



¡Nosotros corremos, nosotros jugamos! [we run, we play!]: Children's perceptions of physical activity in Mexican-origin border communities

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Abstract

Intro The US border between Texas and Mexico has a growing population of Mexican-origin children that are at high risk for obesity and have a lack of physical activity opportunities, resources, and environmental infrastructure. The purpose of this research was to explore children's perspectives of their physical activity behaviors through in-depth interviews.

Methods Five children (ages: 7–11) were recruited to participate and describe facilitators, barriers, and current and desired physical activities. Interviews were transcribed verbatim, harmoniously coded, and analyzed for content.

Results The most common physical activity type was football for boys, jump rope for girls, and general play activities for all. Having friends as social supporters and ability to be active at school were physical activity facilitators for all children; enjoyment was identified for boys and having general play activities for girls. Lack of equipment at home was a barrier identified by all children; homework was identified by boys and lack of social support from siblings for girls. All children desired to do more activities with friends. Girls wanted to visit the park more, where boys wanted more equipment to begin new activities.

Discussion Gender differences are common and have previously been attributed to societal norms. Desired physical activity consisted of longing to participate in more of their current activities involving contact sports for boys and general play for girls. Interviews conducted in neutral settings can allow for natural, unrestricted responses from children. New activities should be introduced to expand desired activity and subsequently increase physical activity within these populations.

Significance

What is already known about the subject? Social, economic, and geographic risk factors combined with a lack of access to physical activity resources and opportunities predispose children within the *colonias* of the Texas border to have elevated risk for childhood obesity. Additionally, these children face many barriers to establishing and maintaining nationally recommended physical activity levels.

What this study adds Asking children their perspective regarding physical activity is useful in gaining insight into current and desired behavior. Children's responses to questions regarding facilitators and barriers for physical activity behavior may be used to inform priority areas for health promotion initiatives.

Keywords Health promotion · Childhood obesity · Exercise · *Promotoras* · *Colonias*

Introduction

In the USA, childhood obesity remains high at 16.9% (Ogden et al. 2014) and is a public health concern as it has been linked to the occurrence of chronic diseases and morbidity in adulthood (Llewellyn et al. 2016). Energy imbalance, resulting from physical inactivity and/or an inadequate nutrition, helps explain the prevalence of children who are obese or overweight (Hall et al. 2011). A focus on improvements of child nutrition, as well as increasing opportunities for physical activity, has been shown to help reduce and prevent childhood

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obesity (Reilly et al. 2006). Though physical activity has been shown to provide protective factors for obesity, 30% of the nation's children are not meeting the national guidelines of 60 min of physical activity a day (Fakhouri et al. 2013).

The burden of obesity disproportionately affects ethnic minority communities, with Mexican Americans (MA) at higher risk than the general population (Rossen and Schoendorf 2012; Falkner and Cossrow 2014). Over the past 3 decades, MA children have seen increases in obesity prevalence ranging from around 13 to 26% (Fryar et al. 2012) and are 60% less likely to meet the national guidelines for physical activity (Fakhouri et al. 2013; Andersen et al. 2008). An area with a large percentage of MA children is the *colonias* of the Lower Rio Grande Valley of Texas, which has a growing population of Mexican-origin families (Sharkey et al. 2010; Sharkey et al. 2011). Similar to other border communities, those living within the *colonias* share a similar heritage, language, and socioeconomic standing. These areas are economically and geographically disadvantaged, hard-to-reach, and often “hidden” communities facing high rates of poverty, financial stress, food insecurity, and hunger (Sharkey et al. 2009; Sharkey et al. 2010; Sharkey et al. 2011). Children within this community are at high risk of obesity and other related diseases due to limited access to resources, nutritional disparity, and adverse social conditions (Sharkey et al. 2009; Donelson and Esparza 2016; Gallo et al. 2009).

In the *colonias*, there is a lack of access to resources and safe physical activity opportunities, especially when children are out of school (i.e., summer, weekends) (Umstatted Meyer et al. 2013). In addition to being hot in the summer, there are substantial environmental barriers to physical activity participation and a lack of infrastructure to support the promotion of physical activity year round (Umstatted Meyer et al. 2013). Other barriers to physical activity in the *colonias* are seen at varying socio-ecological levels of influence and include total household income, household size, work status, lack of energy possibly due to food insecurity, lack of transportation, immigration status, and low parental social support (Umstatted Meyer et al. 2013; Umstatted Meyer et al. 2014; Allen et al. 2016). Combined, these barriers place children in the *colonias* at high risk for not meeting physical activity guidelines. More research is warranted to expose potential areas for enhancements to the social and physical environment that will yield increases in physical activity opportunities for children. Additionally, the use of ecological models can be helpful to understand the full context of the problem and guide the creation of a comprehensive solution (Bronfenbrenner 1977; Sallis et al. 2008).

