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Latino Mothers in Farmworker Families' Beliefs about Preschool Children's Physical Activity and Play

Joseph G. Grzywacz, PhD,
Department of Human Development and Family Science, Oklahoma State University, 700 N. Greenwood Avenue, Tulsa, OK, 74106

Thomas A. Arcury, PhD,
Department of Family and Community Medicine, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157

Grisel Trejo, MPH, and
Department of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157

Sara A. Quandt
Department of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157

Abstract

Objective—Document beliefs about the contribution of physical activity to preschool-aged children's health held by Latino mothers in farmworker families, and delineate their perceived barriers or constraints that impose limits on preschool-aged children's physical activity.

Method—Qualitative data obtained through semi-structured in-depth interviews (N=33) with mothers of preschool-aged children living in Latino farmworker families in North Carolina.

Results—Mothers universally agree that regular vigorous physical activity is good for preschool-aged children's health, including obesity prevention. However, excessive physical activity can produce illnesses, as well as other physical and emotional problems, and should be limited. Mothers wanted their children to engage in more sedentary forms of activity because they believed it would benefit learning. Physical and chemical hazards in rural environments, distance to parks and play spaces, and lack of familiarity and concerns about neighbors constrained children's physical activity.

Conclusions—Although physical activity is believed to be beneficial, strong cultural beliefs and real contextual barriers undermine preschool-aged Latino farmworker children's level of physical activity.

Childhood obesity is a pressing public health problem, particularly among immigrant Latino children. Approximately one-fourth of non-Hispanic White children aged 2–5 are

Address all correspondence to: Joseph G. Grzywacz, Ph.D., Department of Human Development and Family Science, Oklahoma State University, 700 N. Greenwood Avenue, Tulsa, OK 74106. joseph.grzywacz@okstate.edu. Telephone: 918-594-8440; Fax: 918-594-8558.

overweight (i.e., >85 percentile of sex-based weight-for-length), whereas over one-third of Mexican American children in the same age group are overweight [1]. Although a portion of this disparity is likely attributed to socioeconomic conditions such as food insecurity [2–5], cultural beliefs about the proximal antecedents to obesity also contribute to ethnic variation in childhood overweight and obesity [6, 7].

Obesity among immigrant Latino children in farmworker families appears to be especially noteworthy. Although reliable estimates are difficult to obtain because farmworkers are a health disparate and vulnerable population that is under-represented in research studies [8, 9], all available evidence estimates suggest children in Latino farmworker families have excessive rates of obesity. Early estimates from a California-based sample of preschool-aged children, most of whom lived in farmworker families, reported that 37% of children were overweight or obese [10]. Subsequent studies of youth aged 2 years and older in Latino farmworker families have reported combined overweight/obesity rates of 47% [11] 49% [12] and 76% [13].

Physical activity among children is essential for preventing overweight and obesity in any population. The National Association for Sport and Physical Education (NASPE) has recommended that preschoolers aged 3–5 accumulate 60 minutes of structured physical activity and at least 60 minutes of unstructured physical activity daily. However, evidence suggests that few children achieve NSPE's recommendation [14–17], and Latino children tend to be less active than White children [18]. Previous research focused on the physical activity habits of young children in Latino farmworker families could not be located.

Latino preschoolers' lower level of physical activity is beginning to be studied. A small set of studies with non-farmworker families suggests that parents (usually mothers) believe that regular physical activity is important for children's good physical health, and that specific types of physical activity are useful for intellectual and social development [19, 20]. For many Latino parents, "physical activity" refers to a strict set of pursuits that are formalized (e.g., playing a sport) or involve specific types of equipment (e.g., riding a bike, playing with a ball) [20, 21]. Likewise, discrete barriers confronted by caregivers in helping their young children obtain regular physical activity have been documented. Families report that greater reliance on motor-vehicle transportation in the US relative to their native countries places limits on children's physical activity [19, 22, 23]. Northern samples report that the cold US winters impede children's physical activity [22, 23], whereas southern samples report the summer heat reduces regular activity [19].

