



# HHS Public Access

Author manuscript

*Am J Ind Med.* Author manuscript; available in PMC 2019 December 01.

Published in final edited form as:

*Am J Ind Med.* 2019 December ; 62(12): 1079–1090. doi:10.1002/ajim.23039.

## Hired Latinx Child Farm Labor in North Carolina: The Demand-Support-Control Model Applied to a Vulnerable Worker Population

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### Abstract

**Background:** US government child labor policies allow children as young as age 10 to be hired as workers on farms not operated by family members. Children may face substantial health risks in an industry known for high worker morbidity and mortality rates, due to high demands for productivity, and low control and little support because of the organization of the workplace. This paper examines how child farmworkers in North Carolina experience their work situation.

**Methods:** In-depth interviews conducted in 2016 with 30 Latinx child farmworkers, ages 10–17, were analyzed using concepts from the demand-control-support model. All had worked as either migrant or seasonal hired farmworkers within the past year.

**Results:** Children reported planting, cultivating, and harvesting crops including fruits, vegetables, and tobacco. The crew leader supervisory system, piece-rate pay, and co-worker pressure produced significant demands to work quickly and take risks including lifting heavy loads, operating mechanical equipment, and working in excessive heat. Children had little control over work to counter demands they experienced; and they labored in a state of fear of firing, wage theft, and other sanctions. Support was variable, with younger children more likely to experience family and co-worker support than older children.

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Institution at which the work was performed: Wake Forest School of Medicine, Winston-Salem, NC.

Author Contributions: SAQ participated in all aspects of the study conceptualization and design, analysis, and manuscript writing. TAJ managed and participated in data collection, directed data analysis, and participated in manuscript writing. DCM participated in data collection and analysis, and participated in manuscript writing. JCS participated in the study design, analysis, and manuscript writing. DSS participated in the study design, analysis, and manuscript writing. TAA participated in the study conceptualization and design, analysis, and manuscript writing.

Ethics: All procedures were approved by the Wake Forest School of Medicine Institutional Review Board. Participants' parents provided written consent, and child participants provided written assent. The Board approved an exemption to be able to conduct interviews without parental permission among unaccompanied minors, defined as children younger than 18 years of age who had no parent with them in North Carolina.

Conflict of Interest Disclosure: The authors report no conflicts of interest.

Disclaimer: None

**Conclusions:** The high demands with limited control and, for some, little support, that these children experience place them at risk and show the possibility of injury and exploitation. Future research should systematically document the occupational injury and illness of hired child farmworkers, and consider whether changes in labor policy are warranted.

### Keywords

Child labor; Organization of work; Demand-support-control model; Agriculture; Policy; Latino; Farmworker

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## Introduction

Agriculture is a dangerous industry. In 2017, excluding farms with fewer than 11 employees, 20.9 deaths occurred per 100,000 workers,<sup>1</sup> and 5.2 lost work time injuries were reported per 100 workers.<sup>2</sup> Children also experience high rates of agriculture-associated morbidity and mortality.<sup>3–5</sup> Every day 33 children are injured in an agriculture-related incident.<sup>6</sup> In 2015, the fatality rate for young agricultural workers aged 15–17 years was 28.21 per 100,000, compared to 0.63 per 100,000 in all other industries combined.<sup>6</sup>

Federal labor laws permit children as young as 10 years of age to work for pay in agriculture on farms not owned by family members, as long as those children under 14 years of age have parental permission, work outside school hours, and are not involved in “hazardous tasks”.<sup>7–9</sup> Children ages 10 and 11 are restricted to working on farms where Fair Labor Standards Act minimum wage requirements do not apply, that is, on small farms. Children 14 or 15 may work outside school hours in any non-hazardous tasks, and those 16 and over can work in any farm job at any time.

Fewer occupational safety regulations apply to agriculture in the US than to other industries due to the history of exempting agriculture from labor hour, wage, and safety laws, referred to as “agricultural exceptionalism”.<sup>7–9,12,13</sup> While some states have created regulations for agriculture that are more protective of workers than the federal regulations, this is not the case for North Carolina where this research was conducted. Not all safety regulations in US child labor statutes apply to agriculture (Table 1).<sup>12</sup> Hired child workers in agriculture can work with sharp tools and machinery, as well as do the strenuous tasks of planting, cultivating, and harvesting crops, and working with large animals. In tobacco-producing states, they are employed in topping and picking tobacco, which exposes them to large doses of nicotine<sup>14,15</sup> and can result in nicotine poisoning (green tobacco sickness).<sup>16,17</sup>

The vulnerability of the Latinx children in this study is amplified compared to white youth because Latinx youth are typically low income and minority.<sup>18</sup> Sometimes, they do not speak English; the parents of many of these children are undocumented and may be reluctant to complain if their children are mistreated. Discrimination and sexual harassment are often part of the environment in which they work.<sup>15</sup> Hired child farmworkers are at particular risk for injury and exploitation because of their physical, cognitive, and emotional immaturity.<sup>10,11</sup> Increasing their vulnerability, some hired child farmworkers migrate for agricultural work, but are not accompanied by a parent (12% in a recent NC pilot study<sup>15</sup>), though they may be traveling with another relative.<sup>10,19</sup>

Farm work in the US, both for children and adult farmworkers, is generally contingent work.<sup>20</sup> That is, workers are hired for temporary jobs, when work is available, and are laid off when the job is finished. Work is often part time, with hours varying from day to day and week to week, as there is demand for labor. Demand for labor follows the natural cycle of the crop, so times of planting and harvest can be the most intense with the longest hours. In addition, labor demand can vary with danger that the crop will be lost to weather, plant disease, or even fluctuations in the market that make crop harvest more costly than the expected market price.

