

# Focus group or individual interviews for exploring children's health behaviour: The example of physical activity

Kay Woolley <sup>1\*</sup>, Kim L. Edwards <sup>1</sup>, Cris Glazebrook <sup>2</sup>

<sup>1</sup> Department of Academic Orthopaedics, Trauma and Sport's Medicine, University of Nottingham, UK <sup>2</sup> Division of Psychiatry and Applied Psychology, University of Nottingham, UK

## Abstract

**Background:** Children's health behaviours affect their current and future health. An appreciation of children's perceptions regarding these behaviours can inform health promotion initiatives. Focus groups and individual interviews have increasingly been used to explore health-related issues with children although the rationale for choosing any one method is not often explained and despite considerable debate about their benefits and drawbacks these methods have rarely been compared directly. This study aimed to explore the relative merits of the two approaches when collecting information from children about their perceptions of physical activity.

**Methods:** Twelve children from Year 6 classes at one UK primary school were randomly allocated to an 'interview group' or a 'focus group' and asked questions about facilitators and barriers relating to their physical activity at school. Focus group interactions and interviews were recorded and transcribed verbatim. Qualitative data were analysed using exploratory thematic analysis and subsequently content analysis was undertaken to quantify differences between the groups.

**Results:** Although both methods were suitable for collecting information from children about physical activity, children who were interviewed spoke on more occasions and offered more information about facilitators for physical activity. They also spoke more frequently about potentially important aspects of the school outdoor environment with regard to physical activity promotion. The focus group was more time efficient in this setting.

**Conclusion:** Qualitative methods for exploring health behaviours may not be equivalent and need to be chosen carefully depending on the specific research problem and practical constraints within a project.

**Citation:** Woolley K, Edwards KL, Glazebrook C (2018) Focus group or individual interviews for exploring children's health behaviour: The example of physical activity. *Adv Pediatr Res* 5:11. doi:10.24105/apr.2018.5.11

**Received:** September 29, 2017; **Accepted:** August 6, 2018; **Published:** August 13, 2018

**Copyright:** © 2018 Woolley et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Competing interests:** The authors do not have any competing interests.

**Sources of funding:** No funding for this research.

\*Email: kay.woolley@nottingham.ac.uk

## Introduction

Children's health is closely linked to the environments in which they grow up and their health behaviours which, in turn, may be linked with health in adulthood [1,2]. Knowing about young people's health behaviours and influencing factors is important for informing health strategies and practices, monitoring effectiveness of health promotion initiatives and development of prevention programmes [3]. Physical activity is an example of one health behaviour in children which

is associated with a range of physical and mental health benefits as well as with the development of social skills and enhanced academic outcomes [4].

Qualitative methods have been used increasingly to explore issues with young people [5,6] and, unlike responding to researchers' closed questions in a questionnaire, allow children to talk more freely, in their own words about their perceptions of and feelings towards a particular issue. Important content and themes may be elicited which might not have been obvious from the literature or known to

adult 'experts'. A variety of health-related topics have been examined in this way [7-9] including research about physical activity through focus groups [10-14], individual interviews [15] and paired interviews [16].

### ***Which qualitative method?***

Focus groups are widely used with children for a variety of research purposes [17] although their relative advantages and disadvantages compared with individual interviews are not entirely clear. There is little consideration in the literature of why one particular method is chosen over another with authors only sometimes stating reasons for their method of choice although not their reasons for discounting another technique. Where qualitative data collection methods are to be used to explore children's perceptions of health behaviours or experiences of health care, the choice of approach may be an important consideration due to specific research constraints and depending on the nature of information that is sought.

In terms of practicality, for instance, focus groups are sometimes thought to be more time-friendly. However, it could be difficult to ensure that all selected participants are available at once [18]. Finding a suitable venue might not be easy in a health-care or community context, nor ensuring attendance of a diverse range of young people. A high drop-out rate of up to 50% is reported for adults attending focus groups in health care settings due to health related issues, fitness, treatment regimes and work schedules [19] and young people, in addition, are reliant on their parents' goodwill and availability. The space chosen for a focus group may also be important for group productivity and interaction. Holding a group in an informal 'activities' area in school, for example, resulted in lively discussion in one study [10] whereas, in contrast, children who usually attend a clinical setting as a patient may feel anxious when they are there to participate in research [20].

