The Journal of Extension

Volume 54 | Number 2 Article 23

4-1-2016

Fathers' Knowledge of Their Youth's Unsafe Behaviors on the Farm

Zolinda Stoneman
University of Georgia, zo@uga.edu

Hamida Amirali Jinnah
University of Georgia, hamida@uga.edu

Glen C. Rains
University of Georgia, grains@uga.edu

Recommended Citation

Stoneman, Z., Jinnah, H. A., & Rains, G. C. (2016). Fathers' Knowledge of Their Youth's Unsafe Behaviors on the Farm. *The Journal of Extension, 54*(2), Article 23. https://doi.org/10.34068/joe.54.02.23

Journal of Extension
www.joe.org

April 2016
Volume 54
Number 2
Article # 2FEA3
Feature

Fathers' Knowledge of Their Youth's Unsafe Behaviors on the Farm

Abstract

The study discussed in this article examined the extent to which fathers were aware of unsafe farm behaviors engaged in by their youth. Fathers and youth provided information about the youth's behaviors on the farm, particularly related to tractors/large equipment. Fathers indicated whether they were familiar with the North American Guidelines for Children's Agricultural Tasks (NAGCAT). Youth engaged in numerous unsafe and dangerous behaviors of which their fathers were unaware. Fathers were not familiar with NAGCAT. Extension professionals from agriculture, family and consumer sciences, and 4-H youth development all have roles to play in educating parents about NAGCAT and youth farm safety.

Zolinda Stoneman
Professor and Director
Institute on Human Development and Disability
The University of Georgia
Athens, Georgia
zo@uga.edu

Hamida Amirali Jinnah
Assistant Research Scientist
Institute on Human Development and Disability
The University of Georgia
Athens, Georgia
hamida@uga.edu

Glen C. Rains
Professor, Department of Entomology
Adjunct Professor, College of Engineering
The University of Georgia, Tifton Campus
Tifton, Georgia
grains@uga.edu

Introduction

Although injury rates are decreasing, each year almost 14,000 farm youth are injured (8.1 injuries/1,000 farm youth) and an estimated 100-plus youth are killed on farms (Centers for Disease Control and Prevention, 2014). Up to half of youth farm accidents involve tractors and other powerful equipment (Heaney et al., 2006; Hendricks & Goldcamp, 2010; Jepsen & Beaudreault, 2012; Marlenga et al., 2004; Myers & Adekoya, 2001; Yang et al., 2012). Many farm accidents happen because youth engage in tasks and operate equipment for which they lack the necessary physical, perceptual, and cognitive maturity (Schwebel & Pickett, 2012). In response to the high rate of youth farm accidents, the National Children's Center for Rural and Agricultural Health and Safety developed the North American Guidelines for Children's Agricultural Tasks (NAGCAT) (Lee & Marlenga, 1999). Focused on youth aged 7 to 16, NAGCAT provides parents with information to guide their assignment of farm work to youth. NAGCAT provides information about the developmental capabilities of youth at different ages, the developmental appropriateness of specific

farm tasks for children with different skill and maturity levels, and the desired level of adult supervision for youth at different skill levels. The NAGCAT materials, available online at www.nagcat.org, are designed to be used by parents to evaluate whether their youth can be expected to safely perform specific farm tasks.

Parents can be a key to ensuring the safety of youth on farms. Most primary farm operators are male (Kiernan, Barbercheck, Brasier, Sachs, & Terman, 2012; U.S. Department of Agriculture, 2014). Therefore, in the majority of farm families, it is the father who assigns farm work to youth, teaches youth to use farm equipment, sets rules, and provides supervision when youth use heavy equipment (Leckie, 1996). Similar to other youth, farm youth do not always follow safety rules and may modify tasks in potentially dangerous ways to make tasks take less time or to make the work more exciting (Darragh, Stallones, Sample, & Sweitzer, 1998; Kidd, Townley, Cole, McKnight, & Piercy, 1997; Pryor, Carruth, & LaCour, 2005; Reed, Browning, Westneat, & Kidd, 2006; Westaby & Lee, 2003). If fathers are aware that youth are engaging in unsafe behaviors, they can provide guidance and intervene; if fathers are unaware, the opportunity for intervention is lost (Hamza & Willoughby, 2011; Stanton et al., 2000). In studies of other high-risk behaviors (alcohol use, etc.), parents significantly underestimate the risky behaviors of their youth (Beck, Shattuck, Haynie, Crump, & Simons-Morton, 1999; Haynie, Beck, Crump, Shattuck, & Simons-Morton, 1999; Stanton et al., 2000; Young & Zimmerman, 1998). It is not clear whether parents also underestimate the potentially dangerous farm behaviors of youth. The study reported here examined unsafe behaviors engaged in by farm youth, the extent to which their fathers were aware of those behaviors, and fathers' knowledge and use of NAGCAT.

