A Qualitative Exploration of the “Critical Window”: Factors Affecting Australian Children’s After-School Physical Activity

Rebecca Megan Stanley, Kobie Boshoff, and James Dollman

Background: The after-school period is potentially a “critical window” for promoting physical activity in children. The purpose of this study was to qualitatively explore children’s perceptions of the factors influencing their engagement in physical activity during the after-school period as the first phase in the development of a questionnaire. Methods: Fifty-four South Australian children age 10–13 years participated in same gender focus groups. Transcripts, field notes, and activity documents were analyzed using content analysis. Through an inductive thematic approach, data were coded and categorized into perceived barriers and facilitators according to a social ecological model. Results: Children identified a number of factors, including safety in the neighborhood and home settings, distance to and from places, weather, availability of time, perceived competence, enjoyment of physical activity, peer influence, and parent influence. New insights into bullying and teasing by peers and fear of dangerous animals and objects were revealed by the children. Conclusions: In this study, hearing children’s voices allowed the emergence of factors which may not be exposed using existing surveys. These findings are grounded in children’s perceptions and therefore serve as a valuable contribution to the existing literature, potentially leading to improved intervention and questionnaire design.

Keywords: focus groups, social ecological model

Physical activity (PA) is an integral part of a healthy lifestyle and has been associated with multiple health benefits for children.1–3 To achieve health benefits related to PA, it has been recommended that children should accumulate at least 1 hour of moderate-to-vigorous PA each day and no more than 2 hours of electronic media per day.4 There is general concern about the number of children failing to meet these guidelines.5,6

The after-school period, typically defined as 3:30–6:00 PM, has been identified as a “critical window” for promoting PA in children.6 After-school PA includes any activities performed in the school, neighborhood, and home settings, until dinner time. The after-school setting is particularly important because it is a unique period where children generally have the discretion to choose their activities.7 Studies have found that children can obtain up to 50% of their daily recommended PA in the after-school period alone.8,9 However, many children experience a number of limitations during this period and are unable to use PA opportunities. The limitations experienced by children during the after-school period may be different to other periods of the day, such as before school or during lunchtime at school.10 Therefore, it is important to investigate the unique factors that influence PA in the after-school setting so that these can be targeted in interventions that promote children’s opportunities to be physically active.

Recent reviews on the effectiveness of PA interventions11,12 have reported modest findings in the promotion of PA. This may be in part due to an inadequate understanding of the unique primary factors that influence PA behavior for a particular population in a specific setting. Self-report measures commonly used to assess the influencing factors of PA tend to be theoretically derived and focus on a narrow set of predefined factors, which are often inferred by adults.13 Although many predefined factors are relevant, children are restricted to choosing from a list of factors which are assumed to be important but may have limited relevance to the setting or behavior under investigation, and therefore, potentially result in biased perceptions.14 Furthermore, correlate measures may not address all aspects of an ecological framework, which emphasize that PA behavior results from multiple influences at the intrapersonal, social, and environmental levels.15 Employing an ecological framework provides a strong foundation for understanding the complex interaction of factors influencing children’s PA behavior in specific settings.10,15

There are few measures of factors influencing PA where children have been the key informants during the development, with some exceptions.16,17 Qualitatively exploring children’s perceptions of the factors that influence setting-specific PA can be an important step in questionnaire development, where children not only
A total of 54 participants provided consent to participate in the focus groups (56% response rate).

Description of Participants

Focus group participants had a mean age of 11.05 (±0.86) years, ranging from 10–13 years. There were 54 participants (23 males), of whom 5 males and 6 females attended schools in low-SES areas (SCR cut-off for low SES = 31.8%; 50th percentile). Of the 6 participating schools, 5 were metropolitan and 1 was rural; 3 were private and 3 were public schools.

Ethics Approval

Ethics approval was obtained from the University of South Australia Human Research Ethics Committee, Department of Education and Children Services (DECS), the South Australian Commission for Catholic Schools (SACCS), and from the relevant school authority. Assent and consent were obtained from the participants and parents, respectively.