Though some data have been collected to understand the physical activity behavior and the environment of South Texas, few studies have elicited qualitative feedback from the child's point of view. Using qualitative studies with children is especially useful when exploring the beliefs and ideas

informing the child's perception of their lived experience (O'Leary 2004; Söderbäck et al. 2011). It has been shown that asking children their thoughts in addition to parents' perspectives results in valid responses and can add new information to the research process (Söderbäck et al. 2011; Darbyshire et al. 2005). However, often children are not asked about their own behaviors and perspectives on their environment or included in the process of health promotion (Darbyshire et al. 2005). Neglecting to include the child's voice may hinder the impact of health promotion initiatives.

The purpose of this study is to identify supportive and inhibiting factors of Mexican-origin children's current and desired physical activity through in-depth interviews.

Understanding children's perspectives of their physical activity behavior is critical to better inform physical activity promotion efforts. The following research questions were addressed: (1) What influences Mexican-origin children to participate in the types and amounts of activities they do currently? (2) Are there other activities that these children wish they could do? (3) What are the barriers that prevent Mexican-origin children from participating in physical activities they desire to do?

Methodology

Setting

Two areas within a county along the Texas-Mexico border were selected to recruit five Mexican-origin children to participate in in-depth interviews. This county was selected because it is home to over 860 *colonias* and has the largest Texas population of Mexican-origin children and families. The location for each interview was decided by each participant to reduce any possible transportation issues. Along with the child and research team, three interviews had a mother present in the interview setting, and two were held in a private setting.

Participants

Two girls ages 7–9 years and two boys and one girl ages 10–11 ($n = 5$) were recruited by project *promotora* researchers from a larger pilot study, which consisted of group discussions held between the children and *promotoras* (community health workers) regarding healthy eating and physical activity. Eligibility for recruitment was based on whether the child had fully completed the previous pilot study, was a *colonias* resident, and preferred speaking English. All five children agreed to participate and informed consent and assent forms approved by Texas A&M Institutional Review Board were completed.

In-depth interviews

The in-depth interviews were held 4 weeks after the completion of the pilot study and were estimated to last approximately 45 min. A female doctoral-level research assistant attended the pilot study focus groups and interacted with the children prior to conducting the interviews. This researcher had previous experience conducting interviews and focus groups with underserved children and teens. An interview guide was created and pilot tested with a child not included in the sample to enhance the flow and depth of questioning. Along with the researcher, *promotora* researchers coordinated the scheduling of interviews, served as a link between the interview researcher and participating children, provided co-researcher support during the interviews, and recorded field notes. The interviews were conducted in English, audio recorded, and transcribed verbatim. If a child responded in Spanish, answers were back translated into English.

Socio-demographic characteristics

Descriptive socio-demographic information was collected from each participant through a two-page survey in their preferred language as part of the pilot study and was used here to describe the interview sample. Socio-demographic characteristics, language preferences, physical activity items, and food accessibility and security items were included in the survey.

Frequencies of questionnaire responses were examined in Excel to measure food accessibility and to gauge food security within the homes of the participants.

Qualitative analysis of interview transcripts

Thematic and content analysis of all transcripts was completed. Major themes included current physical activity, favorite physical activity, desired physical activity, sedentary behavior, and the child's perspective of health and physical activity. Sub-themes were developed for all major themes and included the following: location, type of physical activity, frequency, social support, physical activity resources, knowledge, self-efficacy, time of year or week, financial resources, pets, safety and/or fear, obligations, and enjoyment of physical activity. Additionally, facilitators and barriers were identified across all major and sub-themes.

After independently coding the documents, three researchers completed consensus coding for each of the documents. Consensus codes were entered into NVivo to look at the saliency of codes across and within interviews and to examine response differences between sexes. Informed by Bronfenbrenner (1977) and Sallis et al. (2008), the Socio-ecological Model was utilized during analysis to examine facilitators and barriers across socio-ecological domains.

Results

Five children, two boys and three girls, from the two areas in a Texas county along the Mexican border were interviewed. Average interview time was 30 min 45 s (SD = 8 min, 35 s), with one interview extending to 46 min. Children were either in 4th ($n = 3$) or 5th grade ($n = 2$), and four were born in the US. All children indicated that they participated in exercise regularly, and three children also participated in sports on a regular basis. See Table 1 for all socio-demographic sample characteristics. Some activities identified in the interviews were similar across the interview participants and others suggest a trend specific to one sex. In the subsequent sections, results will be presented comparatively for boys and girls to highlight any similarities and possible differences.