Work arrangements are often informal and may be through a third party contractor rather than directly between a grower and workers. While some farm work in the US is conducted under formal labor contract, much is not; such arrangements lack guarantees of compensation or other protections for workers.<sup>21</sup> This system of employment facilitates wage theft, the intentional withholding of pay or benefits earned, which has been documented among farmworkers in North Carolina.<sup>21</sup>

This paper focuses on Latinx children hired to work in agriculture in North Carolina. Its goal is to describe how these children experience their work situation. Using qualitative data obtained through in-depth interviews and organized with concepts from organization of work<sup>22,23</sup> and the demand-support-control model,<sup>24,25</sup> this paper identifies factors that may be related to hired child farmworkers' vulnerability to threats to workplace health and safety. The use of verbatim interview data gives voice to these children to describe their work as hired laborers, providing a unique perspective on a largely hidden labor force. The use of the conceptual models provides an organizing framework that has proved useful for understanding and predicting health and safety outcomes in other populations.

### **Conceptual Frameworks for Understanding Risks to Health and Safety**

This study's conceptual framework posits that the health and safety of child workers are linked to the hazards of the workplace. Characteristics of the work organization and characteristics of the children themselves affect how or whether children encounter hazards. The organization of work model<sup>22,23</sup> and the demand-control-support model<sup>24,25</sup> are useful conceptual frameworks for understanding how work affects health and safety of workers.

Sauter and colleagues' organization of work model<sup>22</sup> identifies three levels of the work environment: external context (economic, legal, political, technological, and demographic forces at the national and international level); organizational context (management structure, supervisory practices, production methods, and human resource policies), and work context (job characteristics, such as physical and psychological demands). For hired child farmworkers, components of the external context (e.g., immigration policy, legal documentation to work, national and state agricultural policy) largely dictate that agriculture will be the primary employment opportunity for children in Latinx farmworker families.

The job demand-control-support model provides a framework for examining factors from the organizational and work contexts in association with health among Latinx child farmworkers.<sup>15,24,25</sup> According to this model, jobs with greater physical and psychological demands will result in greater job strain and, therefore, poorer health. However, jobs in

which the worker has greater control (task variety or decision latitude) can offset the demands that might otherwise result in poor health. Finally, support of peers and supervisors may help protect children from occupational injury and buffer the effects of job demands and lack of control.<sup>26–28</sup>

### Existing Literature on Child Risk for Illness and Injury in Agriculture

Most data on the risks faced by children in agriculture come from studies that include both hired children working for non-relatives and children working on family farms. These data show that at least a half million children less than 18 years of age work on farms.<sup>29</sup>

National data on hired child farmworkers are scarce and incomplete, making them difficult to interpret. The National Agricultural Worker Survey (NAWS) 2005–2016 includes interviews with children 14–17, excluding all those younger than 14. No data come directly from the children under 14, but very limited questions are asked of their parents included in the NAWS who respond that they have a child also working in farm work; this excludes any children without parents working in farm work. With these caveats, recent analyses of NAWS data estimate the total number of children working fluctuated from about 43,000 annually in years 2005–2008, to about 30,000 in years 2009–2012, to about 34,000 in years 2013–2016.<sup>12</sup> The majority of child workers were male, Hispanic, and came from families below the poverty line. No trends in these characteristics are discernable over time. In the period 2013–2016, the mean number of days worked by children, 70, indicates the part-time or contingent nature of the work. A majority of these children were US citizens.

For hired child farmworkers, little research has been conducted to document the specific occupational risk factors and the prevalence of injury experienced. Most of what is known about hired child workers in agriculture comes from occupational safety and health research conducted in California, Texas, Oregon, and North Carolina, most of it using surveys. McCurdy and colleagues in California studied high school students working on farms.<sup>30–32</sup> They found that most of the Latinx students were hired on farms not owned by family members. Another study of adolescent Latinx workers in the same region found that those with lower acculturation (measured as more Mexican-oriented than Anglo-oriented, using the Acculturation Rating Scale of Mexican Americans-II<sup>33</sup>) were more likely to be working as hired farm laborers.<sup>34</sup> In Texas, Latinx high school students working in agriculture reported low rates of pesticide safety training (19%),<sup>35</sup> significant prevalence of severe back pain (over 15%), and high rates of non-fatal injuries.<sup>36,37</sup> These adolescents reported high rates of neurotoxicity symptoms, which were positively associated with injuries.<sup>38</sup> In Oregon, in one of the only existing studies that includes child farmworkers to use qualitative methods, focus groups of adolescent Latinx migrant workers (including an unknown number of 18-year-old adults) describe their work environment, as well as macroenvironmental barriers to opportunity that lead them to do farm work.<sup>39</sup> These youth recognized the health risks of pesticides, particularly related to their physical vulnerability. While they recognized danger, they also said they would fail to protect themselves because of heat and pressure to work. In a pilot investigation in North Carolina of a predominantly Latinx group of child workers 10 to 17 years of age, one-year cumulative incidence of self-reported injuries was high: musculoskeletal injury, 54%; traumatic injury, 61%; dermatological injury, 72%.<sup>15</sup>

Although little research has examined the work organization and work safety culture of hired child farmworkers, the research that does exist indicates reasons for concern and demonstrates that the demand-control-support and organization of work, largely used to analyze the work situations of adult workers, are appropriate for trying to understand the experience of hired child labor in agriculture. Findings from North Carolina showed that work safety culture and safety climate were both poor: few child workers received pesticide safety training, most reported unsafe work behaviors, and 38% reported that their supervisors were only interested in their working “fast and cheap”.<sup>11,40</sup> Such demands by supervisors for speed and lack of concern for safety are at the heart of the imbalance of demands and control and a supervisory system that can lead to risk of injury.

In sum, the existing literature on hired child farmworkers in the US is limited, and almost all of it was obtained through survey research. While such research paints a picture of potential risk for occupational injury and illness, it does little to provide the context of work organization and factors of demands, support, and control in which such injuries may occur. The present study uses qualitative data to explore the work of hired child farmworkers and identify potential drivers of injury and illness.