### ***Comparing focus groups and individual interviews***

Some researchers have compared descriptively the use of focus groups and interviews with children and have found each method to have particular strengths. Interviews may, for example, be a good forum for talking about difficult or sensitive issues

[21] whilst focus groups can be useful for accessing shared perspectives, [21,22]. A more formal comparison was undertaken by Heary and Hennessey [23] who found that children's experiences of working in the two different ways were similar although more relevant and unique ideas were produced about the causes of attention deficit hyperactivity disorder (ADHD) by means of individual interview and a greater elaboration of ideas was reported from the focus group discussions.

When data collection methods have been compared with adult participants, interviews have been reported to be the most useful method for raising more ideas in some studies [24-26] although others conclude that concepts are more likely to be raised during focus groups [27].

This work highlights that research methods are not equivalent and need to be selected carefully for a particular purpose. This present study was conducted in order to explore the strengths and limitations of using a focus group method for collecting data about children's perceptions of physical activity in a school setting as compared to using individual semi-structured interviews. Specific issues were the feasibility of the two methods in a school setting, the quality and quantity of children's contributions and the number of novel contributions generated which could be used to inform survey development.

## **Methods**

### ***Participants***

One state primary school in the East Midlands region of the UK, chosen for reasons of convenience, was approached and agreed to take part in the study. Study information was sent home to the parents of all 78 children in three Year 6 classes together with opt-out consent forms. Two children (2.5%) returned opt-out forms. From the remaining 76 children, stratified randomisation was used to allocate six children to the 'interview' group condition and six to the 'focus' group condition. Three boys and three girls participated in each group. All participants gave verbal and written informed consent. The study was given ethical approval by the Faculty of Medicine and Health Sciences Research Ethics Committee at the

University of Nottingham (Ref: B14052015 SoM ROD).

**Procedure**

It was randomly decided that the focus group would be conducted before the interviews. The focus group took place in the morning in an empty classroom where the selected children met the researcher (KW). After the consent process, participants were asked questions according to a prepared schedule (Table 1). When the group found it difficult to offer new opinions and ideas, additional prompting (Table 2) was used to encourage children to elaborate further. A photo ordering task was introduced later during the session for which twenty A5 sized photographs, depicting a variety of equipment, spaces, people and signs which might be found in a school's outdoor environment, were placed on the floor. Children were asked to work as a group to order the pictures according to how they thought the images might encourage them to be active. The resulting line of photos was then used as the basis for more discussion as children were asked to explain their reasons for placing the pictures in that particular order.

Individual interviews took place in the same room in the afternoon and each child was taken through the consent process and asked questions according to a prepared schedule (Table 1). A number of prompts were prepared to help children to respond more fully (Table 2). The same twenty A5 photographs were used as above to stimulate further discussion with KW.

**Table 1.** Focus group and interview schedule

---

To begin with, please could you tell me what and who would be in your perfect play space at school if you could have any design and any people that you wanted?

2. What and who would not be in it?
3. Thinking about your own playground now, what kinds of things help you to be active?
4. Is there anything that stops you from being active?
5. Picture Activity.

Thank you

---

**Table 2.** Additional prompts prepared for use during focus group and individual interviews

---

**Physical Environment**

---

Are there any particular pieces of equipment which encourage you to move around more?

If yes: What is it about that which encourages you to move around more?

If no: What would you like which might encourage you to move around more?

Are there any particular parts of the playground/school grounds where you move around more?

What is it there that encourages you to move around more?

Is there anything in the playground/school grounds which puts you off moving around more?

How do you travel to and from school?

If active: Are there any ways that the school makes that easier/harder for you?

If passive: Is there anything the school could do/does/could stop doing to encourage you

to walk/cycle/scooter to school?

**Policy Environment**

Are there any rules that you have here in your school which encourage you to move around more?

Are there any rules that you have here in your school which might put people off or stop people moving around more?

Do all children play out at the same time at playtimes?

Does that work well to help children to get moving around?

Is there anything which stops children from going out to play?

How many adults are usually out with you at playtimes/lunchtimes?

Are you allowed to play on the playground before/after school?

What kind of rules are there about that?

---

**Coding and analysis of data**

The data were examined in two ways. Firstly, themes were identified and coded [28,29] in an exploratory, descriptive analysis. Secondly, the data were transformed to a numerical form through a process of content analysis and subsequently analysed statistically [30,31]. This integrated mixed-method design [32] allows for both the production of numerical data which can be analysed quantitatively (the present study) as well as qualitative themes and description for deeper understanding of wider research questions.