The belief systems held by parents that may contribute to lower physical activity among Latino children, and presumably Latino children in farmworker families, remains under-researched. Existing studies lack detailed descriptions of the presumptive value of physical activity for children, or beliefs about the conditions that require placing limits on children's activity. Indeed, results reported to date are largely from studies of diet and children's overweight/obesity, not children's physical activity [22, 23]. Further, existing results are based on diverse Latino samples, with some studies reflecting primarily Caribbean Latinos in urban enclaves of the Northeast [22, 23], with others reflecting Mexican immigrants in a metropolitan center of Texas [19], residents of Mexico City [20] or immigrants from diverse

locals residing in an urban area of the Midwest [21]. Research focused on identifying belief systems shaping children's physical activity among homogeneous Latino groups in distinct socioeconomic contexts, like farmworker families, is needed to identify potential cultural bases underlying elevated childhood obesity among Latinos. Moreover, research specific to farmworker families is needed to create culturally- and contextually-appropriate interventions to prevent obesity and other conditions in this vulnerable population.

The goal of this analysis is to enhance understanding of mothers' beliefs about Latino preschoolers' physical activity to enable development of culturally- and contextually-appropriate interventions to support regular physical activity among children in farmworker families. The aims of this analysis are to document beliefs held by mothers in Latino farmworker families about the contribution of physical activity to preschool-aged children's health, and delineate perceived barriers or constraints that impose limits on preschool-aged farmworkers' children's physical activity.

Method

Design

This research is part of a larger study of the dietary and physical activity patterns of young children living in farmworker families being carried out in rural counties across eastern and western North Carolina (NC). The larger study has two primary components. One is formative in nature and involved the collection of qualitative data through in-depth personal interviews. The data for this analysis are from the formative component of the project.

Recruitment and Sample

The goal was to accrue a purposive sample of mothers of children in farmworker households balanced by farmworker status (i.e., seasonal versus migrant), child age (2–3 and 4–5 years of age), and child gender. Attempts were also made to recruit across the study region. To be included in the study a woman had to have a child aged 2–5 years old and a household member employed in agriculture in the previous 12 months. This study focuses on two common types of farmworker families: seasonal and migrant. Seasonal farmworker families are those where an adult member of the household is employed in agriculture, but has taken up residence in the area and works only seasonally in agriculture. Migrant farmworker families are those where either the farmworker or the farmworker and the family relocate one or more times to perform farm work. The research team has an 18-year history of conducting research with Latino farmworkers, and has built a large number of relationships with organizations and agencies serving the immigrant farmworker community, both those in residential enclaves where seasonal farmworker families dwell and farmworker camps and locales where migrant farmworker families dwell. Individuals in the network of community contacts serving either seasonal or migrant farmworker families referred potential participants to study staff. Trained, bilingual study staff recruited all study participants. The final sample consisted of 33 women, including 16 women from "migrant" farmworker families while the remaining 17 women were from "seasonal" farmworker families who had taken up residence in the study area. Families had an average 3 children in the household. In most cases the farmworker in the household was the participant's husband,

but about 40% of the participants reported performing farm work themselves in the previous 12 months.

Data Collection

Data were collected from April 2010 through February 2011, by two trained interviewers. Interviewers met participants at locations of the participants' choosing, usually their homes, explained the project, and obtained signed informed consent. Participants received a small incentive ($10) at the end of the interview. Prior to any data collection staff explained the purpose of the research, indicated that participation was voluntary, and answered all participant questions. Signed informed consent was obtained from all study participants. In-depth tape-recorded interviews ranged in length from about one to three hours. The Wake Forest School of Medicine Institutional Review Board approved all recruitment and data collection procedures. A Certificate of Confidentiality was obtained from the National Institutes of Health to protect the anonymity of study participants.

Interview Content—The goal of this component of the project was to develop a comprehensive understanding of the beliefs about children's weight and obesity held by Latino mothers in farmworker families, including identifying the concrete factors that shape children's eating and physical activity patterns. To achieve this goal, a semi-structured interview guide was created to elicit information about the family and household, including migration patterns, as well as descriptions of the dwelling and surrounding area emphasizing participants' appraisals of how safe it was for children to play. The interview guide also elicited descriptions of children's typical physical activity habits. Finally, participants were shown three 10–15 second video clips of preschool-aged children engaging in sedentary, light, and moderate-vigorous physical activity. After seeing the clip for each intensity of physical activity participants were asked if they considered that type of play normal and good for preschool-aged children, how much time children should spend in that type of activity, and whether they wanted their child to spend more or less time in that type of activity. The interview content was expanded as interviews were conducted and new topics arose.