## Methods

### Recruitment and Sampling

This study was designed to recruit a sample of hired child farmworkers in North Carolina. To be included, children needed to meet the following inclusion criteria: 10–17 years of age, self-identify as being Latina, Latino or Hispanic, have done farm work for pay in the past 12 months on farms not owned by family members, and speak either English or Spanish fluently.

Recruitment was designed to balance the sample by gender, region of the state (eastern and western), and farmworker status (seasonal and migrant), all of which appeared to be dimensions along which experience of work might vary, based on a pilot study.<sup>15</sup> The western region was defined as those counties in the mountain region and western piedmont, while the eastern region consisted of counties on the coastal plain and adjacent piedmont with lower elevations. Children who changed place of residence to work were considered migrants. Those who did not change residence and worked seasonally in agriculture were considered seasonal workers. Children were recruited at different times of year to achieve a broad sample of experience in different crops.

Latinx farmworkers in the US are a complex group to engage in research because they are often a hidden and hard-to-reach population. No listing exists of Latinx child farmworkers; in fact, many employers deny that Latinx children work on farms. Therefore, a community-based recruitment strategy was used in which the study team contacted community organizations throughout the state who have contact with farmworkers and rural children to help the team find and recruit migrant and seasonal child farmworkers. These included the migrant education program, community health organizations, and other farmworker services organizations. The research team also participated in community events for Latinx

farmworkers where they approached children who could potentially qualify and recruited those willing to participate.

The consent process started with contacting parents to ask if they would let their children participate and the children being asked if they were interested. If both said yes, an appointment for the interview was set. At that time, the child and the parent(s) were both informed of the purpose of the research and that the child's participation was voluntary. After the interviewer answered questions, one parent signed the consent form and the child signed an assent form. The assent forms were different for those 10 years old, 11–15 years old, and 16–17 years old to provide the appropriate vocabulary for each age group. Children were given a \$25 cash incentive at the completion of the interview. All procedures were approved by the Wake Forest School of Medicine Institutional Review Board. The Board approved an exemption to be able to conduct interviews without parental permission among unaccompanied minors, defined as children younger than 18 years of age who had no parent with them in North Carolina.

### Data Collection

Open-ended, face-to-face interviews were conducted in English or Spanish by either native English-speaking or Spanish-speaking interviewers who had experience and training in conducting qualitative interviews. Interviews were conducted from June through September, 2016. Each took approximately 60 minutes to complete, and was conducted in the language of the child's choice. All interviews took place at the child's home. Interview guides were constructed and focused on asking child workers about their background, family, housing, and community. Children described their experiences doing farm work and how the work was organized. They were asked about the risks they perceived they took in farm work, and about any occupational injuries and illnesses they had experienced. Child farmworkers were asked about characteristics of their job and what they liked and disliked about their job. Probes were used to elicit descriptions and perceptions of their working conditions.

### Data Management and Analysis

The interviews conducted in English were recorded, and transcribed. Those conducted in Spanish were recorded, and translated and transcribed directly into English by a professional translation service company. All Spanish transcripts were verified against the recording by a bilingual team member to ensure proper translation of the interviews. All English transcripts were also verified to ensure proper transcription of interviews.

During data collection, the team met frequently to review findings from the interviews, including reading notes and transcripts as they became available. Emergent issues that were identified were pursued and clarified in subsequent interviews with other children. By the end of 30 interviews, the researchers judged that saturation had been reached, as no substantively new issues were being revealed.

Once all data were collected, a codebook was constructed for topics of interest, with mutually exclusive definitions established. Based on the analysis of the interviews, codes were created for demographics, housing, social context, farm work experience, farm work



tasks, work related risk behavior, occupational injury, work organization, wages, and safety culture.

Transcripts and notes were entered into Atlas.ti (Version 7.2) text analysis software; codes were applied to segments of text by one of the study team members. The coding was reviewed by two other team members; disagreements were discussed, and changes to coding were made based on consensus. A variable-based, “cross-sectional” analysis<sup>41</sup> was used, such that all segments associated with work organization code were extracted, reviewed, and summarized by team members. The summaries were reviewed by the lead author for consistency with the code. Revisions of these summaries were made until they adequately reflected the interview content. Summaries were subjected to saliency analysis.<sup>42,43</sup> Saliency analysis explores patterns by evaluating recurrent themes based on their frequency of recurrence, participants’ emphasis on the theme, and the explanatory capacity of the theme. Among the salient themes that emerged were demands, control, and support in the workplace. Within a group of interviews, salient themes may not necessarily have been discussed by every individual, but they were discussed in detail and with emphasis throughout the sample and provided some insight or explanation of the associated topic. Exemplary quotations are presented in the results section to support findings. While only one quotation is frequently presented, readers should be aware that only salient findings are being presented. Therefore, a single quotation does not indicate that only one person expressed the idea highlighted in the quotation. Participant identification numbers are provided in brackets. Threats to validity (e.g., focus on extreme cases) were considered in constructing and revising the summaries.<sup>44</sup>

## Results

Thirty hired child farmworkers were interviewed. Half had been born in the US, 11 in Mexico, and the remaining 4 in Guatemala. By design, about half (14) were from eastern North Carolina and the remainder from western North Carolina (Table 2). Also by design, they were about evenly divided by migrant and seasonal farmworker status. The children interviewed included 13 girls and 17 boys. They ranged in age from 10 to 17 years, with a median of 15 years. Eight children were in their first season as hired farmworkers, and 3 children reported being unaccompanied by a parent. Only 7 children chose to be interviewed in Spanish; 2 of these children reported an indigenous language as their first language, but were fluent in Spanish.