Method

Participants

Participants, living in rural Georgia, included 67 youth and the primary family farmer associated with each youth. Youth were 10 to 19 years of age (mean = 14.75 years). Additional demographic information on youth is provided in Table 1. When there were multiple siblings, study youth were selected by families as being the most actively involved in farm work. Primary farmers (64 fathers, 3 grandfathers), referred to in this article as "fathers," ranged in age from 34 to 65 years (mean = 45 years). The average primary farmer had some college or technical school, grew up on a farm, farmed approximately 650 ac, and had been farming for over 25 years. Families were recruited from the mailing list of a statewide farm publication as well as through FFA, 4-H, farmer referrals, and referrals by county Extension agents. Farms primarily produced cotton, peanuts, hay, and corn.

Table 1.

Gender and Farm Safety Experiences of Participating Youth

Youth characteristic	***f***	**%**
Youth gender		
Male	5	8

	8	7
Female	9	13
Youth farm safety experiences		
FFA	33	49
4-H	28	42
Tractor safety training	11	16
Farm safety camp	7	10
Tractor certification	2	3

Procedure and Measures

The study was approved by the University of Georgia Institutional Review Board. Data were collected as part of a larger family-based safety intervention study (Jinnah, Stoneman, & Rains, 2014; Stoneman, Jinnah, & Rains, 2014). Preintervention data from youth who actively operated tractors were analyzed to address the research questions. During preintervention home visits, fathers and youth received questionnaires to complete, seal in separate envelopes, and mail to the researchers.

Father Ratings of Youth Behavior

Fathers were given a list of 14 behaviors related to tractors and large equipment and asked, "To your knowledge, has this youth ever done the following . . .?" (*Yes* – 1 or *No* – 0). Behaviors were selected based on the farm safety expertise of the third author and included behaviors that should be avoided by farmers of all ages (e.g., operating a tractor equipped with a rollover protection structure [ROPS] without wearing a seat belt) as well as behaviors that might be appropriate for older youth but are nonetheless dangerous (e.g., operating a tractor on a public road). Fathers also were asked whether their youth were more careful and safe than other farm youth their age (5 – *Definitely yes* to 1 – *Definitely no*).

Youth Farm Behavior

Youth indicated how often (3 – *Frequently* to 0 – *Never*) in the past year they had engaged in the same 14 behaviors rated by their fathers. These ratings were summed to create a 14-item scale of unsafe youth behavior (Cronbach's $\alpha = .86$). Youth also were asked whether their parents had farm safety rules for them, whether they always followed the rules, whether they thought that taking risks made farm work more challenging and fun, and whether they ever had done something dangerous on their farms that their parents never found out about.

Father Accuracy/Knowledge of Whether Youth Engaged in Each Unsafe Behavior

To create consistency between father and youth measures, each youth behavior was converted to a dichotomous variable by retaining a 0 for *Never* and assigning a 1 (*Yes*) to all other responses. Cross-tabs were used to determine agreement between father and youth reports for each youth unsafe behavior. This procedure yielded four categories of agreement: (a) fathers and youth agreed that the behavior had occurred; (b) fathers and youth agreed that the behavior had not occurred; (c) youth reported that they had engaged in the behavior, but fathers said that they had not; and (d) fathers reported that youth had engaged in the behavior, but youth said that they had not.

Calculation of Overall Father Accuracy/Knowledge

A measure of father accuracy/knowledge, ranging from 0 to 14, was created by adding the number of times youth reported that they had engaged in a behavior but the father said that they had not. Scores were reversed such that higher scores indicated greater father accuracy/knowledge. Fathers responded based on whether the youth had ever engaged in a behavior, and youth responded based on the past year only. Therefore, when fathers said that a behavior had occurred and youth said that it had not, fathers could be correct if the behavior occurred prior to 1 year back. Taking a conservative approach, these responses, which occurred infrequently, were treated as if they were accurate.