Current physical activity

Children reported that their activities were mostly located within the household, school, and other locations such as parks and neighbors' houses. The children identified a multitude of activities that they currently participated in (Table 2). The most common activities mentioned by both sexes were general play games (i.e., tag, hide and seek, and touch) and running. Football was the most commonly discussed activity among boys and jump rope for girls. At school, boys tended to prefer specific exercises and structured play, where the girls enjoyed free time and individual play. Both sexes talked about enjoying the fresh air when being active, using local resources, and finding social support in their friends (Table 3).

Facilitators and barriers of physical activity

Figure 1 presents a socio-ecological model of children's salient facilitators and barriers from interview discussions across different levels of influence; color coding is used to identify whether a boy, a girl, or both identified it as an influence. Figures 2 and 3 are infographic style figures that use pictures to represent children's favorite physical activity. The larger font represents more frequently mentioned facilitators and barriers that influence children's physical activity.

The most common facilitators of physical activity identified by the boys included enjoyment of the activity and the ability to be active at school. The girls also identified school to be a common facilitator for physical activity, but the most frequently mentioned facilitator was participating in general play activities. Figure 1 shows similar results regarding individual-level facilitators for boys. The facilitators individually affecting girls involve access to resources. At the family and peer levels, both sexes are positively influenced by parent and peer support.

However, boys mentioned physical activity was facilitated by adult support other than that of their parents, whereas girls

Table 1 Socio-demographic and health characteristics of the sample

Demographics	Total sample (<i>n</i> = 5)	Boys (<i>n</i> = 2)	Girls (<i>n</i> = 3)
<i>Grade in school</i>			
4 th Grade	3	1	2
5 th Grade	2	1	1
<i>Nativity</i>			
USA	4	2	2
Mexico	1	0	1
<i>Transportation to school</i>			
Bus	2	0	2
Car	1	1	1
Both	1	1	0
Household members*	5.8	5	6.3
<i>Diet and exercise</i>			
Enrolled in the summer food program	0	0	0
Receive school breakfast	5	2	3
Prepare food themselves	3	1	2
Involved in regular exercise	5	2	3
Participate in sports regularly	3	2	1
<i>Language spoken</i>			
<i>Language spoken and read</i>			
English more than Spanish	1	0	1
Both equally	4	2	2
<i>Parents' language spoken</i>			
Spanish only	4	1	0
Spanish more than English	1	1	3
<i>Language spoken in the house</i>			
Spanish only	2	0	2
Both equally	3	2	1
<i>Language that he/she thinks in</i>			
English only	1	0	2
Both equally	4	2	1
<i>Language spoken with friends</i>			
Spanish only	1	0	1
English only	2	0	2
English more than Spanish	1	1	0
Both equally	1	1	0
<i>True statements on household food</i>			
<i>Participant stated that item was true</i>			
We can't get the food we want because there is not enough money	1	0	1
I worry about how hard it is for my parents to get enough food for us	4	1	3
I worry about not having enough to eat	3	1	2
I try not to eat a lot so that our food will last	3	1	2

Socio-demographic and health information taken from the two-page surveys completed by all participants. The table shows the total sample and then separates boy and girl responses

identified having a pet as a facilitator. Only boys identified facilitators at the organizational and environmental levels, including the close living location of peers and receiving incentives, as a way to increase support for physical activity.

Even though both sexes stated that resources (e.g., playground, equipment, space) were facilitators for physical activity, boys and girls identified lack of equipment at home as the most common barrier. Both sexes expressed that homework

Table 2 Current physical activity types

Boys (n = 2)	Girls (n = 3)
Bike riding	Basketball
Cutting the grass (personal yard work)	Bike riding
Fetch with the dog	Catch
Football	Dancing
Going to the Schlitterbahn	Exercises (crunches, etc.)
Going to the park	Going to the beach
Hide and seek (touch)	Going to the park
Riding four-wheeler	Hide and seek
Running outside	Hula hooping
Soccer	Jump rope
Stretches at football practice	Kickball
Swimming	Playing outside (recess/PE class)
Tag	Play/run outside with dog
	Run outside
	Soccer
	Tag
	Touch
	Volleyball (from boy's transcript)
	Walk dog

Current physical activity types identified by participants separated by which sex identified the activity

kept them from being physically active, but girls noted that the lack of social support from siblings had more influence. At the individual level, common barriers for both sexes were: knowledge, equipment, resources, and obligations. Boys acknowledged lack of self-efficacy, whereas girls saw lack of involvement in physical activities and sports as a barrier. Similar barriers for both sexes at the family and peer levels involved not being confident around adults and parental restrictions. Barriers at the organizational level were financial cost and lack of access to programs during the summer. At the environmental level, boys identified rain as the barrier, while girls noted heat. Other environmental and neighborhood constraints included transportation for both sexes, damaged equipment and resources for boys, and loose dogs for girls. Figure 1 shows the socio-ecological examination and Figs. 2 and 3 the infographics.