The children reported having worked in a wide range of crops during the season of the interview and previously. Notably, 10 of 14 from eastern North Carolina reported having worked in tobacco. For those who worked in berries, all of the work was harvesting crops. In vegetables, children worked planting crops, weeding, staking plants like tomatoes, harvesting, and washing, sorting, and packing the harvested produce. In tobacco, a few reported working in planting during the spring school break, but most of the work was removing the flower and suckers from the plant and harvesting the leaves.

## The Work Environment: Organizational Context

For most of the children, work organization was anchored by a crew leader who directed their day to day activities and, in the case of migrants, had usually brought them to North Carolina. In both English and Spanish, the children referred to this person using the Spanish word *contratista*. The crew leader served as an intermediary with the farm owner. In general, the owner interacted only with the crew leader and had very little interaction with the child workers. The owner provided the crew leader with instructions on what work needed to be completed: the tasks to be done in what crop, in what fields, and by what deadlines. All but one of the crew leaders of these child farmworkers were male, and most were Latinx.

Some of the children working under a crew leader did not seem to understand the hierarchical organization of their supervision. This was particularly true of the youngest workers and those in their first seasons. When asked if their boss was the owner of the land or someone who employed them to work there, two girls who had migrated from Florida replied that they did not know [#25, age 15; #26, age 17]. A 13-year-old girl working seasonally in blueberries thought her supervisor might be the owner, but later said she was not sure [#16]. In contrast, more experienced children seemed to be more savvy about how their worksite was organized.

[The crew leader] be giving us water when we need it. Because, they're like, "If you need water, there's a truck if you want to get water." But [the crew leader] needs to be careful also, because, like, the owner gets there and he sees us resting or whatever, like, [the crew leader]'s going to also get fired. And we get fired.

[#18, girl age 17]

Several migrant children reported that their father or uncle was their crew leader. One 17-year-old boy, who migrated from Florida, reported that he supervised a group of workers himself, and, in turn, reported to his father, his crew leader [#27].

Crews varied in size, with some as small as seven workers who migrated with a crew leader from Florida to western NC, and others as large as 40 workers, including both migrant and seasonal workers. In a number of cases for migrating children, the crew included some family members. In other cases, particularly children working seasonally, the crew consisted primarily of workers not related to the children. All but one of the crews was reportedly composed primarily of adults, and some included other children. One 16-year-old girl reported that she worked picking tobacco in a crew that consisted almost entirely of other children ages 13 to 17 [#30].

Other work arrangements were reported less commonly. A few of the children worked with their immediate families, with the families working directly for a grower. One 12-year-old boy [#13] and a 16-year-old girl [#14] reported working seasonally directly for the owner of a nursery. Another girl, age 13, reported that, while she worked for a crew leader in blueberries during the early summer, the rest of the summer was spent with her mother working directly for a farmer picking crops for his farm stand [#15].



**Pay and Pace of Work.**—Two systems of wages, piece rate and hourly wage, were reported, depending on the crop. Piece rate was used for picking blueberries, tomatoes, sweet potatoes, and some other vegetables; workers called this “picking by production”. Pay rates reported by child workers working piece rate varied depending on the size of the container and the crop. A 10-year-old seasonal girl reported that she was paid \$12/box of blueberries [#19]. Workers in blueberries were typically given a “chit” when turning in a full container. At the end of the day, workers redeemed their chits for payment in cash from the crew leader. In other cases, payment was by the week. For example, a 15-year-old migrant boy reported that his crew of eight workers was paid weekly for the number of boxes of tomatoes or peppers they picked [#7]. Another 15-year-old [#11] reported earning \$1/bucket of vegetables, and \$1.25/bucket if it was piled high. He described how the crew decides which workers had skipped a day or worked less hard; this information was given to the grower who wrote the checks [#11]. In another case, a 13-year-old migrant boy described his father receiving cash from the grower and then paying the crew. The boy said the father paid him different amounts, depending on how well he thought the boy had worked [#2].

Hourly pay was used for other tasks in vegetables and for most work in tobacco. Most of the reported pay rates were between \$8 and \$9/hour, which is above the North Carolina minimum wage, but lower than the average hourly pay of \$10.35/hour earned by farmworkers in the 2015–2016 NAWS.<sup>45</sup> A 14-year-old migrant girl reported receiving \$9/hour for picking tomatoes, though the crew leader would reduce it to \$8.50/hour “if they see you, that you’re being lazy” [#3]. A 12-year-old boy working seasonally planting tobacco and picking squash reported that he was paid \$8.50/hour [#4].

Regardless of payment method, child workers reported considerable pressure from supervisors to hurry.

You have to be ... quick with your hands if you wanna pick a lot, especially if you’re picking by production. If you’re picking by the hour, it’s still basically the same concept, because you wanna ... make sure that your spot is secured, and make sure that your boss doesn’t think you’re picking too slow.

[#23, boy, age 17]

Factors beyond the control of the child workers could also reduce their pay. Rain and failure of the crops to produce limited work hours. Wage theft seemed to be common, where the crew leader simply shorted the worker’s pay; and the worker had no recourse. A 16-year-old girl working seasonally in tobacco reported:

Well, *el contratista* tells us how much we getting paid and how much is this field how much is that field, but sometimes I think the *contratista* takes your money.... Sometimes he tells you, “This is that,” but you know it’s more, but you can’t say nothing because it’s the *contratista*. *El contratista* takes ... money. [S]ome *contratistas* [say], “I need money for the gas.” Or sometimes ... like if you get \$453.00, they be taking the \$3.00 off because they be saying they don’t have cash.

[#30]

Other wage theft was more subtle. A 17-year-old boy working seasonally in vegetable harvest reported:

This year, we were getting paid \$9.00 an hour. Well, it, it started off at \$8.00 an hour, and then we got raised to \$9.00. And we stayed at \$9.00 for a good while, but then there was a ... one-week or two-week period where money was really tight for the boss, and he asked us for the favor if we could go back down to \$8.00 just for that week, week-and-a-half.