Parent-Youth Safety Talk

For five items focused on tractors and large equipment, youth were asked, "Have your parents talked to you about the following safety behaviors?" Safety behaviors included wearing a seat belt on a ROPS-equipped tractor, not being an extra rider on a tractor, and not stepping over a running power take-off (PTO). Response options were 2 – *Yes, a lot*, 1 – *Yes, briefly*, and 0 – *No*. Fathers were asked whether they had tried to teach the youth the same five safety behaviors. Responses of youth and fathers were positively correlated: Spearman rank bivariate correlation $r_S 65 = .24$, $P < .05$. A combined measure of parent-youth safety communication was created by summing the responses of fathers and youth, Cronbach's $\alpha = .82$.

NAGCAT

Fathers rated their familiarity with NAGCAT and indicated the degree to which they used NAGCAT to assign farm work to youth (*Always*, *Sometimes*, or *Never*).

Results

During peak planting and harvest times, youth worked on the farm an average of over 6 hr on nonschool days and slightly under 3 hr on school days. The majority of youth (65%) reported that they had done something dangerous on the farm that their parents never found out about. These hidden behaviors included riding on the forks of a forklift, almost hitting a pedestrian when driving a

tractor fast on a public road, riding a wild horse, and lifting a sister high in the air in a front-end loader bucket in order to scare her. Almost all youth (96%) reported that their parents had safety rules for them on the farm, but only 34% indicated that they always followed those rules. Approximately half of the youth (49%) agreed that taking risks made farm work more challenging and more fun.

Most fathers (85%) were not familiar with NAGCAT; 15% had heard of the guidelines but did not know much about them. None of the fathers knew any of the NAGCAT recommendations. Correspondingly, none of the fathers used NAGCAT to guide their assignment of farm work to youth. When asked whether their youth were more careful and safe than other farm youth their same age, 54% of fathers agreed, and an additional 36% indicated that the statement might be true. Only 10% of fathers disagreed or responded that they did not know.

As can be seen in Table 2, youth engaged in numerous unsafe behaviors. Youth under age 16 engaged in behaviors that NAGCAT recommends only for older youth, such as operating a tractor on a public road. Table 2 also presents data on father accuracy/knowledge. Almost all of the youth reported that they had engaged in behaviors that their fathers said the youth had never done (indicated in the table by data in bold).

Table 2.

Youth Reports of Unsafe Behavior by Age Group and Father and Youth Agreement about the Occurrence of Youth Unsafe Behaviors

	Percentage/frequency of youth who engaged in behavior—Youth reports, by age			**Percentage/frequency of father and youth reports about occurrence of behavior (all ages)**			
Unsafe behavior	**Youth aged 10–12 years (*n* = 13)**	**Youth aged 13–15 years (*n* = 27)**	**Youth aged 16–19 years (*n* = 27)**	**Father said no; youth said yes**	**Father said no; youth said no**	**Father said yes; youth said yes**	**Father said yes; youth said no**
Operated tractor on steep slope	38.5%[a] 5	66.7%[a] 18	95.8%[a] 26	**56.7%**[b] **38**	26.9%[b] 18	16.4%[b] 11	0%[b] 0
Operated farm equipment when fatigued	38.5% 5	70.4% 19	82.6% 23	**53.7%** **36**	29.9% 20	16.4% 11	0% 0
Operated tractor near ditch/creek	46.2% 6	96.3% 26	88.0% 24	**46.3%** **31**	13.4% 9	37.3% 25	3.0% 2
Started tractor while not in operator's seat	30.8% 4	55.6% 15	61.5% 16	**46.2%** **31**	44.8% 30	6.0% 4	3.0% 2