Analysis

All interviews were transcribed and translated from Spanish to English. Transcriptions were checked against audio-recordings by interviewers, corrected as needed, and identifying details removed to conceal identities. Interviews were distributed to team members as they became available. Group meetings were held to discuss whole transcripts as cases, to identify emerging findings, and to consider new topics for the interview guide. After most of the interviews had been collected, a list of codes was constructed to reflect original and emergent themes and patterns. Definitions for codes were agreed upon, and several transcripts were assigned to team members for coding. Coded transcripts were compared and codes clarified, as needed. Then each transcript was coded by one team member and reviewed by a second. Any disagreements were resolved by consensus.

Atlas ti v6.0 (Scientific Software Development GmbH, Berlin) text management software was used. For the analysis described here, segments for codes related to physical activity

beliefs and barriers to physical activity were reviewed. Weekly meetings were held at which the team identified themes and patterns in a particular code, related it to other codes, and constructed matrices of related ideas. Variations by migrant and seasonal farmworker status, child gender, and child age were noted. When appropriate, separate matrices were constructed based on these variables.

Results

Analyses yielded two distinct sets of beliefs. The first set of beliefs revolves around mothers' beliefs about physical activity and preschoolers' health. The second set of beliefs revolves around perceived barriers to preschoolers' physical activity. Each set of beliefs and illustrative examples are presented.

Beliefs about Physical Activity and Preschooler's Health

Physical activity is beneficial for children—Virtually every mother expressed sentiments conveying the belief that physically active play requiring a high level of energy is essential for good health for all preschoolers, regardless of child age or gender. The generic belief that physical activity is simply good for child health is clearly illustrated by a mother from a migrant family.

> Yes, it [active physical play like running, jumping rope, and riding bikes] is healthy for the body to develop the bones, body, brain, and all that. It's healthy for her…. [B]ecause it helps them develop their bones properly and to have more muscles so they won't be weak.
>
> Migrant family (P#08)

Mothers in both migrant and seasonal farmworker families intimated that active play and physical activity had valuable physical health benefits. Frequently mothers made direct linkages between physically active play as an essential element of children's weight control or obesity prevention. For example, when asked how exercise is beneficial to children, a mother from a migrant family (*P#32*) responded simply, "jumping helps [children] lose weight." Likewise another participant from a seasonal family (*P#17*) responded simply, "Being active helps children not gain weight."

Less common, although still apparent, were attributions that physical activity is beneficial for various health outcomes. Several mothers commented that active physical play contributed to the development of strong bones. For example, when asked what benefit her daughter would get from active play like running and jumping, a mother from a migrant farmworker family (*P#30)* noted "it will help her bones get stronger." Participants in both migrant and seasonal farmworker families indicated that active play that requires high levels of energy is "… good for their health" (Migrant Family *P#14*). Likewise, another mother from a seasonal family (*P#25)* said, "…it is good for health… he's stretching out his muscles," while another said "it's good for their bodies to do different things" (Migrant Family *P#2*).

The types of physical activity that were believed to convey health benefits to children were frequently structured or purposeful “event” types of experiences. When asked about the frequency in which their children were able to engage in more intense forms of physical activity, many mothers reported about how often they are able to take their children to the park or other destinations that allowed children to run (e.g., zoo, school playground). Similarly in describing how the absence of physical equipment like bicycles or the inability to engage in a sport (e.g., soccer) because of an insufficient number of people or inadequate play areas, mothers conveyed a notion that children’s physical activity somehow required structure and ritual.

Not only was physical activity believed to benefit physical health, it was also viewed by several as important for equipping children for their future. For example, when asked if she would be concerned if her son spent all of his playtime in high-energy activities like running and jumping, one mother commented:

> Honestly, we’ve always worked in agriculture and that’s very physically demanding. So, when our children do things, it’s a good thing because when they’re older, they won’t fear manual labor because if they don’t do a lot of exercise, then, they won’t want to do something physically demanding because they won’t have the strength to do it.
>
> Migrant Family (P#31)

The importance of active play and physical activity for children’s health was also apparent in statements linking the absence of physical activity with health or developmental problems. For example, when asked if she would worry if her son only wanted to engage in sedentary forms of play that required little energy, a mother said:

> Yes, I would worry about what was wrong with him, what was wrong that he didn’t want to play [in activities requiring more energy]. I’d worry because I imagine that looking at a child who just sits around all day long would be worrisome. You’d ask yourself what was wrong with the child.
>
> Seasonal Family (P#1)

Other participants suggested they would be concerned if their child spent too much time in more sedentary forms of play, and some suggested that overly sedentary behavior was potentially indicative of a behavioral problem. For example, in response to questions asking whether she would be concerned if her daughter only wanted to play with dolls or other types of calm activities, one participant said:

> No, that’s not good. You always have to see…because my daughter likes to play with her dolls and be like that, but she also likes to play running around and going from here to there. That’s what my daughter is like, but if she always did that, you’d know that she had autism. If you see that instead of playing with some action figures, they prefer to play with blocks and want to put them in a certain way each time, that could be a person who has autism, or they could have OCD.
>
> Seasonal Family (P#24)

Too much activity can be harmful—Despite the widely held presumed benefits for young children of active physical play, there was also a ubiquitous belief that too much physical activity could threaten children's health. In some cases the health threats were acute, but relatively benign, such as too much physical activity would cause children to become overly tired and cranky.

As common was the expressed belief that too much physical activity could contribute to a variety of discrete health problems. For example, when probed to ask why she limited her child's amount of jumping, a mother from a seasonal farmworker family (*P#5*) said, "… because it will make his stomach hurt … it can hurt his spleen." Others expressed a need to limit children's physical activity as a means to controlling injury risk. For example, a mother from a migrant farmworker family (*P#2*) expressed worry about her daughter running around too much because, "[s]ometimes, when she spends a lot of time running and playing all around, in the afternoon, she complains that her knees hurt a lot," whereas a mother from a seasonal farmworker family (*P#19*) described a trip to the hospital to stop bleeding that resulted from her child tripping on "sharp gravel." Several mothers commented that prolonged play, especially if it required a lot of energy, would cause children to overheat and potentially pass out. For example, a mother from a migrant family (*P#8*) reported that her daughter played outside an hour a day explaining that "…because if she gets too much sun, that isn't good for her either." Likewise, a mother from a seasonal farmworker family reported:

> Sometimes, I see on the news that children in the sun can pass out. I worry when the sun is very strong because if it's very hot, her heart can beat faster and she could pass out or something. That's why I don't like to take her out for a long time.
>
> Seasonal Family (P#7)

Sedentary activity benefits children's brains—Participants clearly expressed the belief that sedentary activities like puzzles, coloring, reading and playing with small manipulative toys like Legos was good, even though children were not moving their bodies.

> I wish he'd sit down and write his name and all that because that would make him learn more things, because doing physical activity makes them develop physically, but they should also develop their ability to pay attention. They mostly just want to play and not do anything else.
>
> Migrant Family (P#31)

Other participants highlighted other types of cognitive benefit resulting from young children engaging in sedentary forms of play. When probed to explain why she thought sedentary activities like putting a puzzle together was good for children, Participant 3 from a seasonal family said, "because they're thinking and that helps them develop their memory since they have to put those figures together. I think that is good." Similarly, when asked whether sedentary play requiring little physical movement was good for children, one mother said:

> Yes, because they develop their ability to think and when they're playing with a toy, they can make something up and play along with it. That's good for them because that develops their minds and it develops their ability to think about what

> they want to do. They're improving their ability to think about something and their imaginations
>
> Migrant Family (P#32)

Television is bad for children—Although participants generally believed that sedentary activities benefited children's cognitive development, television viewing was generally not described as a beneficial form of sedentary activity. Participant 24, who was from a seasonal family, said, "…if it's Dora the Explorer [on the computer], that's something she can learn from, but that time she's using to watch TV, she can use to play," suggesting a clear distinction between spending time on the computer and spending time watching television. In essence Participant 24 seems to be suggesting that spending time on the computer is useful because it promotes learning, whereas time watching television is perhaps better suited for playing. When probed about why she thought television was bad for young children, Participant 9 from a migrant family said, "Because they could be doing something else, and because if they're watching TV, they aren't doing another activity, like drawing." Likewise, Participant 31 from a migrant family said "I prefer that he do something better than watching TV because it doesn't teach them anything good."