[#23]

**Work Hours and Breaks.**—Child farmworkers reported workdays that began early in the morning, usually by 7am, and, for most, ended at 4 or 5pm, unless work was completed earlier or heat or rain resulted in stopping earlier. Children working in tobacco harvest reported not stopping until 6 or 8pm. Driving time to and from the worksite added time and was generally not paid. One 13-year-old picking blueberries reported she got up between 5 and 6am and did not get home until 8pm [#16]. Some days could be extremely long. A migrant boy working in the West reported that, although he typically worked 8 hour days, they could start early: when he picked sweet corn, he arose at 3:30am, and left for the fields by 4 to start work at 5 [#7].

All children reported getting a lunch break of 30 to 60 minutes. Other breaks were variable. At some sites, it appeared that the full crew took a break together, but in most cases, water and bathroom breaks were taken only as needed. A 14-year-old girl reported that she could only take a few minutes for a bathroom break, or one of the other workers was sent to look for her [#5]. A 16-year-old boy working in tobacco reported that “sometimes, if you are the first one to finish your row you could take a break at the end, but you have to be careful because if the leader sees you, he’s going to scream at you” [#28]. Two children, ages 12 and 16, who worked in a nursery report set breaks at 10:30am and 3pm in a 7am to 5pm day [#13, #14]. One 17-year-old girl working in tobacco reported that the contractor withheld lunch breaks if she did not think workers were putting in enough effort [#22].

Some children reported working 5 days per week. Others reported that they worked 6 or 7 days, though they tended to work shorter hours on weekend days than on other days. Saturday work was particularly common during the tobacco harvest.

### Work Demands

Children noted heat as the most oppressive physical work demand. They described it as suffocating to work in the confinement of row crops often higher than their heads. One 17-year-old girl said, “You’re in between all the tobaccos.... It just feels bad not to get wind, air. You feel like a fish without no water” [#22]. A 12-year-old boy reported, “[in the heat, you] feel like you’re about to pass out” [#13]. A 15-year-old girl said, “Usually when the heat starts rising, around 2:00 or 3:00 in the afternoon, that’s when the heat is really, really, really bad. So I usually start getting dizzy, and I start sweating a lot” [#6].

Lifting posed another physical demand. After picking berries or vegetables, children had to carry the loaded bucket or box to the collection point. The fields for blueberries, for

example, are large, so the distance could be great. Produce was often collected in 5 gallon buckets which were heavy and had to be lifted above the workers' heads onto the truck. A 13-year-old girl complained that her legs and shoulders hurt from running while carrying buckets of blueberries to the truck to get her chit before the truck moved on to the next field [#16].

Awkward postures and repetitive motion are common physical work demands. One 17-year-old girl reported she spent the whole day picking green beans bent over [#22], while another reported being so stiff from squatting to pick sweet potatoes that she could not even sit down when she took a bathroom break [#18]. A 13-year-old boy who picked tomatoes reported, "we walk a lot. That's hard. Sometimes your hands hurt from picking tomatoes. And your back, sometimes it will be hurting" [#2]. A 14-year-old girl complained of shoulder pain from days spent placing tomato stakes [#3].

Child workers' accounts of their work reflect several types of psychological demands. Fear of having wages docked or of being fired was extremely common, particularly for failing to keep pace with other workers. As one 16-year-old girl [#17] reported, if you slow down or take a break in tobacco, [the supervisors] "will try to take an hour away from your money. The *contratista* was mad that day that he told us, he said he had some other things to do, and we were going too slow. We had to keep working, because we knew he would do it." A 16-year-old boy reported that, "if you [fall behind the other workers], the boss man will scream at you and tell you to go faster [or] he's going to replace you with someone else" [#28]. On the other side of this need to work quickly, was the stress of not working so fast that co-workers perceived the child to be a rate-breaker. A 16-year-old girl working in a team of older women in a nursery reported that they "always told me not to work too slow, but don't work too fast" [#14].

For the youngest workers, learning the rules for cultivating and picking vegetables was stressful. A 13-year-old boy recited the rules he had gleaned [#2]. He noted that *caminos* [rows] were close together and sometimes walking between the *caminos*, you step on plants. "We can't do that because that's money." When you are weeding, you have to be careful not to leave weeds "or they will get mad" and not to cut the drip irrigation lines when you are cutting out weeds. When picking, you have to pick only the color and size you are told.

Seeing coworkers injured or pass out from heat in the fields was an additional psychological demand. One 13-year-old girl [#16] reported seeing her grandmother pass out.

[My grandmother] fainted. I got scared, because I was kind of small. I would [have said] she was dead. She kind of just passed out, and we were all freaking out. She got hurt by one of the branches, because when she fell, there was a branch there, and she got hurt on her arm.... We had to call an ambulance, and it came to get her.

The experience of harassment poses an ongoing psychological threat. A 15-year-old boy reported that, when he was sent to work in the packing house, surveillance cameras were used to watch what he was doing, including making sure he did not steal the equipment [#11]. Sexual harassment was also mentioned.

The supervisor ... that I had at first, he was, like, kind of, I don't know. Like, there was more females. He didn't accept guys. He only accepted females. That kind of felt weird .... Well, there was this one girl, and he started asking her questions, like, weird questions.... Like sexual things.... Them kind of questions. That was kind of rude for him to be asking them type of questions.... Well, [the girl] didn't say nothing at all. She just stayed quiet.

[#18, girl, age 17]

## Control

Overall, child workers perceived that they had very little control of their work to counter the physical and psychological demands they experienced. This included both components of control: skill discretion and decision latitude.

One 12-year-old boy who usually worked in a greenhouse gave an example of how little control he had [#13]. The owner would sometimes demand that the child workers get into the bed of his truck and go with him out to the fields, where they would have to weed or spoon fertilizer onto the plants. The owner drove fast and recklessly, and a disability kept him from using the brake, which the boy found frightening.