Development of Questions

A semistructured questioning route was developed before the focus group discussions to ensure consistency across groups and allow for flexibility of the discussion. A number of prompting questions were designed around a social ecological model to obtain information about interpersonal, social, and physical environmental influences (refer to Table 1). The questioning route was reviewed for structure, content and expected length by a panel of experts with research experience in conducting children’s focus groups. The questions were piloted with a group of children from Year 5, 6, and 7 in a South Australian school to ensure the questions could be answered within an appropriate timeframe, were worded and sequenced appropriately and elicited the required information.

Procedure

Eleven focus groups were conducted on school premises during class time, each approximately an hour in duration. The number of participants varied, ranging from 2–9 participants per focus group. Based on recommendations from the literature, separate male and female focus groups were conducted to provide a safe environment to discuss gender-specific PA influences, such as body image, which may be difficult to discuss in mixed-gender groups. The first author facilitated the discussions, supported by a trained research assistant. The discussions were audio taped and transcribed verbatim.

Each focus group followed the same basic structure (refer to Table 1). As children expressed their views during the discussions, a list of factors in the form of key words and phrases was documented on a whiteboard by the research assistant, until saturation was reached. Saturation occurred when no new ideas were being expressed by the children. To ensure rigor of the data, member checking occurred during which children were
Factors Affecting After-School Physical Activity

Table 1  Focus Group Procedure and Questions Used During Discussions

<table>
<thead>
<tr>
<th>The procedure for each focus group was as follows</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introductory discussion to focus thinking around the concept of physical activity.</td>
</tr>
<tr>
<td>2. After-school timeline activity, where children were asked to write and/or draw the activities they did after school on any chosen day.</td>
</tr>
<tr>
<td>3. A discussion to identify factors that influence children’s after-school physical activity using the following questions.</td>
</tr>
<tr>
<td>When thinking about the time you spend on weekdays, after school . . . can you tell me about . . .</td>
</tr>
<tr>
<td>• What influences your after-school physical activity?</td>
</tr>
<tr>
<td>• Why do you/others do this activity?</td>
</tr>
<tr>
<td>• Is there anyone who helps you do this activity?</td>
</tr>
<tr>
<td>• What helps you or stops you from doing this activity?</td>
</tr>
<tr>
<td>• Is there anything that you would really like to do after school that you can’t do or don’t do?</td>
</tr>
<tr>
<td>• Was there ever a time when you stopped being active after school?</td>
</tr>
<tr>
<td>• What do you think stops children from playing elsewhere in the neighborhood?</td>
</tr>
<tr>
<td>• When you and others are doing this activity, is there anything you have to be careful about?</td>
</tr>
<tr>
<td>• Who do you do this activity with?</td>
</tr>
<tr>
<td>4. Sticker dot activity, where children identified the 5 most important factors.</td>
</tr>
</tbody>
</table>

Results

The findings are presented under the social ecological categories, which provide a systematic structure for questionnaire development. Transport, organized, and nonorganized activities were the 3 main activity domains that emerged from the discussions and were subsequently used to uncover the factors related to the after-school setting. The most important factors identified by the children are described in detail in the following text and are outlined in Table 2. These factors include safety, distance, weather, perceived competence, enjoyment, peer influence, parent influence, and time.

Physical Environmental Factors

Safety. Safety was mentioned as a very important barrier to after-school PA. A number of children discussed not partaking in active transport home from school or playing in the neighborhood due to the presence of strangers and not feeling safe. For example, one child provided a reason why she did not play outside after school, saying “when I go home, alone, I stay inside because I get really scared that someone’s going to come and take me.” One child mentioned that she did not walk home from school “because there are weird people out there.” Another barrier to actively commuting home from school was road safety. This is illustrated by a comment from a child who described why he chose the bus over walking home from school: “you are on a main road [when you walk home] and you would have to cross quite a few main roads and there are very few traffic lights.”

Children also discussed the presence of dangerous objects and animals as a safety barrier to after-school PA. Children living in rural regions mentioned that they had to be careful of scrap pieces of metal and wire in their backyards. These objects would either prevent them from playing in their backyards at home altogether or limit where they could play in their backyards at home. Children, both in rural and urban locations surrounded by bushland, also refused to play outside due to a fear of dangerous animals, such as snakes, lizards, and wasps,
particularly during the summer months. One child commented, “I won’t go out in summer in the bigger bit [of our backyard] because we’ve got a wood heap and I’m scared of snakes.”