Desired physical activity

Children were asked to discuss their desired physical activity and any types of physical activity they would like to participate in or be more involved with. Girls expressed the desire to go to parks more often and use the park equipment. Boys identified the desire for more resources to pursue new activities. Both sexes expressed interest in wanting to be more active with their friends (see Table 3 for statements). Most children had the desire to do more of their current physical activities. A few children expressed that they wanted to be more active but could not. A description of some of these barriers was described previously.

Children's' perspective

Lastly, children were asked to share their thoughts and opinions on what they would do if they were in charge of getting children to be more active. Children included the need for social support as a contributing factor to their plans and identified good locations to be physically active. In addition to sharing what they would do to help get children active, they also shared their own definitions of what it meant to be healthy. Both sexes discussed how physical activity is important for health benefits and provided similar tactics to help other children increase participation (e.g., location and who to involve; see Table 3).

Discussion

While past investigations have found that increasing opportunities for physical activity aid in reducing obesity, few researchers have allowed or empowered children to incorporate their ideas into intervention development and/or implementation. When considering a child's perspective, it is important to regard cultural beliefs, theories, and worldviews (Sommer et al. 2009). This goal was accomplished through in-depth interviews conducted with children.

Additionally, when considering the child's perspective, it is important to allow the interpretation of the child to be void of an adult perspective or influence and to ensure that the child is adequately able to express her/his thoughts (Nilsson et al. 2015). The open-ended survey items, followed by verbatim transcription of responses, aided in capturing a complete picture of what the children were trying to convey. Ages of participants (7–11 years) further allowed for a more accurate depiction of physical activity as older children are more capable of explaining thoughts than younger children (Nilsson et al. 2015).

Current physical activity regarding facilitators and barriers

Children spoke of several barriers to current physical activity including equipment, social support, obligations (homework, chores), and safety. These barriers were similar between boys and girls, and differed with boys being affected by their fathers leaving for work purposes and with girls being affected by loose dogs in the neighborhood. These findings for boys are normal as previous investigators have found that parental support is an important factor in physical activity participation (Davison et al. 2003; Trost et al. 2003) and that fathers explicitly model or do the activity with their children (Davison et al. 2003). Likewise, findings for girls have been highlighted in former studies, with subjective neighborhood quality affecting the mother's parental efficacy and contributing to the