Children's daily tasks had little variation, and therefore, scant discretion. Depending on the point in the agricultural season, they planted, weeded, or harvested the same crop all day long. The tasks were relatively low-skill; after the child learns the task, there was no further skill to be developed. A few exceptions were noted. One 15-year-old girl [#6] reported that she had been taught to drive a "four-wheeler" by the grower so she could deliver plant stakes in the fields. While she reported that it was "scary" at first, she seemed delighted by the new tasks opened up by this skill.

There was little place for making decisions about how the work was performed. A few children reported that they could take breaks whenever they wanted to; these were largely the youngest children, who often worked with their parents. However, most of the child workers took rest, meal, or water breaks only when allowed by the crew leader.

## Support

Child workers experienced positive support, as well as negative behaviors and attitudes that undercut their confidence and ability to work. Family members, co-workers, and supervisors were described both as supportive and unsupportive.

Family members appeared to provide support by teaching children how to do the work tasks. For example, a 15-year-old boy [#21] described how his aunt tried to tell him how to do the work "just so I won't get in trouble or anything." Family members also protected children by shielding them from criticism, docked wages, or other distressing events they might encounter due to their inexperience and immaturity. In some cases, family members tried to protect the health of children by making sure they took water breaks, did not lift heavy loads, and stopped work early if warranted by the heat.

Co-workers supported the children in some of the same ways. A 13-year-old boy reported that other workers told him that he was slow, but they came and helped him finish a row. “They just come and help if I get way behind.... The one who gets done first helps me.... Always” [#2].

Children reported that some crew leaders helped them when they realized the child could not do the work assigned. A 15-year-old girl [#6] reported:

[The crew leader] helps you out. He understands that you’re, like, small. Like, when you can’t do something, they go and change your work. Like, when we’re putting in [stakes for tomatoes], he sees that we’re staying behind, he comes and he puts a whole row of six in for us, and, he’s like ‘Go ahead, go help somebody else.’

The crew leader also helped the child by finishing harvest in a row or some other action to prevent the children from falling behind and delaying the whole crew. Child workers perceived as supportive or “nice” crew leader behaviors that were actually mandated by law, such as providing water. Crew leaders were also sometimes supportive in ways that were not directly related to work. One 17-year-old girl recalled that the crew leader in blueberries had given them money for gas and for medicine for her father when he went to work sick [#22].

Negative behaviors and attitudes that indicate lack of support were reported, as well. Family members and co-workers of some child workers criticized them for the way they worked. A 13-year-old girl who picked blueberries said: “When I’m really tired and it’s really hot, I just stress out. And then my parents, they start getting mad because I’m not doing anything.” [#16] A 17-year-old girl working in tobacco reported other workers thought she and other youth were going slow in tobacco and started screaming at them, “Stop being lazy, get up, we ain’t got your time.” Older workers also took advantage of the children. A 16-year-old girl working in a nursery reported that her work partner, an adult woman, would be “just standing there” while the girl did all their work planting and moving dirt [#14].

Crew leaders also exhibited behaviors that undermined support, principally by creating an atmosphere of fear. They threatened child workers for working too slowly with sanctions such as lack of water breaks, docked pay, and firing. A 17-year-old girl [#22] working in tobacco reported that her crew leader told her that if she sat and rested, she would discount her money. Another time she would not give the crew a lunch break.

## Discussion

Agriculture, as an industry, was exempted from child labor regulations formulated in the 1930s. Such regulations were established in recognition of the immediate dangers to children and to the lifelong effects of working in hazardous conditions and foregoing other opportunities for child development. The exemption of agriculture from the child labor regulations is part of the legacy of agricultural exceptionalism, whose historical roots have been described elsewhere<sup>9,20</sup> as linked to the attempts to maintain the status quo in southern states with a sharecropper production system. Ongoing support for hired child labor in US agriculture often harks back to the “myth of the family farm”,<sup>46,58,59</sup> as an independent entity supported by family labor. Leaving aside the fact that children working in agriculture

for their families are totally exempt from all regulations, the idea that farms are small in scale and that child employees are directed by the grower him- or herself flies in the face of the reality of huge operations increasingly vertically integrated into multinational corporations.<sup>60</sup>

Child farmworkers in the current study in North Carolina describe an organization of work in which they are working, for the most part, part-time and in temporary seasonal jobs. In most cases, these children work directly for a crew leader, whose relationship with the farm owner dictates the atmosphere in which the children work. If the owner pressures the crew leader to work faster, this pressure is passed on to the children in demands and threats. If there is less pressure on the crew leader, the atmosphere for the child workers appears to be more relaxed, with considerations such as more adequate break time and fewer threats to take away wages. The system of payment is strongly connected with the work organization. Working piece rate, whether payment by the box, bucket, or other measure, usually increases pressure to work, as more work equates to more earnings for both the child and crew leader. Both the crew leader system and piece rate contribute to what Sauter and colleagues<sup>22</sup> call the intensification of work. Such intensification puts increasing amounts of pay at risk, makes workers vulnerable to labor market risks, and sets workers up for occupational injury and illness.<sup>47</sup>

The use of the demand-control-support model as a farmworker for collection and analysis of these data shows that the demands on child farmworkers are physical (heat, lifting heavy loads, working in awkward postures) as well as psychological (fear, harassment). Karasek and Theorell<sup>24</sup> argue that the effects on health of such demands can be offset by a worker's control of factors such as the pace of work. Others have argued that a supportive work environment could also offset extreme demands.<sup>25,26</sup> Unfortunately, child workers' descriptions revealed that they have little or no control over their work, and experience little support except in some cases where the child works with other family members. As Karasek, Theorell, and others<sup>24–26</sup> point out, little control in a situation of high demands and low support results in high job strain, with the risk of physical illness and injury.