Dismounted tractor with PTO running	46.2% 6	48.1% 13	80.1% 21	**46.3% 31**	37.3% 25	13.4% 9	3.0% 2
Operated tractor at night[c]	46.2% 6	77.8% 21	92.3% 25	**32.8% 22**	20.9% 14	44.8% 30	1.5% 1
Gave ride on tractor he/she was operating	30.8% 4	70.4% 19	88.9% 24	**32.8% 22**	17.9% 12	37.3% 25	11.9% 8
Stood in front of running self-powered equipment	30.8% 4	48.1% 13	59.3% 16	**26.9% 18**	40.3% 27	22.4% 15	10.4% 7
Attached hydraulics to tractor[c]	38.5% 5	81.5% 22	96.3% 26	**20.9% 14**	13.4% 9	58.2% 39	7.5% 5
Operated tractor on public road[c]	84.6% 11	88.9% 24	100.0% 27	**19.4% 13**	6.0% 4	73.1% 49	1.5% 1
Climbed into a cotton module builder	38.5% 5	40.7% 11	44.4% 12	**17.9% 12**	55.2% 37	23.9% 16	3.0% 2
Operated ROPS tractor without wearing seat belt	61.5% 8	96.3% 26	92.6% 25	**13.4% 9**	7.5% 5	74.6% 50	4.5% 3
Stepped over running PTO	15.4% 3	7.4% 2	14.8% 4	**13.4% 9**	86.6% 58	0% 0	0% 0
Rode on tractor someone else was operating	100.0% 13	100.0% 27	100.0% 27	**4.5% 3**	0% 0	95.5% 64	0% 0

Note. Data for behaviors engaged in by youth of which fathers were unaware are in bold. PTO = power take-off; ROPS = rollover protection structure.

[a]Percentage of youth within each age group.

[b]Percentage of all father-youth pairs.

[c]Behaviors that might be appropriate for the oldest age group.

Fathers were more accurate in reporting on the behavior of their youth when parents and youth talked more often about farm safety, Spearman rank bivariate correlation $r_s65 = .29$, $p < .02$. The number of different unsafe behaviors engaged in by youth, however, was not related to parent-youth communication about farm safety. Father accuracy/knowledge did not differ by youth age, father age, or father education. Older youth engaged in more unsafe behaviors than did younger youth, $F(2,64) = 10.09$, $p < .001$. Tukey post hoc tests revealed that youth aged 13–15 and 16–19 did not differ from each other (means = 9.48 and 10.86, respectively); both age groups engaged in more unsafe behaviors than did youth aged 10–12 (mean = 6.54, $p < .01$).

Discussion

Study youth broke safety rules and took risks while working on the farm. Youth under age 13, who according to NAGCAT should not be operating a tractor of any size, not only operated tractors but engaged in an array of unsafe behaviors while doing so. Over 80% had operated a tractor on a public road. Most had operated a ROPS-equipped tractor without wearing a seat belt. Older youth had engaged in an even more troubling array of behaviors. Over half had given tractor rides, operated ROPS-equipped tractors without wearing seat belts, and operated tractors on public roads, at night, on steep slopes, near ditches/creeks, and when fatigued.

The farm fathers who participated in this study often were not aware of the unsafe behaviors engaged in by their youth. For many of the behaviors measured, over half of the youth who engaged in a behavior had fathers who believed that their youth had never done so. Some of the behaviors were particularly dangerous. Nine youth, for example, reported that they had stepped over a running PTO in the past year. None of their fathers were aware of their actions. The majority of youth reported that they had done dangerous things on the farm that their parents never found out about. If fathers are not aware of unsafe behavior, they cannot intervene to keep the youth safe. They also miss the opportunity for continued safety training and education.

Consistent with past findings (Ashida, Heaney, Kmet, & Wilkins, 2011; Zentner, Berg, Pickett, & Marlenga, 2005), over half of the fathers believed that their youth were more careful and safe on the farm than their peers. Fathers want to believe that their youth work safely (Neufeld, Wright, & Gaut, 2002). These data suggest that the developmental immaturity of youth often may cause this trust to be misplaced. Key areas of the brain do not reach full development until individuals are in their early 20s (Lenroot & Giedd, 2006). As a result, even older adolescents may engage in behaviors that show poor judgment and that are at odds with known safety practices. When working with large, powerful farm equipment, these lapses can have dire consequences.

Past research has linked parent-youth communication to parent awareness of a range of risky youth behaviors (sex, drinking, etc.) (e.g., Stanton et al., 2000). In the current study, when parents and youth talked about farm safety, fathers were more likely to be aware of their youth's unsafe behaviors. However, parent-youth communication about safety was not predictive of the number of unsafe behaviors reported by youth. We identified only the general topics of these conversations. We did not collect information on their specific context or content. Understanding the link between parent-youth safety conversations and youth behavior will require future research that examines the specific content of these communications as well as the rules parents set for youth and how parents enforce those rules.