Table 3 Children's physical activity quotes

Theme	Boys (<i>n</i> = 2)	Girls (<i>n</i> = 3)
Current physical activity location: school	<p>“Well, our [P.E.] coach, he, he set ups the [football] teams and he decides which team you go...[and] the girl coach teaches [the girls] volleyball” (5)</p> <p>“Wind mills, push-ups, crunches, scissors, jumping jacks, front and back, uh, up and down, and sit- and side by side” (4)</p> <p>“I like the push-ups and the scissors and jumping jacks” (4)</p>	<p>“Cause every time when we go to P.E., the coach tells us to line up in a row and then he, he blows a whistle and we run a lap and he makes us run outside” (2)</p> <p>“Crunches...exercise, up and down, sideways front and back and, scissors, and all more” (5)</p> <p>“Because [at P.E.] we run and we have free time and at library we do not” (2)</p>
Current physical activity enjoyment and location: school	<p>“Well, last time, there was a lot of kids that wanted to play [football] and I told them to join. And me and my friends were on teams and he always passes the ball to me, and everything” (3)</p>	<p>“I like using the hula hoops...they go fast in circles” (2)</p>
Current physical activity enjoyment	<p>“In football practice, I like that, uhmm, [the coach] makes us run the [lap] and we do the stretches. And then we, run. We like, uhmm, practice our positions, with, uh, the... And then we go and the scrimmage” (4)</p>	<p>“Cause you can play [soccer] at school and everywhere” (5)</p>
Current physical activity equipment and resources	<p>“When you, when [you] run, the wind blows through you and then you get fresh air when it's hot” (4)</p> <p>“My friend does not have the bat, and the glove” (3)</p>	<p>“The fresh air” (1) {in reference to bike riding}</p> <p>“Well, actually, me and my sister, uhmm, use, one bike” (1)</p>
Current physical activity location: neighborhood	<p>“We go to the swimming pools in front of the parks and recs” (4)</p> <p>“We pass the ball and we run...someone is coming after us and we can make a touchdown” (3)</p>	<p>“We play on the slide, monkey bars, and we sometimes run around” (2)</p> <p>“Every time I go to my neighbor's house, and I go and, sometimes she says she does not want to play. Then, I go next time. She, shef[s] like, ‘Get the rope, let us play the jump rope.’ Then we called our other friends, so she could jump it” (2)</p> <p>“We ride out bikes...around the street” (1)</p> <p>“Running...with nobody...outside...in the yard and the streets” (5)</p>
Current physical activity social support	<p>“When I play football with my friends...I did not know how to catch the football... Then, I went to school and I tell my coach to teach me, and he taught me [to catch the ball] and when I came back and play, I won” (3)</p> <p>“There's two people on the bikes and then, if [my sister] touch the people on the bike, they have to get off from the bike and then the other one that had it gets on the bike, and then the other, kid, has to catch one of us” (4)</p>	<p>“I play with my friend but sometimes she comes over here and we play hide and seek” (2)</p> <p>“Only one time, I was going to walk my dog and then she said, uhmm, I asked her if she wanted to come with me and she was like, ‘Yeah, sure’” (1)</p> <p>“You could get skinny and you could run more fast” (5)</p>
Child's perspective: importance of physical activity	<p>“Well, if, if you are not healthy you might, might get sick. You might, you might be, you might never go to school. Eh, you might stay at the hospital” (3)</p> <p>“[If] you are not conditioned, you might stop like running in the middle of the game when you have the ball” (4)</p>	<p>“Cause, sometimes, when you like play with something, you always sweat and if you do not play with anything you do not sweat.” (R: ‘What's important about sweating?’) ‘It helps your body’ (2)</p> <p>“A gym, a park, and, (Pause) mmm, a bike riding place?” (1)</p>
Child's perspective: location	<p>“You play in the park and you and your cousin know a little bit of people. And then you make friends” (4)</p>	<p>“I'd tell [my sister] to supervise them, while I am gone. Then, when I come back, she can leave” (2)</p>
Child's perspective: social support: who would help you to help other children be more active?	<p>“My cousin, because he knows more about sports because... I think the people that are...over there, know more about sports because...they see soccer, they play like everything” (4)</p>	<p>“You could play more and they, there, they have slides and more stuffs” (5)</p>
Current and desired physical activity location: park	<p>“Yeah, sometimes in football practice they change the...parks” (4)</p>	<p>“You could play more and they, there, they have slides and more stuffs” (5)</p>
Desired physical activity enjoyment	<p>“You get to run. Go where...whatever you want.” (3) {in reference to airsoft park or arena}</p>	<p>“I played in the swings, the slides, and I ran” (1)</p>
Desired physical activity resources	<p>“Well, last time we got a Frisbee, we throw it to [my dog], we got it but he did not return it back. He, he broke it” (3)</p>	<p>“I do not like doing [soccer, hide and seek, running] now, ‘cause...it's like, so boring and it's hot” (5)</p> <p>“I wish I could use a hula hoop right now” (2)</p>
Desired physical activity social support	<p>“During the week, when I am in school, I would love to, well if my friends come with footballs and more teams, I would love to play that” (3)</p>	<p>“If my mom or my friend would pick me up, I would play with them” (1)</p>

Quotes from participants describing certain themes regarding physical activity and separated by sex. The numbers after each quote represent which participant said the quote