Verbatim transcripts of the individual interviews and the focus group formed the data for coding and analysis. Pseudonyms were used to ensure anonymity of participants. Data analysis was concerned with establishing whether there were any

differences between the focus group and individual interviews in terms of how engaged the children were in discussion and in the type and number of responses that were obtained by each method. Four analyses were conducted. For the first, the total number of words and total number of separate spoken occasions were counted for each child in the interview setting and the focus group as a measure of children's participation in the research process. In the second, the number of facilitators/potential facilitators of physical activity and barriers/potential barriers to physical activity raised, affirmed or spoken about by each child in the two discussion settings were identified (discrete facilitators/barriers). A third analysis then re-examined each child's list of named facilitators and barriers, removing any from an individual's list if it had previously been mentioned by another child, earlier in the process (unique facilitators/barriers). In this way, the total number of unique facilitators and barriers contributed by the interviews and the focus group could be ascertained. A final analysis was concerned with identifying how many times each individual mentioned particular facilitators or barriers and out of those times, how often were those facilitators and barriers personally applicable or relevant. The facilitators and barriers presented were subsequently grouped into categories based on relevant literature and the exploratory descriptive analysis to reduce the data to a more comprehensible size due to the large number of possibilities suggested by the children. Ideas that were not relevant to the research question were not included in the analysis. Examples of transcript segments coded according to the described analyses are shown in Table 3.

Mann-Whitney U tests were used to determine whether there were any statistically significant differences between the focus group and individual interviews in terms of the number of words spoken, number of spoken occasions, number of discrete and unique facilitators and barriers and how often facilitators and barriers were mentioned and noted as personally relevant.

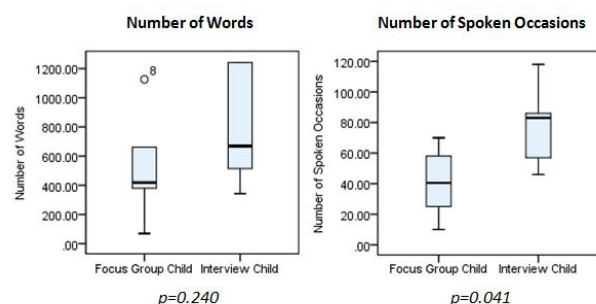
## Results

Three boys and three girls (mean age 11 years 6 months) participated in the focus group and three boys and three girls (mean age 11 years 6 months) were interviewed separately. The focus group lasted 56 minutes after a consent period lasting

approximately 20 minutes and lengths of interview (without consent process) varied from 8.46 minutes to 13.56 minutes (mean length=12.24 minutes), giving a total of 73.33 minutes of interview recordings. The consent process for each interview lasted between 5 and 10 minutes. Interviews took approximately 18 hours to transcribe and the focus group approximately 10 hours.

The coding for facilitator/barrier presence and frequency was checked by a second researcher on a 20% sample of the transcripts and inter-rater agreement established as 71% for analysis 2, 79% for frequency of concepts mentioned in analysis 4 and 70% for frequency that concepts were described as actually facilitative or inhibitive in analysis 4. These values fall within the threshold of 70% agreement recommended by Boyatzis [28] and discussed by Campbell et al. [33] as being acceptable.

The range of words spoken was wider in the focus group, with the least talkative member speaking only 70 words during the session compared with 343 words spoken by the quietest child in interviews (Figure 1). Children in the interview group spoke on significantly more occasions ( $Z=2.09$   $p=0.041$ ) than children in the focus group. In the focus group, the child contributing least spoke on only 10 occasions during the discussion time compared with 46 for the quietest child being interviewed. Spoken occasion counts were similar during individual interviews for girls (median=83) and boys (median=86). In the focus group, however, boys (median=58) spoke on more than twice as many occasions as girls (median=25).



**Figure 1.** Box plots of number of words spoken and number of spoken occasions for focus group and interview children

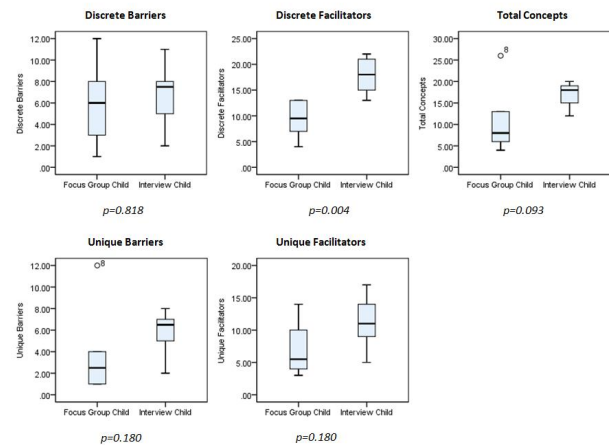
In the second and third analyses, the differences between the focus group and individual interviews in the numbers of discrete and unique facilitators