It seems possible that certain of the youth's unsafe behaviors might have been done with the fathers' knowledge. For example, all youth had been extra riders on tractors, and almost all fathers were aware of this behavior (and perhaps were the adults operating the tractors). Similarly, 75% of youth who operated ROPS-equipped tractors without wearing seat belts and 73% of youth who operated a tractor on a public road had fathers who knew that their youth had engaged in the behavior. To field effective interventions, it is important to know to what extent, if at all, the fathers condone certain behaviors. If fathers do condone behaviors considered by safety experts to be unsafe, it is important to understand whether this occurs because fathers are unaware of the risky

nature of the behavior or whether they are aware of the risk and decide that the level of risk is acceptable for their youth.

It was striking that none of the fathers were familiar with NAGCAT. Research suggests that many serious youth farm accidents could be avoided if the NAGCAT recommendations were followed (Marlenga et al., 2004). Clearly, there is a need for more robust dissemination of NAGCAT to farm families.

Implications for Extension

Extension professionals have a long history of working to make farming safer and to protect the youth who live and work on family farms, including by sponsoring farm safety day camps and youth tractor safety trainings. Extension professionals also field multiple programs designed to enhance parenting, youth development, and family wellness. Many of the families in this study had ongoing contact with county Extension agents; some were referred to the study by an Extension agent.

Several findings of the study can inform Extension practices and programs. In working with farm families, it may be important for Extension professionals to appreciate that fathers may be overly optimistic about the degree to which their youth avoid unsafe behaviors on the farm. Extension professionals can play key roles in helping families keep farm youth safe:

- Support for parents to improve the safety of farm youth is a prime area for cross-program integration. Extension professionals can explore possible collaborations among the program areas of agriculture, family and consumer sciences, and 4-H youth development. Such collaborations could result in the creation of new programs and educational materials that combine content focused on effective parenting strategies, parent-youth communication, youth development, and youth farm safety.

- Agricultural Extension professionals are well-acquainted with farm families in their counties and could provide NAGCAT information during routine contacts with farmers who have youth living and/or working on their farms. Although families are in control of making decisions about what their youth are allowed to do, Extension professionals can make sure that farmers are aware of NAGCAT and of youth safety practices.

- Family and consumer sciences Extension professionals have a rich history of providing programming related to parenting and parent-youth communication, home safety, youth development, health, and wellness. When providing these programs for rural families, these Extension professionals could incorporate youth farm safety information and disseminate NAGCAT materials. They also could remind parents of the importance of talking with their youth about farm safety and creating an open atmosphere in which youth feel comfortable sharing information about what they are doing as they work on the farm.

- Extension professionals can tactfully caution farm parents about the developmental immaturity of youth, including older teens, which can lead to impulsive and unwise decisions on the farm, even in the most trustworthy youth.

Study Limitations

In the study, youth behavior was measured through self-reports. It would be problematic if youth "bragged" about risky behaviors they never actually performed. In studies of other risky behaviors, youth reports have been found to be generally accurate, with underreporting more likely than overreporting (Beck et al., 1999; Gibbons, Helweg-Larsen, & Gerrard, 1995; Williams & Nowatzki, 2005). Thus, although youth exaggerations may have occurred, past research suggests that this was unlikely. Study limitations include use of a relatively well-educated volunteer sample in only one geographic region of the United States. Because of the small number of girls, gender differences could not be examined. The roles of mothers, siblings, and other family members were not addressed.

Concluding Comments

It is important to find a balance between the positive aspects of youth involvement on the family farm and prevention of injuries. Parents want their youth to be safe. They also must face the realities of running a family farm. The challenge is to support families in keeping their youth away from high-risk situations by building on the enduring positive values of farm culture (Neufeld et al., 2002; Sanderson, Dukeshire, Rangel, & Garbes, 2010). By bringing together content from different program areas, Extension professionals are in a strong position to provide programming that can help reduce the number of youth farm injuries and deaths.

Acknowledgment

This research was supported by grant R01 OH009210 from the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention to the Institute on Human Development and Disability, College of Family and Consumer Sciences, The University of Georgia.

