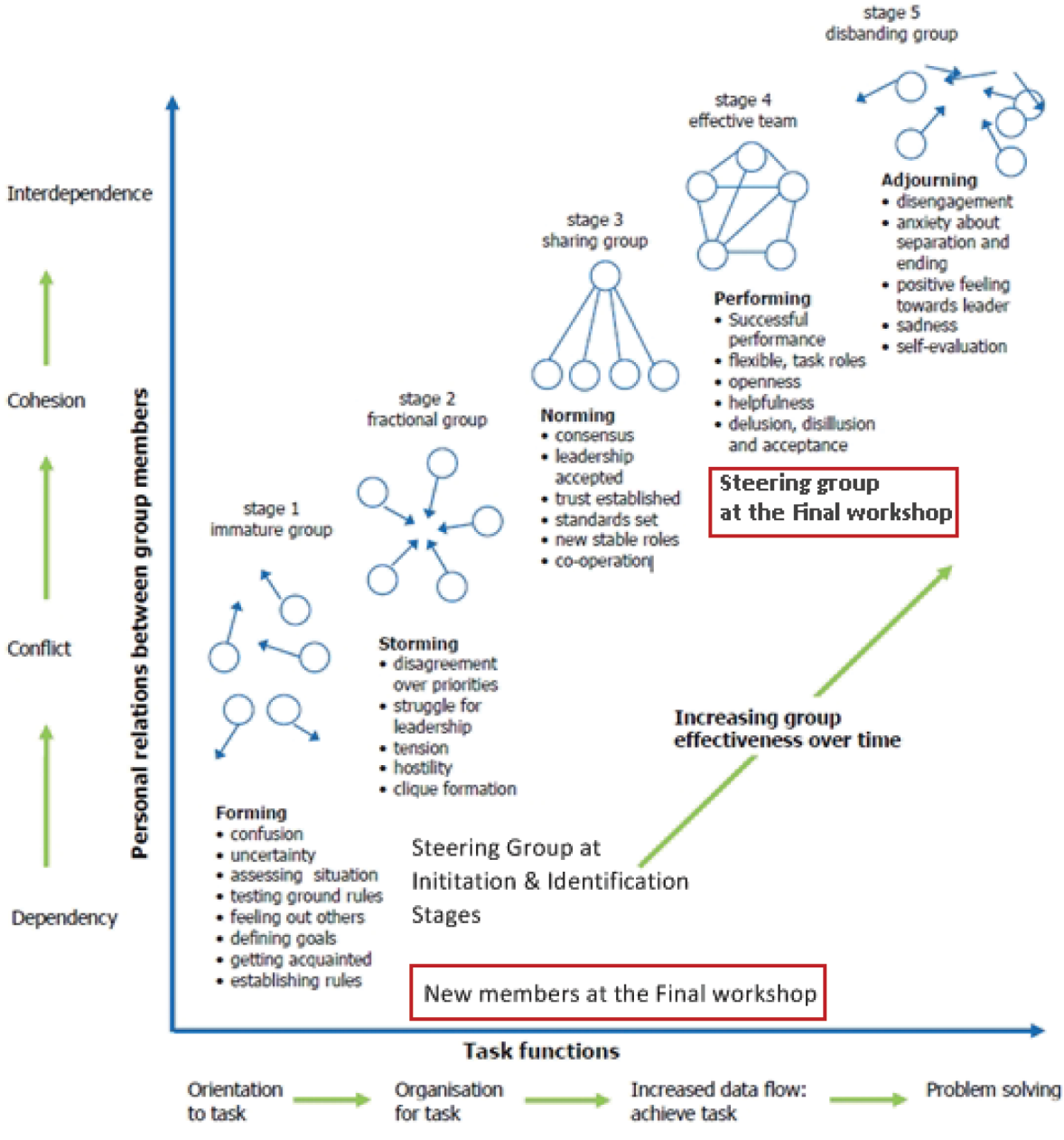
At 'initiation' of the partnership, participants had to form a steering group, and define the scope, timeframe and methods for priority setting. Steering group members looked outside for guidance and direction, while some felt anxious and were unsure of their roles. These characteristics are similar to those in the 'forming' or 'team building' in the Group Development Model.[28] Once the group completes 'forming', it moves onto 'storming' and 'norming'.[28] During 'storming', members feel comfortable expressing discontent and challenging other opinions; although this can be unpleasant, the process of challenging is necessary for group growth. At 'norming', the group have a common goal and mutual plan, and take responsibility for success in reaching that goal. In the JLA process, it was difficult to distinguish 'norming' and 'storming', as members were repeating 'storming' after 'norming'. This 're-norming' is perhaps due to the group having to perform multiple tasks, such as deciding the partnership scope and preparing the survey.[30,31] At 'performing' group members are competent, autonomous and able to handle the decision-making process; a stage reached only by high-performing groups[28] and similar to 'prioritisation' in the JLA process.

At the final workshop, communication patterns were different between the steering group members and new participants. The steering group members had already reached 'performing'. When new participants joined the final workshop, the group returned to 'forming'. Members had to spend time getting to know each other, and defining their roles

and tasks. Therefore, those first fifteen minutes, when participants did not express views, can be interpreted as the 'forming' or 'norming' stages necessary for group development. The Group Development Model relates to task function and dependency of group members (Figure 2).[1] Initially, participants are scattered and show high dependency, so tasks at this stage should be introductory. As the group moves on to 'storming' and 'norming', it will experience conflict and cohesion; then as the group 'performs' members manage tasks effectively. Before the final workshop, steering group members had been through the 'conflict' and 'cohesion' process and were 'interdependent', so at the workshop they could work effectively. This caused discrepancy in group development between steering group members and new participants, and new participants were given tasks they were not yet ready for. This discrepancy may have influenced the quality of consensus at the workshop.

In conclusion, this study showed the complex issues when tackling research priorities with service users and clinicians. The Elaboration Likelihood Model helped understanding of how they interact and what elements makes some views more persuasive than others. Service users and clinicians had different priorities and used different communication styles to persuade others. Nevertheless, in general, messages using logical arguments (centrally routed) were more persuasive than emotional arguments (peripherally routed). While the role of facilitators were crucial, participants tended to share more direct messages after the first 15 minutes of each session. The steering group's communication patterns were similar to stages in the Group Development Model, and this changed with new participants joining.

Figure 2: Stages of group development for the steering group and new participants (modified from [1])



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