Several parents believed that too much television viewing by young children would produce several negative physical and social consequences. The dominant physical problem (apart from it distracting from more useful types of activity or play) was concerns that too much television watching would harm children's vision. Participant 20, from a seasonal family, reports that she limits her children's television watching to an hour or two because, "I've been told by doctors that it messes up their vision." Likewise, when asked why children should be limited to 10 minutes of television viewing, one mother from a migrant family (P#32) stated, "[b]ecause it messes up your eyes."

Several participants also commented on the negative social consequences of children watching too much television.

> … it's like they get mean or lazy and don't want to do anything. If I let them watch TV too long, they'll get mad easily and get too lazy. If you tell them to do something, they'll ask you why they have to and tell you that they don't want to do it is bad for young children.
>
> Seasonal Family (P#21)
>
> It's okay to distract yourself with the TV for a little while, but I don't think you should do it more than twenty minutes. There are a lot of children who spend an hour or two in front of the TV, which is bad for them because they aren't doing things that will benefit them when they grow up. They could learn stupid or worthless things from TV, depending on what their parents let them watch. They can also learn to not listen to their parents from watching TV.
>
> Seasonal Family (P#31)

Beliefs about Barriers to Preschoolers' Physical Activity

Physical and built environmental barriers—Participants identified several barriers to children's regular physical activity. Hot temperatures were a commonly reported barrier; several mothers commented that spending too much time in the sun and high heat could cause children to become sick. Another common barrier was the widespread belief that children's physical activity, especially outdoor physical activity, required adult supervision. Children's safety was a key because many participants lived in dwellings adjacent to fields or forests, or there were concerns about automobile traffic.

> When they aren't fumigating [the fields], I take the children outside to play soccer, or they play with their toy cars or bikes. But when they're fumigating, we can't go outside because of the chemicals.
>
> Migrant Family (P#9)

> Because, sometimes, they fall or they can run away and get run over by a car. So, it's better inside because I can keep an eye on him, here in the room or in the hall. [Interviewer] … is there another reason why you don't like for him to go outside? No, just that because he's young and he can leave. We live around the fields and there are snakes around here since there's cotton.
>
> Seasonal Family (P#23)

Farmworker families generally lacked the physical space to engage children in physically active forms of play. Few had outdoor play areas that were deemed safe for children, and much of the indoor space was confining. Migrant families, in particular, reported not having an assortment of equipment or toys for children to play with because of the difficulty transporting bulky personal items from one agricultural site to another.

> They don't have that many toys here because we only stay a short amount of time. If we bought them something, we'd have to take it back with us because when we come back next year, we might not get the same trailer.
>
> Migrant Family (P#8)

Access to parks in this predominantly rural region was virtually non-existent. Within this context transportation constrained children's physical activity. Few farmworker families had their own mode of transportation; and even when a vehicle was available, many mothers did not have a valid drivers' license or they feared driving over concerns of police checkpoints.

> I haven't seen a park around here. Well, there is one in Wilmington, but it's too far to take them in the afternoon. It takes about an hour to go and come back. Sometimes, we get home from work late and by the time we take a shower and cook, it's already too late. Sometimes, on Sundays, when we don't work, we take them to the park for a little while.
>
> Migrant Family (P#11)

> Because I was working almost every day, including Saturday and Sunday. And, sometimes, I don't have time because I only drive to the small towns. I don't drive any further than that to be cautious.

Seasonal Family (P#1)

Social environmental barriers—There was a subtle difference in the way that mothers in seasonal and migrant families talked about “neighborhood” safety. Whereas concerns held by mothers in seasonal farmworker families were situated in their knowledge of specific neighbors and their activities, concerns held by mothers in migrant families were situated in the general absence of knowledge or information about others living in their camp.

> Yes, because you can’t trust everyone since some people abduct children. [Interviewer: “Have you heard of that happening?”] My mom says that there are people around here stealing children, and maybe they can even kill them. There are black people who live across the street and I’m scared of black people because they are dangerous
>
> Seasonal Family (P#5)
>
> I’d just take them outside because I don’t like for my kids to play with strangers, because you never know. I do it for the safety of the kids
>
> Migrant Family (P#8)

Apart from basic concerns about children’s safety, participants also believed that unsupervised play would escalate to mischief or potential trouble. For example, in response to a question probing the benefits of regular active play like jumping on a trampoline, one mother from a seasonal farmworker family (*P#18*) reported, “[M]aybe if they do too much, it isn’t good for them because they can get into trouble, sometimes, because they can’t figure out what to do. So, they end up doing something bad.” Likewise, another mother (P#5) expressed reservations about her son engaging in too much active play because “furniture could get broke,” and suggesting that active play can “get out of hand”.