**Distance.** Distance to and from a place of interest was described as both a facilitator and barrier to active transport. Children who perceived they lived too far from school or activity facilities would often commute by motorized transport modes. One child had to be driven because “it is too far to walk home. It would probably take an hour.” On the other hand if children lived close, they would either ride or walk. One child mentioned “I live so close. There’s not really any point [taking a car].” This was only discussed by children living in urban locations.

Distance to and from places also influenced children’s engagement in specific activities after school. One child described how he rarely had friends over to play after school because “I’m too far away to have all my friends up for fun play.” Children chose to engage in specific after-school organized activities or sporting clubs because they are conveniently located in the neighborhood. For example, one child commented on the reason why she participated in school sport instead of club sport, stating “if you do school sport, it’s in your district and it’s not going an hour to get there but if you were to do club sport you often have to drive quite far, like maybe to the other side of the city.”

**Weather.** The weather was an important factor mentioned by children across most schools. This influenced children’s PA in all 3 contexts during the after-school period, acting as both a facilitator and a barrier. When the weather was fine and sunny, children described being more active but in extreme weather, such as very hot or wet days, children commented that they would opt to either stay inside or participate in more sedentary activities, such as “in summer I don’t really like to play outside. One because it’s too hot.” One child commented, “I ride the bike in summer but I don’t ride it in winter because it is cold.” In relation to organized activities, engagement in these activities after school is also governed by the weather with one child commenting, “we call off our cricket games if it’s over 35 degrees.”

**Intrapersonal Factors**

**Perceived Competence.** Perceived competence was discussed by children as both a barrier and facilitator in all PA domains. Children mentioned that they chose to engage in activities if they perceived themselves to be competent ("good at it") or found the activity easy. An example of the importance of perceived competence came from one child who commented, “I like sport because I am a good runner. I like soccer mostly because I’m good with my feet so I get the ball and I can dribble it really well and I do basketball as well and I’m pretty good at it.” Alternatively, some of the children did not

---

**Table 2 Factors Influencing Children’s After-School Physical Activity**

<table>
<thead>
<tr>
<th>General categories</th>
<th>Subcategories and/or description</th>
<th>Activity domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical environmental factors</td>
<td>Safety (−) Stranger danger concerns in the neighborhood and home settings</td>
<td>T, N-O</td>
</tr>
<tr>
<td></td>
<td>Road safety concerns in the neighborhood</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>Fear of dangerous objects or animals</td>
<td>N-O</td>
</tr>
<tr>
<td>Distance (+ and −)</td>
<td>The required distance to travel to and from places in the neighborhood (eg, living too far away, living close by)</td>
<td>T, O, N-O</td>
</tr>
<tr>
<td>Weather (+ and −)</td>
<td>The type of weather</td>
<td>T, O, N-O</td>
</tr>
<tr>
<td>Intrapersonal factors</td>
<td>Perceived competence (+ and −) A child’s perception of how good he/she is at a particular activity</td>
<td>T, O, N-O</td>
</tr>
<tr>
<td></td>
<td>Enjoyment (+) I enjoy it; It’s fun</td>
<td>T, O, N-O</td>
</tr>
<tr>
<td>Social environmental factors</td>
<td>Peer Influence (+ and −) Some-one/no-one to play with</td>
<td>N-O</td>
</tr>
<tr>
<td></td>
<td>Bullying/teasing</td>
<td>O, N-O</td>
</tr>
<tr>
<td>Parent Influence (+ and −)</td>
<td>Parent’s rules surrounding physical activity; parent’s concerns for child’s safety; parent support</td>
<td>T, O, N-O</td>
</tr>
<tr>
<td>Time (−)</td>
<td>Lack of time (other commitments; too much homework)</td>
<td>T, O, N-O</td>
</tr>
</tbody>
</table>

Abbreviations: +, Perceived facilitator; −, Perceived barrier; T, Transport; O, Organized activities; N-O, Nonorganized activities.
participate in particular organized and nonorganized activities because they did not think they were competent. This is illustrated by one child, who described the reason why she does not engage in organized activities, stating “I don’t play sport because I am not good at sports and I don’t really see much point in doing it if I can’t really play very well.” This was particularly apparent when children compared their own competence to their peers. One child provided her insights into why she thinks some children do not engage in physical activities after school: “you might not be as good as everybody else, you might like be the worst in the team.”