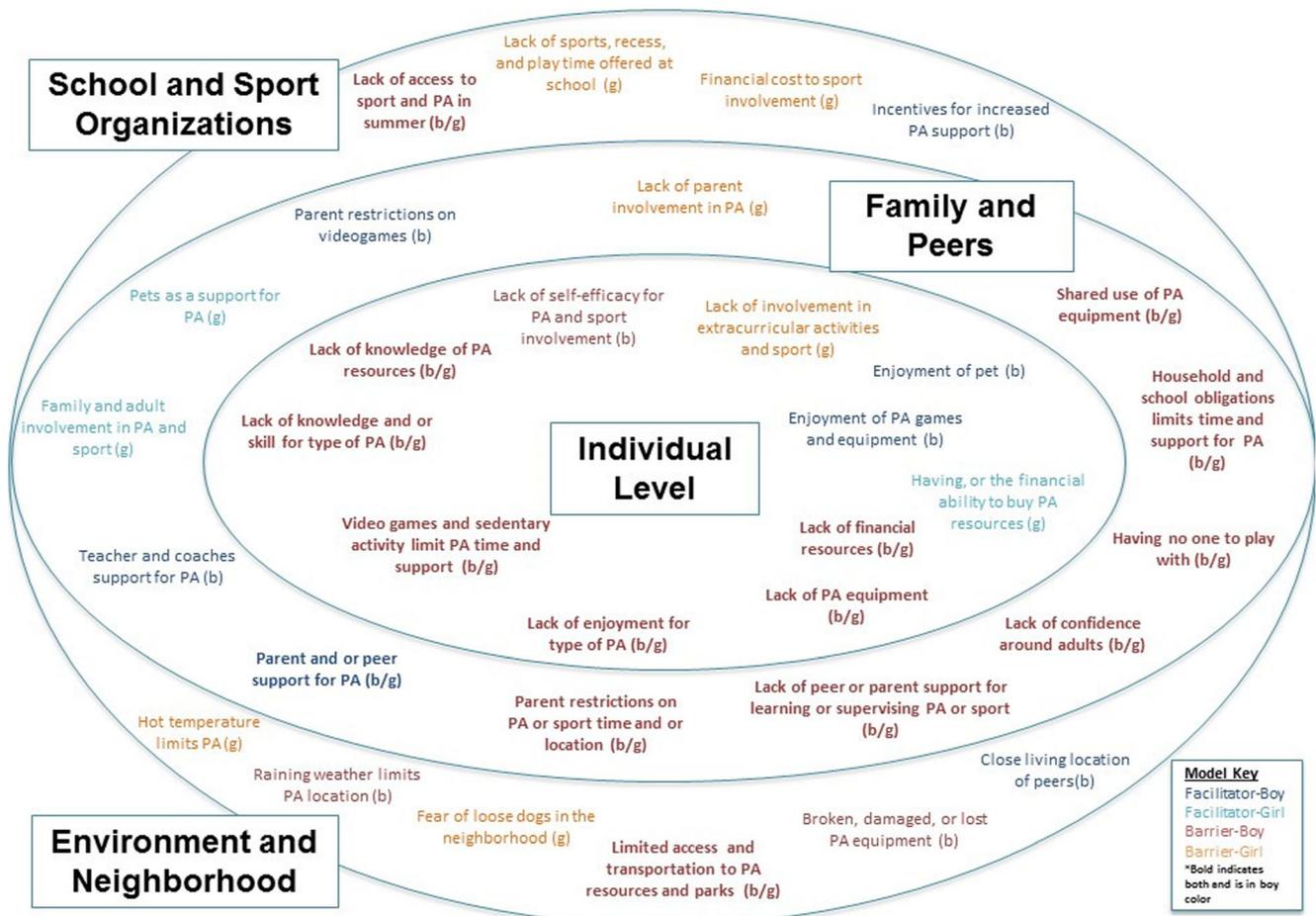


Fig. 1 Socio-ecological model demonstrating the different levels of influence on children’s physical activity behavior, starting with the individual level in the center and expanding out into the child’s social

and environmental context. Note: Sociological model informed by Bronfenbrenner’s (1977) ecological systems theory

development of concerns regarding safety (Ceballos and Hurd 2008). Cleland et al. (2010) found that environmental factors, including personal safety and walking environment, affected leisure time physical activity and transport-related physical activity among women living in socioeconomically disadvantaged neighborhoods.

When considering facilitators, children referenced specific times of the week that play occurred (school, weekday, afterschool) and having specific people around them (coach, team, friends). Differences seen between sexes included specific games for boys (football, running) and specific locations for girls (school, neighborhood,

Fig. 2 Infographic depicting facilitators and barriers to boy’s physical activity. The shape reflects the most commonly mentioned activity by boys. The large font size of words represents more salient themes

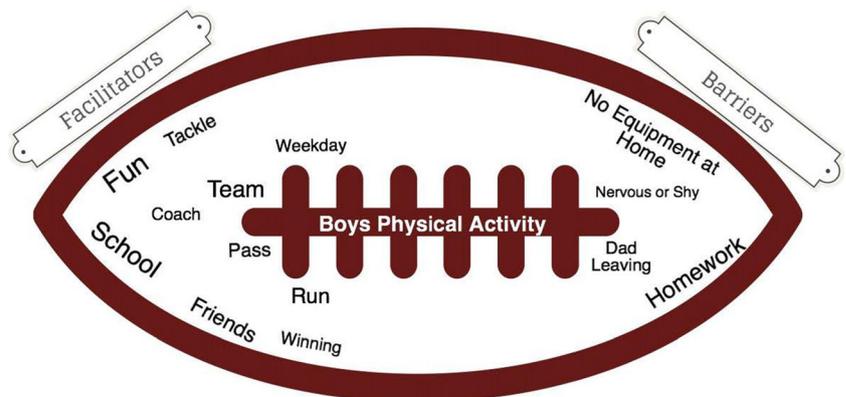




Fig. 3 Infographic depicting facilitators and barriers of girl's physical activity. The shape reflects the most commonly mentioned activity by girls. The large font size of words represents more salient themes

outside). Societal focus on contact sports could result in a greater number of male activities within an area. In a cross-cultural study conducted by Deaner and Smith (2013), findings included a larger quantity of physically competitive sports for males and a larger quantity of general play activities for females. The investigators attribute these differences to societal norms that encourage males to be more competitive and compel females to do more housework. This is one possible explanation for the participants within this study, as only girls discussed chores and lack of parental support for physical activity and sports as a barrier to physical activity. Similarly, girl participants' focus on specific locations for physical activity could have resulted from gender-specific cultural practices. The locations spoke of by the girls within this study were areas that allow an adult to keep them within eyesight for safety purposes. As noted before, this is an issue within this population of socioeconomically disadvantaged females (Ceballo and Hurd 2008).