References

Ashida, S., Heaney, C. A., Kmet, J. M., & Wilkins, J. (2011). Using protection motivation theory and formative research to guide an injury prevention intervention: Increasing adherence to the North American Guidelines for Children's Agricultural Tasks. *Health Promotion Practice*, *12*(3), 396–405. http://dx.doi.org/10.1177/1524839910362034

Beck, K. H., Shattuck, T., Haynie, D., Crump, A. D., & Simons-Morton, B. (1999). Associations between parent awareness, monitoring, enforcement and adolescent involvement with alcohol. *Health Education Research*, *14*(6), 765–775. http://dx.doi.org/10.1093/her/14.6.765

Centers for Disease Control and Prevention. (2014). *Childhood Agricultural Injury Survey*, *2012*. Retrieved from http://www.cdc.gov/niosh/topics/childag/cais/injtables.html

Darragh, A. R., Stallones, L., Sample, P. L., & Sweitzer, K. (1998). Perceptions of farm hazards and personal safety behavior among adolescent farmworkers. *Journal of Agricultural Safety and Health Special Issue*, *1*, 159–161. http://dx.doi.org/10.13031/2013.15366

Gibbons, F. X., Helweg-Larsen, M., & Gerrard, M. (1995). Prevalence estimates and adolescent risk

behavior: Cross-cultural differences in social influence. *Journal of Applied Psychology*, *80*(1), 107–121. http://dx.doi.org/10.1037/0021-9010.80.1.107

Hamza, C. A., & Willoughby, T. (2011). Perceived parental monitoring, adolescent disclosure, and adolescent depressive symptoms: A longitudinal examination. *Journal of Youth and Adolescence*, *40*(7), 902–915. http://dx.doi.org/10.1007/s10964-010-9604-8

Haynie, D. L., Beck, K. H., Crump, A. D., Shattuck, T., & Simons-Morton, B. (1999). Parenting strategies regarding teen behavior: Parent and teen perceptions. *American Journal of Health Behavior*, *23*(6), 403–414. http://dx.doi.org/10.5993/ajhb.23.6.1

Heaney, C. A., Wilkins, J. R., III, Dellinger, W., McGonigle, H., Elliott, M., Bean, T. L., & Jepsen, S. D. (2006). Protecting young workers in agriculture: Participation in tractor certification training. *Journal of Agricultural Safety and Health*, *12*(3), 181–190. http://dx.doi.org/10.13031/2013.21226

Hendricks, K. J., & Goldcamp, E. M. (2010). Injury surveillance for youth on farms in the U.S., 2006. *Journal of Agricultural Safety and Health*, *16*(4), 279–291. http://dx.doi.org/10.13031/2013.34838

Jepsen, S. D., & Beaudreault, A. R. (2012). Ohio farm safety day camps: Developing a successful statewide program through surveillance and evaluation. *Journal of Agricultural Safety and Health*, *18*(2), 95–102. http://dx.doi.org/10.13031/2013.41327

Jinnah, H. A., Stoneman, Z., & Rains, G. (2014). Involving fathers in teaching youth about farm tractor seat belt safety—A randomized control study. *Journal of Adolescent Health*, *54(3*), 255–261. http://dx.doi.org/10.1016/j.jadohealth.2013.10.010

Kidd, P., Townley, K., Cole, H., McKnight, R., & Piercy, L. (1997). The process of chore teaching: Implications for farm youth injury. *Family & Community Health*, *19*(4), 78–89. http://dx.doi.org/10.1097/00003727-199701001-00006

Kiernan, N. E., Barbercheck, M., Brasier, K. J., Sachs, C., & Terman, A. R. (2012). Women farmers: Pulling up their own educational bootstraps with Extension. *Journal of Extension* [online], *50*(5) Article 5RIB5. Available at: http://www.joe.org/joe/2012october/rb5.php

Leckie, G. J. (1996). 'They never trusted me to drive': Farm girls and the gender relations of agricultural information transfer. *Gender, Place and Culture: A Journal of Feminist Geography*, *3*(3), 309–326. http://dx.doi.org/10.1080/09663699625586

Lee, B., & Marlenga, B. (1999). *Professional resource manual: North American Guidelines for Children's Agricultural Tasks.* Marshfield, WI: Marshfield Clinic.