Enjoyment. One of the most important facilitators of PA in all contexts discussed by the children was enjoyment. When children were asked why they participated in the activities, the most common response was “because it’s fun,” “I enjoy it,” or “because I love it.” After further prompting of what makes an activity fun, it became apparent that ‘hanging out’ with friends was one of the reasons that made activities fun—“when you are with friends, that makes it fun”—and having people to play with—“netball’s really fun because half of my class does it [plays netball].” Enjoyment was also linked to feelings of perceived competence with many children mentioning that activities were fun if they were good at them, such as “I like sport because I am a good runner.”

Social Environmental Factors

Peer Influence. Children mentioned peer influence as an important factor for participating in nonorganized and organized activities. Having “someone to play with” was particularly important in the nonorganized activity context. One child mentioned “It’s always more interesting when someone’s there with you.” In comparison, having no-one to play with was viewed as an important barrier to play by majority of the children. One child provided his perception of why children do not play after school, stating, “If you have no-one to play with. That’s what stops people.” Having no-one to play with was also linked to expressed feelings of loneliness for children living in isolated locations. One child stated, “being on a farm you get lonely.”

Another aspect of peer influence identified in both the nonorganized and organized activity contexts was bullying/teasing. Bullying/teasing was identified as something that would stop participation completely or make it harder to participate in activities, and was perceived to be particularly important for females. One child provided her insights on why some children might not engage in after-school activities, stating, “Someone might be mean to you at dancing and you might stop it because they are mean to you.” In addition, the body size of a person was also linked to bullying/teasing, with one child suggesting “maybe because they are too big for the teams and no-one picks them when they get on the teams so they can’t actually do a sport.” Another perception for why some children are bullied in the after-school setting revolved around engaging in activities classified as gender-specific. This is illustrated in the following comments: “people get teased if they play a boys sport or a girls sport” and “maybe they [girls] are scared if they do some sort of sport that is classified as to some people as a boys sport. They won’t do it because they get teased.”

Parent Influence. Parent influence included perceptions of parents’ rules surrounding PA, parents’ concerns for child’s safety, parent support, and lack of parent support, which were discussed across all subpopulations. Parents’ rules about PA were identified by the children as an important factor in the transport context. When children were asked why they chose a particular mode of transport, responses clustered around parents not allowing them to use active modes of transport, such as “I asked mum if I could ride my bike to school and she said no.” Other reasons why children had to use active transport modes or bus transport, as perceived by the focus group participants, were parents had to work or they were busy with other commitments, such as picking up other siblings. One child commented, “my dad and mum both work in the city so they drive. I’ll have to wait until about 5 o’clock in the library and most nights I don’t really want to do that and I’ve got something on so I catch the bus home and let myself in.”

Children also discussed that some parent-driven rules prevented them from playing and engaging in nonorganized activities. For example, one child was not allowed to play after school because “they just make you do chores which stop you.” One child also commented that he gets in trouble if he tries to be active, “me and my brother, we run around the house or throw balls in the house and then we get in trouble.” In some circumstances, children reported that their parents placed limits on the number of activities they were allowed to engage in, such as “my mum said that I’m not allowed to do 3 things; I am only allowed to do 2 things [ie, 2 sport activities].” These limits were perceived quite negatively by many children. On the contrary, some children stated that they were forced to engage in sports and activities because it was a family rule, such as “there’s a rule in our house that you have to play at least 1 sport so I play netball” and “sometimes my mum makes me go outside and jump on the trampoline.”