Desired physical activity and the child's perspective

Desired physical activity revolved around doing more of the activities the children were currently doing, speaking of different ways to eliminate barriers to these current physical activities, and involved the same locations spoken of when discussing current physical activity. Boys spoke of wanting to have more time to spend playing with friends and having friends bring equipment. This revealed a barrier of lack of equipment and constraints placed on the children by parents and environment. Girls spoke of general play activities such as playing with a hula hoop and also mentioned needing support from friends and parents. As with the boys, this pointed to constraints placed upon the girls by parents and the environment, leading to quantity gaps between current and desired physical activity in both sexes. Physical activity barriers and equipment discussed in this study parallel previous research within similar populations that concluded neighborhood resources as the most viable options within these communities.

Additionally, social norms have been previously cited as the main household resource within similar populations accounting for the effects of specific physical activity constraints experienced by the sexes (Umstatt Meyer et al. 2013).

Strengths and limitations

One strength of this study was the involvement of *promotoras* researchers. These individuals are community members that facilitated recruitment of participants, eliminated language barriers, and aided in processing and disseminating information. Additionally, inclusion of *promotoras* has been shown to reduce anxiety in participants by increasing feelings of understanding (Ali et al. 2010) that come from the ability of the *promotora* to be empathetic toward specific situations. This is extremely important when involving personal inquiry in the daily lives of participants. Therefore, *promotoras* were present throughout every step of the project and at all interviews.

Although having the *promotoras* was a strength of our study, the team realized that increased interaction between other team members, including the interviewer, and child could have possibly led to even greater outcomes. Even though team members had previously met the children on four other occasions for a previous study, the richness of responses seemed to be hindered possibly because of the interview environment including mothers. The presence of mothers led to apprehension from these children if they had a response that they feared might not be accepted by their mother. Background noise from other siblings playing and television programs could have also interfered with the focus of a child. Furthermore, interviewing children was a major strength within this study as it enhanced our knowledge of the child's perspective regarding physical activity facilitators, barriers, and desires. However, as noted before, special care must be taken

to ensure that the adult perspective does not dominate child views.

Other potential limitations included a small sample size that did not reach saturation. While findings within this sample are fruitful, a more thorough understanding of this group is needed to enhance future application of intervention techniques. Finally, desired physical activity seemed to be limited to what the children were already doing and did not involve new physical activities. Introduction of new types of physical activity could help reverse the lack of activity seen within this population.

Conclusions

Future researchers should consider the environment in which the interviews are being held. Interviews should be at a location where participants feel physically safe, and feel that they have the freedom to fully express their opinions. For interviews conducted within the home, it may prove useful to remove mothers from the room. Engagement of *promotoras* should be continued for receptivity of the research team, but future teams should consider increased interaction between participants and the research team members, especially the interviewer, prior to completion of interview.

When considering information gathered from the interviews, investigators should take special care to utilize the perspective held by the child and not a child's perspective seen through the eyes of the investigator (Sommer et al. 2009). For effective changes to take place, it is important to hear what children actually want and not what adults think they want. In this, it is important to receive the full perspective of the child regardless of current barriers that are faced. This potentially could be enhanced by establishing adolescent researchers, removing adult bias during responses, and further questioning. Adolescent researchers could provide assistance in both conducting interviews and reflection on participant responses leading to more enhanced and complete interventions for children.

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Compliance with ethical standards

Conflicts of interest The authors declare that they have no conflict of interest.