These findings add to the existing literature on hired child farm labor by using the organization of work framework to organize the reports of child workers and, thus, to describe conditions in which job strain and injury risk are likely. Previous studies using survey methods have in some cases, focused on somewhat older child workers and have focused on the influence of work on education.<sup>30–32,35–37</sup> Although self-reported injury and illness data have been collected, these have not been contextualized with a framework like organization of work.<sup>35–37</sup> The only other qualitative study used focus groups among workers in Oregon to collect perceptions of pesticide exposure, but, as noted earlier, was not restricted to children.<sup>39</sup>

The use of contingent labor (part-time, seasonal, temporary) has long characterized US farms,<sup>47</sup> but it has become more pronounced as farm size has grown beyond what is typically regarded as a family farm and the number of farms, overall, has declined.<sup>48</sup> A contingent work force offers flexibility to employers. Workers can be hired or laid off as needed, and, particularly on small operations, employers are rarely responsible for paying



for employment benefits. However, these contingent jobs are usually what Kalleberg and associates call “bad jobs”,<sup>49</sup> offering low wages, no overtime, and, except rarely, no benefits; poor working conditions; and little chance for advancement. The descriptions by these child farmworkers of their jobs and experiences in the fields fit the “bad jobs” description. While they produce income for the children and their families, they are dangerous and they appear to be jobs with limited growth or training potential, as are many other jobs held by Latinx immigrants.<sup>50</sup>

In some ways, child labor in agriculture, as described by the children in the current study, seems to be at its most egregious as children work in tobacco, cutting flowers and shoots to make the plants produce more leaf for processing into cigarettes, and then “priming” (harvesting) the crop leaf by leaf. The latter process, in particular, exposes children to substantial doses of nicotine, a potent stimulant that is readily absorbed through the skin<sup>17</sup> and produces green tobacco sickness,<sup>16</sup> which impairs the ability to work<sup>51</sup> and, in the context of heat stress, can be deadly. Besides nicotine, workers are also exposed to a wide variety of pesticides.<sup>52</sup> Child labor in tobacco cultivation and harvest in the US is unique to the Southeast. Although it has been mentioned in previous research on green tobacco sickness,<sup>53</sup> the overall experience of children has not been documented previously, except in Human Rights Watch’s advocacy report on children working in tobacco in Kentucky, Virginia, North Carolina, and Tennessee.<sup>11</sup>

While child workers are all vulnerable because of age and immaturity, they likely vary in their vulnerability due to other individual factors. While children were not questioned directly on documentation status, the fact that half were born in the US means they are citizens. Those who lack documentation to be in the US may be even more vulnerable to exploitation such as wage theft and sexual abuse,<sup>40</sup> as they are unlikely to report the offenses and have few other employment opportunities. While inability to speak English makes many adult Latinx farmworkers vulnerable,<sup>54,55</sup> many of these children preferred to be interviewed in English, indicating adequate language skills. Nevertheless, those whose preferred language is Spanish may be more vulnerable.

Vulnerability is also likely mixed in terms of age and physical maturity. While younger, less mature children appear to be more vulnerable to injury because of their small body size in the context of lifting heavy loads or being exposed to pesticides,<sup>56</sup> inexperience, and possible lack of judgment when performing physical work, the fact that most of the youngest children seem to work in family groups may provide them some protection that older children who work in crews of adults lack. Baseline data from a follow-up longitudinal survey of child farmworkers in North Carolina shows that older children have a longer work week, are more likely to work in tobacco, and report more high risk work such as driving motorized equipment.<sup>57</sup>

Limitations of this study should be recognized. Qualitative research with purposive, nonrandom sampling such as this study cannot provide quantitative results to establish associations between child characteristics and health outcomes. The study was conducted in a single state in the southeastern US, so results may not apply to other areas of the country. Nevertheless, this study used a sampling strategy designed to draw upon major dimensions

of variability within the population of child farmworkers—gender, age, migrant status, agricultural crops and practices—that likely impact the experience of children working in agriculture. It is one of the first systematic studies to explore the experiences of child farmworkers in their own words.

## Conclusions

Statistics on child morbidity and mortality in agriculture<sup>3–6</sup> show rates higher than other industries and prompt calls for change.<sup>61</sup> The findings from the current study highlight the usefulness of the organization of work and demand-support-control model<sup>22,24</sup> for examining hired child labor and highlighting possible links to injuries and fatalities. While the nature of qualitative research prevents a direct connection to health and safety, these findings reveal the potential for harm, whether due to occupational injury and illness or to exploitation, for child farmworkers in the US. For example, children riding without restraints in motorized farm vehicles and no power to refuse sets them up for injury. The risk for heat illness, which is potentially deadly, may be exacerbated by children's lack of control of rest and water breaks. The lack of experience and judgment of adolescent girls and boys may prevent them from taking protective measures against sexual abuse that older workers would take.<sup>11</sup>

These results need to be used to shape further research to quantitatively document the effects of hired farm labor on children. Physical injuries and illness, as well as psychological effects of work experiences should be documented. Research at the national level, including surveillance, as well as more focused research regionally or in different agricultural systems is needed.

If the findings of the current study and associations of work organization and impaired health and safety are supported, then federal policy change to remove agriculture from hired child labor exemptions is needed. Current federal regulations allow very young children—as young as 10 years of age—to work for pay on small farms with parental permission. These regulations also allow any child to work without the requirement of parental permission at age 14 or older and to work in any farm job, regardless of hazard, at age 16.<sup>7</sup> While some states have adopted more stringent regulations, many have not. Attempts to revise these regulations at the national level have been met with challenges from politically powerful agricultural corporations, commodity groups and other industrial components of agriculture. Agriculture is a dangerous industry, and the grounds for exempting hired child labor from protective regulations should be reexamined.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgements:

The authors appreciate the support of numerous community organizations in helping facilitate participant recruitment. We especially thank the children who were interviewed for this study.