and barriers generated were examined (Figure 2). Children in the interviews talked about facilitators more than children in the focus group ( $Z=2.75$   $p=0.004$ ), although there was very little difference in the absolute numbers of barriers spoken about in the two discussion settings. When duplicate items were removed to produce measures of 'unique' facilitators and barriers, 102 unique concepts (67 facilitators and 35 barriers) were generated by the interview group compared with 65 in the focus group (42 facilitators and 23 barriers) However, the difference between the two groups in terms of total numbers of facilitators and barriers generated was not found to be statistically significant ( $Z=1.76$ ,  $p=0.093$ ).

In the final analysis, the number of times particular types of facilitators or barriers were mentioned or described as personally applicable was counted. Potential social factors which might influence physical activity were talked about significantly more often by children in individual interviews than in the focus group ( $Z=2.51$ ,  $p=0.009$ ) and the number of times that fixed equipment items were mentioned was greater in the interviews ( $Z=2.02$ ,  $p=0.041$ ) as well as equipment items that were

actually facilitative ( $Z=2.39$   $p=0.015$ ). Activity factors, team games and school features were topics which were also frequently mentioned by children in the focus group and interviews (Table 4). The interview group raised items as being personally facilitative significantly more times than did the focus group (interview median =11.5, focus group median =2.5,  $p=0.009$ ).



**Figure 2.** Box plots of discrete, unique and total concepts for focus group and interview children

**Table 3.** Examples of transcript coding

Analysis	Transcript	Code
<b>Analysis 1: Total number of words/number of spoken occasions</b>	Edie: Like a circuit, like different activities that you go round.	Word count Edie: 20, Kieran: 2
	KW: So, a circuit. What kinds of activities would be on the circuit?	Connor: 2
	Edie: Like skipping and running to somewhere and like doing different...	Spoken occasion count
	Kieran: Basketball, Boxing.	Edie: 2, Kieran: 1
	Connor: That's unsafe.	Connor: 1
<b>Analysis 2: Number of facilitators and barriers raised/mentioned by each individual</b>	KW: If you could design a perfect play space at school in the playground, what would you have in it and who would you have in it?	Potential facilitators raised as part of perfect play space discussion: 4
	Kate: Well, I would have a big park with slides and I would have a few teachers and lots of children.	
	KW: So you like the look of the playground markings?	Facilitator affirmed as part of pictures discussion.
	Thomas: Yeah, cos it's like stuff you can do rather than just sitting around.	
	KW: What happens if you don't have your PE kit at school?	Policy barrier spoken about by Kieran and Alice.
	Kieran: Can't play.	
	Alice: You can't do it.... You have to sit out.	

**Analysis 3: Number of unique facilitators and barriers raised by each group**

KW: ... are there any particular parts of your playground that really encourage you to want to be more active than any others?

Kate: Yeah, um, there is... the climbing frame.

KW: ... so thinking about your own playground now, are there any things in your playground that really, really encourage you to be active?

Sian: Climbing frame.

Kate mentions the climbing frame as a facilitator as part of her interview.

In a later interview, Sian mentions the climbing frame. This is not counted as an additional unique factor for the interview group and is deleted from the facilitators listed by Sian.

**Analysis 4: Number of times particular facilitator or barrier mentioned**

Connor: Well, on like some days only some people can play football and only some people can play basketball like some people can play like on equipment like say year 3s and year 4s at Monday are playing football and year 5 and 6 can't play football. Then Monday there's no football and no basketball and no stuff....

Football, basketball and [loose] equipment talked about on this occasion in same context therefore only counted once each.

**Analysis 5: Number of times particular facilitator or barrier mentioned and acknowledged as liked or undertaken.**

KW: Mmm. Do you ever do those [previously mentioned] games?

Kenny: Er... nah. I'm normally playing football or bulldog or something like that.

KW: That sounds like you like really kind of quite heavy active games.

Kenny: Yeah. I like like ball... any ball games pretty much.

Football, bulldog and 'ball games' mentioned.

Kenny states that he actually plays football and bulldog so both are personally applicable.