Mothers also expressed concerns that children who played unsupervised outside could be picked up by the Department of Social Services.

> If they go out, they have to go out with us. They only go walking outside when we’re with them. I don’t let them go out like I do here. They told us that if they saw them playing by themselves there, they were going to be taken by social services. I haven’t let them go outside since then. I didn’t know that. One time, when they went outside to ride their bikes, a lady who’s a pediatrician came and told me that I couldn’t let my children out because the social services people would come by and take my children.
>
> Migrant Family (P#15)

Contextual constraints created barriers to children’s physical activity, particular outdoor physical activity. Mothers’ suggested that the absence of age-appropriate playmates undermined children’s play. For example, Participant 5, from a seasonal family, said, “Because when a child doesn’t have anyone to play with, he plays with games. But when a child sees another child playing and jumping around, it makes them want to jump and play, too. When they don't have anyone to play with, they can’t.” The time structure imposed by

farm work created another contextual constraint on children's physical activity. Among those that did farm work themselves, mothers reported having little time or energy to play with children after a long day of working in the fields.

> …since we work in the fields, we don't have much energy to come home and run more at home. Because working in the fields is hard work. When it's hot, we come home really tired because it is hot and we have sweat a lot. So, when we get home, we don't feel like running anymore.
>
> Migrant Family (P#11)

Weekends were frequently consumed by other family obligations such as church and grocery shopping for the week, leaving little time for children's physical activity. A mother from a migrant farmworker family (*P#32*) reported, "[H]e only plays (outside) on Sundays. I go grocery shopping on Saturdays and he only gets a chance to play on Sundays since he has to go back to school on Monday."

Discussion

Obesity is elevated among preschool-aged Latino children relative to their non-Latino peers [1], and evidence suggests a portion of this disparity may result from Latino children's lower level of physical activity [18, 24]. This study aimed to delineate the beliefs and situational barriers that may contribute to Latino farmworker preschool-aged children's activity habits. Farmworker families are a health disparate and vulnerable population that is under-represented in research studies [8, 9], despite experiencing elevated rates of morbidity across the lifespan. In the unique case of childhood obesity, published rates of obesity are up to 200% higher among children in Latino farmworker families compared to the general population.

Mothers of preschool-aged children in Latino farmworker families believe physical activity is valuable as a means to an end. Active physical play and more intense forms of physical activity are presumed to stretch and grow muscles, and strengthen bones: it contributes to general good health. These results parallel those obtained from previous research with Mexican mothers in non-farmworker samples, who reported physical activity is important for children's good physical health [19, 20]. The contribution of our results is that they offer insight into the origins of why children's physical activity is important for children, particularly for those in farmworker families. That is, "good health" has implicit value, but it has practical value in that it enables and equips children to work hard. Even discussions of possible behavioral issues contributing to the absence of physical activity were not focused on behavioral issue per se, as much as the implications of that issue for ongoing care or the child's ability to enter the workforce. Likewise, "laziness" attributed to too much television viewing was not a problem onto itself as much as a threat to the children's ability to work.

Another contribution to the literature is the clear evidence that too much active play or vigorous physical activity is potentially harmful to children. Some of the concern expressed by mothers in these farmworker families is contextually appropriate; prolonged outdoor play during hot and humid North Carolina summer months can contribute to heat illness, especially without adequate hydration. However, other concerns, like too much running or

jumping could create health problems (e.g., “hurt his spleen”) or that vigorous physical activity contributes to injury risk, is newer to the literature. Limiting young children’s physical activity is highly logical if mothers believe it will contribute to injury or health problems. Future research is needed to discern how mothers balance the perceived benefits and risk of young children’s vigorous physical activity. It is possible concerns about intense but short duration activities are counterproductive to the demands of daily life.