Children also mentioned that they believed some of their parents’ rules were governed by safety concerns. For transport, children reported that their parents’ concerns for stranger danger influenced the decisions about how their child would get home after school. For example, “I get driven home because my mum doesn’t trust me to take the bus because she thinks I might get stolen.” For the organized activities, parents’ perceived fears of their children getting injured prevented children from engaging in some after-school organized and nonorganized activities. One child provided his insights into why he believes some children do not engage in organized activities after school, stating “maybe something has happened to them [the parents] and they don’t want their younger ones to continue on with that [sport], like risk them getting hurt or something, so they’re maybe just looking out for their safety.”
The most important social factor identified by children was “parent support.” Support is defined as resources provided by parents to help children’s participation in activities. Provision of transport to activities was perceived to assist children engage in specific sport and play activities, with one child commenting, “maybe parents are able to drop the kids and take them back home.” Parents’ availability to help the child during play and sport was also identified as an important facilitator to after-school activities. One child commented “they shoot hoops with me in the back yard, help me practice, and get rebounds.” In addition, children perceived that parents were sometimes unable to support them in their activities after school. This “lack of parent support” factor was discussed across the 3 contexts and centered on parents being too busy. One child commented that the reason she did not play sport after school was because her parents “have fulltime work and they can’t get to the games and stuff.”

**,Time.** “Lack of time” was mentioned by children as a barrier to active transport, organized, and nonorganized activities. The perception of lack of time arose from external social influences and obligations, with children reporting “other commitments” and “too much homework” as common reasons for not having enough time to engage in PA. When transport options were discussed, children often mentioned that they had to be driven after school because they had other commitments to get to and did not have enough time to actively commute. One child mentioned “my house isn’t very far away but I am busy mostly every night with other things and the only times we get to walk is when we don’t have anything on” and “on Fridays I’m really really busy so I drive.” Children mentioned having “too much homework” as one of the main reasons why they did not participate in nonorganized and organized PA after school. One child commented, “I use to have so much stuff on Wednesdays. I quit because I had lots of homework, too much homework. I used to do figure skating and gymnastics but now I only do trampolining.” This tended to be a particular issue for children attending high-SES schools.

**Discussion**

This study employed an in-depth qualitative descriptive approach to explore children’s insights into the factors of setting-specific PA. The most important physical environmental factors discussed by the children were safety in the neighborhood and home settings, travel distance to and from places in the neighborhood, and weather. The most important perceived social factors discussed included parental and peer influences and time available for active pursuits. Perceived competence and enjoyment were identified by the children as the most important intrapersonal factors influencing after-school PA. Talking to children about the influences on after-school PA in the neighborhood and home settings has not only confirmed the existence of a number of important factors identified by quantitative studies but it has also exposed several factors specific to the after-school period and subpopulations that are rarely considered in quantitative research. Using an in-depth qualitative approach could be the key to enhancing our understanding of children’s after-school PA behavior and improving questionnaire design.

Insights into additional factors not usually considered in the PA correlate literature but identified by the children as being important, included bullying/teasing and fear of dangerous objects and animals. Even though bullying/teasing has been identified in other recent qualitative studies it is still often overlooked in quantitative research. Casey and colleagues found that teasing was linked specifically with body image, academic performance and skill competence. Even though the children in this study described links between bullying and body image, their discussions were more focused on the issue of engaging in gender stereotyped sports and the resultant bullying. Studies have found a link between bullying and avoidance of physical activities. This can have profound negative effects on self-competence and potentially lead to lower preference for PA and a higher preference for sedentary activities. This demonstrates the importance of addressing bullying when trying to promote healthy behaviors. Fear of dangerous objects and animals was another factor that emerged from the focus groups. To the authors’ knowledge, fear of dangerous objects and animals has not been addressed in previous literature. This could be because this factor may only be important in the after-school period and not other periods of the day, and is only pertinent to rural settings or urban settings surrounded by bushland. As a result, it has not been captured in previous PA correlate research, which commonly focuses on general PA and is not setting-specific.