Kenny states that he likes ball games so it is personally applicable.

**Example of contribution not relevant to research question**

Kay: If people follow the rules.... Do you think people generally do follow the rules?

Connor: Most people but like some people like when people want to go to the toilets, everyone like shuts the doors when they're going to the toilets but they're actually not.

**Table 4.** Factors mentioned  
\*p<0.05

	Frequency of factors mentioned	
	Interview group Median (range)	Focus group Median (range)
Policy factors	3.0 (0-4)	2.0 (0-3)
Social factors	6.0 (4-7)	2.5 (0-5) *
Activities	7.0 (3-8)	4.0 (1-7)
Team games	5.5 (0-10)	5.5 (0-15)
School features	6.5 (1-13)	5.0 (1-11)

Fixed equipment items	5.0 (2-9)	2.0 (0-5) *
-----------------------	-----------	-------------

**Discussion**

The results of this study indicated that, whilst both focus groups and individual interviews can be suitable methods for collecting information about health behaviours from children, in this case, physical activity, interviews may offer some advantages over focus groups in terms of item generation.

Despite the very small sample sizes, it was found that using interviews to explore children's perceptions produced significantly more contributions, identified more facilitators for physical activity and produced more personally relevant contributions compared to focus groups.

Children in the focus groups spoke fewer words on average and identified fewer unique factors.

The findings suggest firstly, that the interview situation may be one which better facilitates participation for all children, whether confident or shy as indicated by the higher 'spoken occasion' counts in the individual interviews. Even the most reticent child offered over four times as many contributions to the discussions compared with the quietest child in the focus group. Previous work has also suggested that shy children might feel more at ease and contribute more in individual interviews [34] although others propose that a shy child could feel supported by peers in a focus group and thus enabled to speak [35].

As well as speaking on more occasions, children in the interview group also mentioned facilitators significantly more than children in the focus group and talked about features of the school outdoor environment which actually encouraged them personally to be active significantly more frequently. In addition, while a wide range of potential facilitators and barriers were put forward by children in each discussion setting, social factors and fixed equipment were topics of conversation which were spoken about more in interviews and these have been identified as important possible influences on children's physical activity at school [36,37].

As found previously [23], the focus group seemed to be a suitable forum for elaborating on ideas. Through the exploratory analysis, the theme 'Interference from others' came across strongly as a barrier to being active whichever method was used. In the focus group, however, the main discussion about interference revolved around bullies. Once the idea of bullies was introduced, this concept was developed and maintained as illustrated by the following extracts which were in response to a question asking about what children might like to have/not have in their perfect play space.

Kieran: 'There would be no bullies.'

Joe: 'I'd probably go with the same idea as Kieran and have no bullies. They do stop you and they like probably put you to the floor and stuff like that and fight...'

Kieran: ....like punch you...

Connor: They tell you...like...you're not...you can't do that.

Alice: And like you're too weak.

Connor: And tell you...like...the opposite of encouraging you.

Kieran: Or they'll get in front of you...and also, they'll put their fists up or just block you.

Children expanded on the nature and impact of bullying in the playground but there is the possibility that its importance as a barrier to physical activity has been inflated by the group process. However, the individual interviews also reflected the influence of other children using a range of descriptors to describe such interference including 'bully' (Sian, Interview 4) 'naughty' (Kate, Interview 2), 'people who boss you about' (Thomas, Interview 3) and 'fighting and pushing' (Sian, Interview 4).

It seems that focus groups, as on this occasion, may provide a setting where children can expand on a theme and provide more depth in their responses. However, the subject chosen for debate by the group might not always tie in with specific research objectives and children may well talk about concepts that energise them at the expense of topics that the researcher is interested in. In this instance, once the word 'bully' was with the group, children held onto it and used it to frame their responses so that elaboration perhaps took the place of diversity of ideas.

The focus group also failed to elicit measures that the school has put into place to address issues relating to anti-social behaviours and promoting inclusivity. It was only in the individual interviews that important peer support structures such as 'play leaders' and a 'friendship bench' were mentioned. These types of social and emotional support have been used with some success to tackle bullying and related behaviours in schools [38] and may be important strategies for enabling children to be more active in the playground.

Qualitative interview techniques are conducted in a variety of settings which are likely to present specific challenges. Practical differences between methods may also need to be considered when deciding on the most appropriate interview strategy to use for exploring health behaviours.