**Funding:** This research was supported by a grant from the Eunice Kennedy Shriver National Institute for Child Health and Human Development (R01 HD084420). The Institute had no involvement in the study conduct, in writing the paper, or in the decision to submit it for publication.

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**Table 1.**

Employment permitted by federal regulations for children in the US, comparing agriculture with other industries. Within agriculture, none of the rules listed apply to children working for their parents on family farms.

Ages	Rules under the Fair Labor Standards Act (1938)	
	Agriculture <sup>1</sup>	Non-Agriculture <sup>2</sup>
16–17	Any farm job, hazardous <sup>3</sup> or not, unlimited hours	Unlimited hours in non-hazardous <sup>4</sup> jobs or industries
14–15	Any nonhazardous farm job outside school hours <sup>5</sup>	Specified jobs for limited periods of time each day and each week, outside of school hours <sup>5</sup>
12–13	Any nonhazardous farm job outside school hours with parental permission or on same farm as parent(s) <sup>5</sup>	Employment generally prohibited <sup>5</sup>
Under 12	Any nonhazardous farm job outside school hours with parental permission, but only where FLSA minimum wage requirements do not apply (i.e., small farms) <sup>5</sup>	Employment generally prohibited <sup>5</sup>

<sup>1</sup> Hazardous Occupations Orders in Agricultural Occupations (USDOL Wage and Hour Division, 2016a)

<sup>2</sup> Hazardous Occupations Orders in Nonagricultural Employment (USDOL Wage and Hour Division, 2016b)

<sup>3</sup> Hazardous tasks include working with and driving machinery, working with large animals, working from heights, working in confined spaces, driving passengers, working with toxic chemicals, and working with explosives.

<sup>4</sup> Hazardous tasks include motor-vehicle driving and outside helper on motor vehicle, operating a wide variety of power-driven machinery. Hazardous occupations include coalmining, forestry, roofing, demolition, excavation, and manufacturing or storing explosives.

<sup>5</sup> An exception is made for children employed by their parents.

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**Table 2:**

Characteristics of Individual Study Participants, Ordered by Age (N=30)

Age	Gender	NC Region	Interview Language	Farmworker Status	Crop Experience
10	F	Western	Spanish	Seasonal <sup>1</sup>	Blueberry <sup>2</sup> , Blackberry
11	M	Western	Spanish	Seasonal <sup>1</sup>	Blueberry <sup>2</sup> , Blackberry
12	M	Eastern	English	Seasonal	Squash <sup>2</sup> , Tobacco <sup>2</sup>
12	M	Eastern	English	Seasonal <sup>1</sup>	Nursery <sup>2</sup>
12	M	Western	Spanish	Migrant <sup>1</sup>	Chili Pepper <sup>2</sup> , Tomato
13	F	Eastern	English	Seasonal	Pea <sup>2</sup> , Blueberry
13	F	Eastern	English	Seasonal	Blueberry <sup>2</sup> , Raspberry, Tobacco
13	M	Western	English	Migrant <sup>1</sup>	Tomato <sup>2</sup>
13	M	Western	English	Migrant	Tomato <sup>2</sup> , Green Pepper
14	F	Eastern	English	Seasonal	Blueberry <sup>2</sup>
14	F	Western	English	Migrant	Tomato <sup>2</sup> , Onion, Chili Pepper, Blackberry, Squash
14	M	Western	Spanish	Migrant	Bean <sup>2</sup> , Blueberry
14	M	Western	English	Migrant	Tomato <sup>2</sup>
15	F	Western	English	Migrant	Tomato <sup>2</sup> , Onion, Cucumber, Squash, Blackberry, Apple, Green bean
15	F	Western	Spanish	Migrant <sup>1,3</sup>	Tomato <sup>2</sup>
15	M	Eastern	English	Seasonal	Blueberry <sup>2</sup> , Tobacco <sup>2</sup>
15	M	Eastern	English	Seasonal	Tobacco <sup>2</sup>
15	M	Western	Spanish	Migrant <sup>3</sup>	Tomato <sup>2</sup> , Chili Pepper, Corn
15	M	Western	English	Migrant	Tomato <sup>2</sup> , Green Pepper
15	M	Western	English	Migrant	Tomato <sup>2</sup> , Squash
16	F	Eastern	English	Seasonal <sup>1</sup>	Nursery <sup>2</sup>
16	F	Eastern	English	Seasonal	Tobacco <sup>2</sup> , Sweet Potato, Blueberry
16	F	Eastern	English	Seasonal	Tobacco <sup>2</sup>
16	M	Eastern	English	Migrant	Grapes <sup>2</sup> , Strawberry, Blueberry, Tobacco, Sweet Potato, Cucumbers, Pine needles, Squash
16	M	Eastern	English	Seasonal	Tobacco <sup>2</sup>
17	F	Eastern	English	Seasonal	Tobacco <sup>2</sup> , Sweet Potato, Blueberry, Green Bean
17	F	Eastern	English	Seasonal	Tobacco <sup>2</sup> , Blueberry, Green Bean
17	F	Western	Spanish	Migrant <sup>1,3</sup>	Tomato <sup>2</sup>

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Age	Gender	NC Region	Interview Language	Farmworker Status	Crop Experience
17	M	Western	English	Seasonal	Tomato <sup>2</sup> , Cucumber <sup>2</sup> , Blackberry, Melon, Squash, Corn, Sweet Potato, Blueberry
17	M	Western	English	Migrant	Bell Pepper <sup>2</sup> , Eggplant <sup>2</sup> , Tomato <sup>2</sup>

<sup>1</sup>In the first season working for pay in agriculture

<sup>2</sup>Crop(s) most recently worked at the time of the interview

<sup>3</sup>Unaccompanied by a parent

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