This study confirmed factors that have emerged from previous quantitative and qualitative studies. Safety is a complex factor that incorporates diverse components. In comparison with other studies that have look at overall safety, the children in this study identified a number of aspects of safety that relate particularly to the after-school setting, including ‘stranger danger’ and road safety. These findings are supported by a number of qualitative studies but existing empirical evidence provides little support for associations between perceptions of safety and PA. For example, Carver and colleagues found no associations between perceptions of ‘stranger danger’ and walking to and from places in the neighborhood. However, peer influence was associated with higher levels of walking and riding in the neighborhood. Similarly, children in this study discussed importance of friends when walking or riding home from school, which suggests that social support can modify children’s perceptions of safety and potentially be an intervention priority to increase neighborhood PA. The Walking School Bus program, a voluntary program where 1 or more adults escort groups of children, by foot or bicycle, to and from school each day, is one example of an intervention strategy that promotes active transport in groups.
Lack of time is an important and consistently reported barrier, particularly in the after-school PA setting. Even though lack of time is a perception and often classified as an intrapersonal factor, this factor was discussed in relation to external social influences, such as school demands and commitment to other activities, and hence was defined as a social factor. This is consistent with previous qualitative research, in which lack of time was classified as a social environmental barrier to PA. Unlike the school period where children’s time is organized and controlled by a strict regimen of consecutive tasks, children’s time after school tends to consist of multiple and often competing responsibilities, such as home responsibilities, homework, cultural activities, and extracurricular activities. In this study, children indicated that they would like to be more physically active after school but other demands, such as homework and other commitments, limited their opportunities. Strategies to promote PA could focus on balancing demands and ensuring more time is given for PA opportunities, as suggested by Humbert and colleagues. Incorporating activity into homework, such as ‘active homework’, balancing home responsibilities, or restructuring the school day (ie, starting and finishing the school day earlier) to increase the “critical window,” are potential solutions.

Previous research has found that children who have peers, siblings or parents who support them in PA are more likely to engage in PA compared with children who do not have these supportive networks. In this study the children did give a lot of attention to the negative social influences, such as lack of support, parent rules, bullying/teasing, and having no-one to play with. This was a similar finding to Reis and colleagues, suggesting that children may perceive their social environment to provide more negative rather than positive influences. However, despite the negative focus, children did identify some positive influences, such as having friends to play with and parent support. Empirical research has shown a positive association between social support and increased PA during the after-school period, highlighting the importance of emphasizing positive social support in intervention design.

Enjoyment is one of the most common reasons children engage in PA. However, when exploring this concept further, children often find it difficult to articulate why an activity is enjoyable. This is further complicated by the individualized meanings given to the term “enjoyment.” In the current study, as with other studies, children articulated that enjoyment is often dependent on the presence of friends and perceived competence. These examples may have come out more strongly because they can be clearly connected to positive feelings and are easily conceptualized and articulated by children compared with other intrinsic processes, such as how enjoyment is experienced. It is important to survey multiple dimensions of enjoyment that are tangible in the eyes of the respondent. Furthermore, regardless of confusion in the conceptualization of enjoyment, all interventions should contain an element of “fun.” Based on the findings of this study, interventions designed to increase PA could consider inclusion of a social aspect and activities that are developmentally appropriate.

There are a number of limitations of the current study that should be considered. The study took place in South Australia, and therefore the generalizability of the results is limited to this context. After-school activities clustered into 3 main PA domains (ie, transport, organized activities, and nonorganized activities). These were identified to encourage children to explore the factors influencing PA in the after-school setting. Due to the breadth of behaviors explored, in-depth examination of the factors for each after-school PA domain was limited.

Despite these limitations, this study builds on previous research by examining children’s perceptions of influences on PA and the relative perceived importance of these factors in the after-school period specifically. Future research should extend this current field of research to other settings, such as school settings and school holiday breaks, and apply this methodological approach to inform the development of PA correlate questionnaires. To obtain a holistic view of influences on children’s PA in specific settings and contexts, further research should also include the in-depth exploration of the views of parents, coaches or teachers. It is also recommended that researchers focus on specific behaviors in specific contexts, such as active transport during holidays or before school, to delve deeper and further improve our understanding of children’s PA behavior.

Research aiming to improve the understanding of the factors that influence PA should ensure that the factors being studied are relevant to the context and the behavior being measured and address all aspects of a social ecological framework. Using an in-depth descriptive qualitative methodology is an effective approach in confirming or uncovering new insights into factors relevant to a specific setting that may not be exposed using quantitative methods with predefined and adult-inferred factors. Researchers using quantitative methodologies will be able to incorporate these specific qualitative findings or use this methodology as a template to inform questionnaire design and potentially increase content validity of research tools, rather than modifying existing questionnaires that may not be appropriate for the behavior and the setting in question. Unless changes are made to intervention design and questionnaire design and more recognition is paid to the factors that children perceive to be important, approaches to PA promotion are likely to continue to produce modest and short lived effects.

References

2. Biddle SJ, Gorely T, Stensel DJ. Health-enhancing physical activity and sedentary behavior in children and...