It is apparent, for example, that the focus group in the school setting was more time-friendly than the individual interviews. This is in contrast to Coenen et al. [39], who found that in adults, focus groups were the most time consuming when the whole research process was taken into consideration. Focus groups may not always be a quick option as considerable time may be needed for preparation, recruitment, transcription and analysis [40]. Where children were recruited through GP practices for attendance at a community centre, for example, the research process was reported to be extremely time consuming [9]. For children in schools, however, many of the issues relating to recruitment and attendance are less of a problem than may be the case in community or medical settings. Focus groups with children in medical settings may require more commitment from parents and thus potentially bias the sampling frame. Individual interviews can be carried out in the children's home, or for adolescents, by phone [41] thus widening access.

A 'neutral' yet 'familiar' setting is advised for children's focus groups as institutions such as schools and hospitals may carry negative associations [42]. In the current study, children in the focus group behaved in a subdued manner which is in contrast to the natural exuberance and excitability that has been described by some as a feature when working with children's groups [43]. This reticence to talk could, perhaps be attributed partly to being in a classroom which might have constrained the way in which some children responded [20,44]. However, finding space in a busy school can be difficult and a smaller, non-teaching room might not have been of an adequate size.

Without the influence and distraction of peers, the individual interview situation seemed to be one in which children could participate more fully and the interviewer could fine-tune the discussion more easily to the needs of the participant. Although some authors have noted that the power differential between adult and child in a one-to-one setting may be harder to equalise [45], the interview setting in this study enabled the researcher to meet individual children as a novice researcher having a chat rather than as an adult working with a group, who, in a school setting may well be equated with an authoritative figure such as a teacher.

### ***Strengths and limitations***

This study collected views from a focus group and six individual interviews from children at one school and selected participants randomly from a representative sample, from which only 2 out of 78 children were withdrawn (Non-response rate: 2.6%). Practical constraints due to school time availability precluded a larger sample size and the authors acknowledge that the very small sample size may limit the extent to which the study can be generalised. However, this is a rigorous approach to exploring this issue which could now be replicated by other researchers.

In addition, the differences between focus group work and individual discussions may not be the same in different populations or conditions which again, might limit the study's generalisability. The topic of physical activity in schools, for example is a social topic which could lend itself well to group discussion. Follow-up studies could address how issues of a more sensitive nature, such as how bullying in the playground or parent influence affects children's physical activity might be explored to most advantage. As well, researchers could compare focus groups and interviews conducted in more neutral settings than schools or clinics in order to understand how results translate into a wider range of circumstances.

That the researcher, KW, was an experienced teacher could be a particular strength of this work as she is familiar with ways of engaging children in a variety of situations, encouraging participation and focus and therefore able to question and encourage responses with some confidence in both interviews and the focus group. A moderator equipped with these kinds of skills is recommended for working with children in a focus group [17]. Conversely, having worked in educational settings, which value group work, KW had some pre-conceptions that a focus group would yield richer data. These pre-conceptions could have unconsciously influenced data collection and analysis.

Boys and girls being mixed in the focus group could, potentially, have influenced the interaction between individuals. Mauthner [46] suggested that single sex groups might be more successful than mixed groups which can be dominated by boys who tend to talk more and influence the direction of the discussion and in the current study, boys were



considerably more talkative than girls in the focus group. Girls might have felt somewhat inhibited in this context and unable to voice some of their opinions. Mixed gender groups have been used successfully with children of this age [34,47,48] although single-sex groups are often recommended [17,43]. Gibson [49] considers the issue of focus group composition with regard to gender and other group composition factors and concludes that the nature of the study as well as practicalities associated with individual studies are ultimately likely to guide focus group composition as was the case in the current study. As recruitment from the community in health care research can be time-consuming and problematic, real world focus groups are rarely single gender so holding mixed focus groups might be the only way to meet sample size targets.

Due to constraints in the school timetable, there was little control over the time of day at which the interviews and focus group could be held so there is a possibility that children or the researcher might have felt more tired/hungry/replete depending on the time of day which may have changed the outcome of a discussion. The very small sample size meant that many differences between the data collection conditions failed to reach statistical significance and non-significant differences could not be taken to indicate equivalence.

## Conclusion

Individual interviews with children are an effective and acceptable method for exploring children's perceptions of barriers and facilitators of physical activity. A well-matched focus group offered no advantages in terms of quality of data obtained. It is argued that for qualitative work in paediatric settings, one to one interviews should be the preferred option in order to ensure the widest possible participation and to increase the diversity of experience and view obtained. Further research is needed to replicate this finding in adolescent and younger samples.