References

- Allen SJ, Umstadt Meyer MR, Sharkey JR (2016) Physical activity of Mexican-origin children: examining parental support. *J Health Care Poor Underserved* 27(2):685–699
- Ali NS, Ali BS, Azam IS, Khuwaja AK (2010) Effectiveness of counseling for anxiety and depression in mothers of children ages 0–30 months by community workers in Karachi, Pakistan: a quasi experimental study. *BMC Psychiatry* 10(1):1
- Andersen SE, Economos CD, Must A (2008) Active play and screen time in US children aged 4 to 11 years in relation to sociodemographic and weight status characteristics: a nationally representative cross-sectional analysis. *BMC*, 366(8)
- Bronfenbrenner U (1977) Toward an experimental ecology of human development. *Am Psychol* 32(7):513
- Ceballo R, Hurd N (2008) Neighborhood context, SES, and parenting: including a focus on acculturation among Latina mothers. *Appl Dev Sci* 12(4):176–180
- Cleland V, Ball K, Hume C, Timperio A, King AC, Crawford D (2010) Individual, social and environmental correlates of physical activity among women living in socioeconomically disadvantaged neighbourhoods. *Soc Sci Med* 70(12):2011–2018
- Darbyshire P, MacDougall C, Schiller W (2005) Multiple methods in qualitative research with children: more insight or just more? *Qual Res* 5(4):417–436
- Davison KK, Cutting TM, Birch LL (2003) Parents' activity-related parenting practices predict Girls' physical activity. *Med Sci Sports Exerc* 35(9):1589–1595
- Deaner RO, Smith BA (2013) Sex differences in sports across 50 societies. *Cross Cult Res* 47(3):268–309
- Donelson AJ, Esparza AX (2016) The colonias reader: economy, housing, and public health in US-Mexico border colonias. University of Arizona Press
- Fakhouri TH, Hughes JP, Brody DJ, Kit BK, Ogden CL (2013) Physical activity and screen-time viewing among elementary school-aged children in the United States from 2009 to 2010. *JAMA Pediatr* 167(3):223–229
- Falkner B, Cossrow ND (2014) Prevalence of metabolic syndrome and obesity-associated hypertension in the racial ethnic minorities of the United States. *Curr Hypertens Rep* 16(7):1–8
- Fryar CD, Carroll MD, Ogden CL (2012) Prevalence of obesity among children and adolescents: United States, trends 1963–1965 through 2009–2010. National Center for Health Statistics, 1960
- Gallo LC, Penedo FJ, Espinosa de los Monteros K, Arguelles W (2009) Resiliency in the face of disadvantage: do Hispanic cultural characteristics protect health outcomes? *J Pers* 77(6):1707–1746
- Hall KD, Sacks G, Chandramohan D, Chow CC, Wang YC, Gortmaker SL, Swinburn BA (2011) Quantification of the effect of energy imbalance on bodyweight. *Lancet* 378(9793):826–837
- Llewellyn A, Simmonds M, Owen CG, Woolacott N (2016) Childhood obesity as a predictor of morbidity in adulthood: a systematic review and meta-analysis. *Obes Rev* 17(1):56–67
- Nilsson S, Björkman B, Almqvist AL, Almqvist L, Björk-Willén P, Donohue D, Enskär K, Granlund M, Huus K, Hvit S (2015) Children's voices—differentiating a child perspective from a child's perspective. *Dev Neurorehab* 18(3):162–168
- Ogden CL, Carroll MD, Kit BK, Flegal KM (2014) Prevalence of childhood and adult obesity in the United States, 2011–2012. *Jama* 311(8):806–814
- O'Leary Z (2004) Guide to doing research. Sage, California
- Reilly JJ, Kelly L, Montgomery C, Williamson A, Fisher A, McColl JH, Conte RL, Paton JY, Grant S (2006) Physical activity to prevent obesity in young children: cluster randomised controlled trial. *Bmj* 333(7577):1041

- Rossen LM, Schoendorf KC (2012) Measuring health disparities: trends in racial– ethnic and socioeconomic disparities in obesity among 2- to 18-year old youth in the United States, 2001–2010. *Ann Epidemiol* 22(10):698–704
- Sallis JF, Owen N, Fisher EB (2008) Ecological models of health behavior. *Health behavior and health education: theory, research, and practice* 4:465–486
- Sharkey JR, Dean WR, Johnson CM (2011) Association of household and community characteristics with adult and child food insecurity among Mexican-origin households in colonias along the Texas-Mexico border. *Int J Equity Health* 10(1):1
- Sharkey JR, Dean WR, St John JA, Huber JC (2010) Using direct observations on multiple occasions to measure household food availability among low-income Mexicano residents in Texas colonias. *BMC Public Health* 10(1):1
- Sharkey JR, Horel S, Han D, Huber JC (2009) Association between neighborhood need and spatial access to food stores and fast food restaurants in neighborhoods of colonias. *Int J Health Geogr* 8(1):1
- Söderbäck M, Coyne I, Harder M (2011) The importance of including both a child perspective and the child's perspective within health care settings to provide truly child- centred care. *J Child Health Care* 15(2):99–106
- Sommer D, Samuelsson IP, Hundeide K (2009) *Child perspectives and children's perspectives in theory and practice* (Vol. 2). Springer Science & Business Media
- Trost SG, Sallis JF, Pate RR, Freedson PS, Taylor WC, Dowda M (2003) Evaluating a model of parental influence on youth physical activity. *Am J Prev Med* 25(4):277–282
- Umstatted Meyer MR, Sharkey JR, Patterson MS, Dean WR (2013) Understanding contextual barriers, supports, and opportunities for physical activity among Mexican- origin children in Texas border colonias: a descriptive study. *BMC Public Health* 13(1):1
- Umstatted Meyer MR, Walsh SM, Sharkey JR, Morgan GB, Nalty CC (2014) Physical and social environmental characteristics of physical activity for Mexican-origin children: examining differences between school year and summer perceptions. *BMC Public Health* 14(1):1