Lenroot, R. K., & Giedd, J. N. (2006). Brain development in children and adolescents: Insights from anatomical magnetic resonance imaging. *Neuroscience and Biobehavioral Reviews*, *30*, 718–729. http://dx.doi.org/10.1016/j.neubiorev.2006.06.001

Marlenga, B., Brison, R. J., Berg, R., Zentner, J., Linneman, J., & Pickett, W. (2004). Evaluation of the North American Guidelines for Children's Agricultural Tasks using a case series of injuries. *Injury Prevention*, *10*(6), 350–357. http://dx.doi.org/10.1136/ip.2004.005298

Myers, J. R., & Adekoya, N. (2001). Fatal on-farm injuries among youth 16 to 19 years of age: 1982–1994. *Journal of Agricultural Safety and Health*, *7*(2), 101–112. http://dx.doi.org/10.13031/2013.2607

Neufeld, S., Wright, S. M., & Gaut, J. (2002). Not raising a "bubble kid": Farm parents' attitudes and practices regarding the employment, training and supervision of their children. *The Journal of Rural Health*, *18*(1), 57–66. http://dx.doi.org/10.1111/j.1748-0361.2002.tb00877.x

Pryor, S. K., Carruth, A. K., LaCour, G. (2005). Occupational risky business: Injury prevention behaviors of farm women and children. *Issues in Comprehensive Pediatric Nursing*, *28*(1), 17–31. http://dx.doi.org/10.1080/01460860590916744

Reed, D. B., Browning, S. R., Westneat, S. C., & Kidd, P. S. (2006). Personal protective equipment use and safety behaviors among farm adolescents: Gender differences and predictors of work practices. *The Journal of Rural Health*, *22*(4), 314–320. http://dx.doi.org/10.1111/j.1748-0361.2006.00052.x

Sanderson, L. L., Dukeshire, S. R., Rangel, C., & Garbes, R. (2010). The farm apprentice: Agricultural college students' recollections of learning to farm "safely." *Journal of Agricultural Safety and Health*, *16*(4), 229–247. http://dx.doi.org/10.13031/2013.34835

Schwebel, D. C., & Pickett, W. (2012). The role of child and adolescent development in the occurrence of agricultural injuries: An illustration using tractor-related injuries. *Journal of Agromedicine*, *17*(2), 214–224. http://dx.doi.org/10.1080/1059924x.2012.655120

Stanton, B. F., Li, X., Galbraith, J., Cornick, G., Feigelman, S., Kaljee, L., & Zhou, Y. (2000). Parental underestimates of adolescent risk behavior: A randomized, controlled trial of a parental monitoring intervention. *Journal of Adolescent Health*, *26*(1), 18–26. http://dx.doi.org/10.1016/s1054-139x(99)00022-1

Stoneman, Z., Jinnah, H. A., & Rains, G. (2014). Changing a dangerous rural cultural tradition: Youth as extra riders on tractors. *Journal of Rural Health*, *30*(4), 388–396. http://dx.doi.org/10.1111/jrh.12073

U.S. Department of Agriculture. (2014). *2012 Census of Agriculture.* Retrieved from http://www.agcensus.usda.gov

Westaby, J. D., & Lee, B. C. (2003). Antecedents of injury among youth in agricultural settings: A longitudinal examination of safety consciousness, dangerous risk taking, and safety knowledge. *Journal of Safety Research*, *34*(3), 227–240. http://dx.doi.org/10.1016/s0022-4375(03)00030-6

Williams, R. J., & Nowatzki, N. (2005). Validity of adolescent self-report of substance use. *Substance Use & Misuse*, *40*(3), 299–311. http://dx.doi.org/10.1081/ja-200049327

Yang, J., O'Gara, E., Cheng, G., Kelly, K. M., Ramirez, M., Burmeister, L. F., & Merchant, J. A. (2012). At what age should children engage in agricultural tasks? *The Journal of Rural Health*, *28*(4), 372–379. http://dx.doi.org/10.1111/j.1748-0361.2012.00412.x

Young, T. L., & Zimmerman, R. (1998). Clueless: Parental knowledge of risk behaviors of middle school students. *Archives of Pediatrics and Adolescent Medicine*, *152*(11), 1137. http://dx.doi.org/10.1001/archpedi.152.11.1137

Zentner, J., Berg, R. L., Pickett, W., & Marlenga, B. (2005). Do parents' perceptions of risks protect children engaged in farm work? *Preventive Medicine*, *40*(6), 860–866. http://dx.doi.org/10.1016/j.ypmed.2004.10.007