## Acknowledgement

KW conducted the study, collected and analysed the data and drafted the paper. All authors contributed to the study design, editing, reviewing and approving the article. The authors declare no conflicts of interest.

## References

- Graham H, Power C. Childhood disadvantage and health inequalities: A framework for policy based on lifecourse research. *Child Care Health Dev.* 2004;30:671-678.
- Telama R. Tracking of physical activity from childhood to adulthood: A review. *Obes Facts.* 2009;2:187-195.
- World Health Organization. Growing up unequal: gender and socioeconomic differences in young people's health and well-being. *World Heal Organ.* 2016;7:1-294.
- Chalkley A, Milton K, Foster C. Change4Life Evidence Review: Rapid evidence review on the effect of physical activity participation among children aged 5-11 years. London: Public Health England. 2015.
- Gibson JE. Interviews and focus groups with children: Methods that match children's developing competencies. *J Fam Theory Rev.* 2012;4(2):148-59.
- Irwin LG, Johnson J. Interviewing young children: Explicating our practices and dilemmas. *Qual Health Res.* 2005;15(6):821-831.
- Gill P, Stewart K, Treasure E, Chadwick B. Conducting qualitative interviews with school children in dental research. *Br Dent J.* 2008;204(7):371-374.
- Kortesluoma RL, Hentinen M, Nikkonen M. Conducting a qualitative child interview: Methodological considerations. *J Adv Nurs.* 2003;42(5):434-41.
- Morgan M, Gibbs S, Maxwell K, Britten N. Hearing children's voices: methodological issues in conducting focus groups with children aged 7-11 years. *Qual Res.* 2002;2(1):5-20.
- Darbyshire P, Macdougall C, Schiller W. Multiple methods in qualitative research with children: more insight or just more? *Qual Res.* 2005;5(4):417-36.
- Pawlowski C, Tjørnhøj-Thomsen T, Schipperijn J, Troelsen J, Currie C, Zanotti C, et al. Barriers for recess physical activity: a gender specific qualitative focus group exploration. *BMC Public Health.* 2014;14(1):639.
- Stanley RM, Boshoff K, Dollman J. Voices in the playground: A qualitative exploration of the barriers and facilitators of lunchtime play. *J Sci Med Sport.* 2012;15(1):44-51.
- Watson A, Elliott J, Mehta K. Perceived barriers and facilitators to participation in physical activity during the school lunch break for girls aged 12-13 years. *Eur Phys Educ Rev.* 2015;21(2):257-271.
- Willenberg LJ, Ashbolt R, Holland D, Gibbs L, MacDougall C, Garrard J, et al. Increasing school playground physical activity: A mixed methods study combining environmental measures and children's perspectives. *J Sci Med Sport.* 2010;13(2):210-216.
- Christiana RW, Davis M, Freeman M. "I'd rather dance outside": A phenomenological examination of youth experiences in outdoor, noncompetitive physical activity. *Qual Rep.* 2014;19(46):1-16.
- Parrish AM, Yeatman H, Iverson D, Russell K. Using interviews and peer pairs to better understand how school environments affect young children's playground physical activity levels: A qualitative study. *Health Educ Res.* 2012;27(2):269-80.