Despite the physical benefits of active play and physical activity, sedentary forms of play are clearly valued by mothers in farmworker families. Participants believed sedentary forms of play like completing puzzles, reading a book, or playing with blocks contributed to cognitive development. These results are consistent with those obtained from earlier studies with nonfarmworker families [19, 20], but add to the literature by demonstrating a potential preference for sedentary activities. Indeed, several mothers explicitly mentioned wanting their children to engage more frequently in sedentary forms of play. It is also possible sedentary forms of play are simply easier to supervise or require less personal involvement, or that the cognitive development resulting from greater involvement in sedentary play is viewed as a way to a “better life” for their children, a key consideration behind parents’ decision to migrate to the US. Although explanations for the apparent value of sedentary forms of play requires additional research, our results suggest the presumed benefits of this form of play may compete with children’s ability to engage in active and more vigorous forms of play.

Many of the barriers to physical activity by preschool-aged children identified in this study have been reported in previous research. Like Gallagher and colleagues [19], we find the summer heat tends to drive children indoors where there is little opportunity for active physical play. Like other research with non-farmworker Latino samples, we find parental work schedules pose barriers to children’s physical activity, and concerns about traffic and other aspects of safety impose limits on children’s active play, especially outdoor play [19, 20]. In most cases the specific manifestations of these barriers are analogous to urban situations, like crowded modest housing, unknown neighbors, and parents’ work schedules. However, they reinforce the importance of built and social environment for enabling children’s physical activity [25–27].

However, there was a notable point of distinction in the way transportation imposes barriers on children’s physical activity. Whereas previous research in metropolitan areas like Boston [22, 23] and San Antonio [19] has suggested greater reliance on automobiles lessens children’s physical activity, participants in our rural sample maintained the lack of access to vehicles or the absence of a drivers license undermined children’s involvement in physical activity. Thus, while previous research suggests greater reliance on transportation undermines “free living” forms of physical activity (e.g., walking to the store), our results provided no evidence of a major lifestyle shift in terms of reliance on mechanized transportation. Rather, in our sample, the barrier of transportation to children’s physical activity was more strongly nested in the way children’s physical activity was viewed. That is, like previous research [20, 21], participants in this study typically viewed children’s physical activity or active play as a stylized or formalized event that necessitated some type

of trip (e.g., to the zoo or a visit to the park) that was challenging without a vehicle, the ability to drive, or the lack of local alternatives.

The contributions of this research must be interpreted in light of its limitations. First, data were collected from a small, specific subgroup of Latino families, all of whom were engaged in farmwork. Although the focus on farmworker families was purposeful, the generalizability of study findings to other immigrant Latino groups is unclear because we only spoke with mothers in farmworker families. Even though our results parallel the existing literature, the extent to which we succeeded in delineating the cultural beliefs of Latinos about preschool-aged children's physical activity awaits further research and discussion. Conceptual ambiguity poses another potential limitation to our research. Concepts like "active play" and "physical activity" were used interchangeably throughout this study by interviewers, and may have shaped the pattern of observed results.

Limitations notwithstanding, the obtained results have meaningful implications for public health practice. Attempts to promote regular and sustained active physical play among children in farmworker families need to acknowledge and circumvent notions that too much physical activity can cause illness or problems. Moreover, attempts to promote young children's physical activity need to recognize that parents generally believe their children are already active enough, and that they are looking to engage their children in more sedentary forms of play that they view as being of equal or perhaps greater importance to their children. In most cases, programs to promote farmworker children's physical activity will need to be positioned in childcare centers like Head Start, or community-based agencies. Most homes lack the physical space necessary for children to engage safely in active physical play;: this is especially the case among children in migrant farmworker families.

In summary, this study of cultural beliefs and barriers to physical activity among preschool-aged Latino children in farmworker families makes several contributions to the literature. The results indicate that both the built and social environment pose several barriers to preschool-aged Latino children's physical activity. Many of these barriers are exacerbated by cultural beliefs about children's physical activity. Although Latino mothers in farmworker families believe that active play and physical activity promotes good health and equips children to work hard, there is also widespread belief that too much active play or intense physical activity is potentially dangerous. Further, there is a general belief that children are sufficiently active, and that children should spend more time in more sedentary forms of play that is believed to benefit children's brains. Thus, although physical activity is clearly viewed as beneficial, strong cultural beliefs and very real contextual barriers undermine preschool-aged Latino children's level of physical activity.

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