17. Heary CM, Hennessy E. The use of focus group interviews in pediatric health care research. *J Pediatr Psychol.* 2002;27(1):47-57.
18. Hennessy E, Heary C. Exploring children's views through focus groups. In: Greene S and Hogan D (eds) *Researching children's experience.* 2005;pp:237-253.
19. Tausch AP, Menold N. Methodological aspects of focus groups in health research: Results of qualitative interviews with focus group moderators. *Glob Qual Nurs Res.* 2016;3:2333393616630466.
20. Gill P, Stewart K, Treasure E, Chadwick B. Methods of data collection in qualitative research: interviews and focus groups. *Br Dent J.* 2008;204(6):291-295.
21. Michell L. Combining focus groups and interviews: Telling how it is; Telling how it feels. In Barbour RS, Kitzinger J (eds.), *Developing focus group research: Politics, theory and practice.* Thousand Oaks, CA: Sage Publications. 1999;36-46.
22. Porcellato L, Dughill L, Springett J. Using focus groups to explore children's perceptions of smoking: Reflections on practice. *Health Educ.* 2002;102(6):310-320.
23. Heary CM, Hennessy E. Focus groups versus individual interviews with children: A comparison of data. *Irish J Psychol.* 2006;27(1-2):58-68.
24. Fern EF. The use of focus group for idea generation: The effects of group size, acquaintanceship, and moderator on response quantity and quality. *J Mark Res.* 1982;19(1): 1-13.
25. Rat AC, Pouchot J, Guillemin F, Baumann M, Retel-Rude N, Spitz E, et al. Content of quality-of-life instruments is affected by item-generation methods. *Int J Qual Heal Care.* 2007;19(6):390-398.
26. Guest G, Namey E, Taylor J, Eley N, McKenna K. Comparing focus groups and individual interviews: findings from a randomized study. *Int J Soc Res Methodol.* 2017;20(6):1-16.
27. Thomas L, MacMillan J, McColl E, Hale C, Bond S. Comparison of focus group and individual interview methodology in examining patient satisfaction with nursing care. *Soc Sci Health.* 1995;1(4):206-219.
28. Boyatzis RE. *Transforming qualitative information: Thematic analysis and code development.* Thousand Oaks, CA: Sage Publications. 1998;p.184.
29. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3(2):77-101.
30. Carley K. Coding choices for textual analysis - a Comparison of content-analysis and map analysis. *Sociol Methodol.* 1993;23:75-126.
31. Yang K, Miller GJ. *Handbook of research methods in public administration.* Boca Raton, FL: CRC Press. 2008;p.672.
32. Srnka KJ, Koeszegi ST. From words to numbers: How to transform qualitative data into meaningful quantitative results. *Schmalenbach Business Review.* 2007;1:29-57.
33. Campbell JL, Quincy C, Osserman J, Pedersen OK. Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociol Methods Res.* 2013;42(3):294-320.
34. Hill M, Laybourn A, Borland M. Engaging with primary-aged children about their emotions and well-being: Methodological considerations. *Child Soc.* 1996;10(2): 129-144.
35. Mayall B. Conversations with children: working with generational issues. In: Christensen P, James A (eds). *Research with children: perspectives and practices.* New York: Routledge. 2000;p.120-135.
36. Escalante Y, Garcia-Hermoso A, Backx K, Saavedra JM. Playground designs to increase physical activity levels during school recess: A systematic review. *Health Educ Behav.* 2013;41:138-44.
37. Hyndman B, Telford A. Should educators be 'Wrapping school playgrounds in cotton wool' to encourage physical activity? Exploring primary and secondary students' voices from the school playground. *Aust J Teach Educ.* 2015;40(6):60-84.
38. Thompson F, Smith P. The use and effectiveness of anti-bullying strategies in schools. *GovUk.* 2011;1-13.
39. Coenen M, Stamm TA, Stucki G, Cieza A. Individual interviews and focus groups in patients with rheumatoid arthritis: a comparison of two qualitative methods. *Qual Life Res.* 2012;21(2):359-370.
40. Parsons M, Greenwood J. A guide to the use of focus groups in health care research: Part 1. *Contemp Nurse.* 2000;9(2):169-180.
41. Cuenca J, Glazebrook C, Kendall T, Hedderly T, Heyman I, Jackson G, et al. Perceptions of treatment for tics among young people with Tourette syndrome and their parents: a mixed methods study. *BMC Psychiatry.* 2015;15:46.
42. Topalidou A, Menaxiadi A, Trakas DJ. Focus group settings and ambiance. Maximising interaction, minimising distance in children's groups. In: Trakas DJ (ed). *Focus groups revisited: Lessons from qualitative research with children.* Münster: LIT Verlag. 2008.
43. Clark CD. *In a younger voice: Doing child-centered qualitative research.* Oxford: Oxford University Press. 2011;p.1-240.
44. Punch S. Research with children: The same or different from research with adults? *Childhood.* 2002;9(3): 321-341.
45. Leonard M. Involving children in social policy: A case study in northern ireland. *Sociolog Stud Children Youth.* 2005;10:153-167.
46. Mauthner M. Methodological aspects of collecting data from children: Lessons from three research projects. *Children Soc.* 1997;11(1):16-28.
47. Tobin J. "Good guys don't wear hats": Children's talk about the media. New York: Teachers College Press. 2000;p.33-34.
48. Davis A, Jones L. Environmental constraints on health: Listening to children's views. *Health Educ J.* 1996;55:363-374.
49. Gibson F. Conducting focus groups with children and young people: strategies for success. *J Res Nurs.* 2007;12(5):473-483.