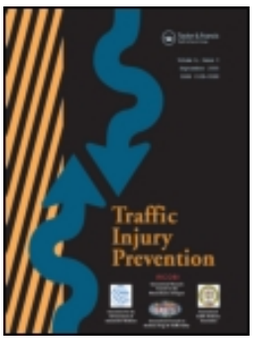

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Reasons for Child Passenger Nonrestraint in Motor Vehicles

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Objective: Although child passenger restraint use in motor vehicles has increased, there is an important minority of children who remain unrestrained. The goal of this study was to identify the frequency of and under what circumstances parents keep their children unrestrained.

Methods: A cross-sectional, online survey was distributed to parents and caregivers of children 10 years old and younger. Survey participants were asked about child restraint practices, including frequency of and reasons for nonuse of restraints. Parents were specifically asked how acceptable it would be to keep their child unrestrained in certain situations.

Results: One thousand two hundred eighty-five parents and guardians responded to the survey and 1,002 completed it; 23.8% (95% confidence interval [CI], 21.3–26.6%) of respondents said they had driven with their child not fully restrained on at least one occasion. Approximately 1 in 5 parents strongly or somewhat agreed that it would be acceptable to keep their child unrestrained in certain situations, including a short drive, in a rush, an inadequate number of restraints, riding in a taxi, if somebody was holding the child, and as a reward for a child. Parents were more likely to agree that it was acceptable to keep their child unrestrained under nearly all circumstances listed if they were male, ages 18–29, with a graduate school education, in the $100,000+ income bracket, or Latino.

Conclusions: There are certain situations for which parents find it acceptable to leave their children unrestrained. This has implications for targeted child passenger safety efforts designed to maximize consistent restraint use.

Keywords: child restraints, child seat, unrestrained, child safety

Introduction

Motor vehicle crashes (MVCs) are the leading cause of death for children older than 4 years and lead to significant injury-related morbidity, disability, and societal burden (CDC 2014; NHTSA 2014c). The consistent and proper use of child passenger restraints reduces the risk of injury and death (Arbogast et al. 2009; Elliott et al. 2006; NHTSA 2014c). There has been a decrease in motor vehicle crash occupant deaths and injuries to child passengers over the past 20 years, largely due to improved vehicle and restraint technology, passage and enforcement of legislation, and public awareness and education on the importance of car safety seat use. In 2013, 91% of children younger than 13 years were restrained in a vehicle, with higher restraint use in the youngest ages (98% for children birth–12 months) and lower use in older children (89% for 8- to 12-year-olds; NHTSA 2014a). Despite these advances and relatively high restraint use, more than 600 children ages 12 years and younger die in motor vehicle crashes annually (NHTSA 2014b), and 40% of child occupants 14 years old and younger who are fatally injured in crashes are unrestrained (NHTSA). In order to further reduce deaths associated with nonrestraint, we sought to identify the frequency of and under what circumstances parents keep their children unrestrained. Our hypothesis was that though parents generally have high knowledge about the need for child restraint use in vehicles, they might have more lenient attitudes in particular scenarios.

Methods

This was an online, cross-sectional, confidential survey that was exempt from review from our institutional review board. The survey was managed through an online respondent panel in the United States by Survey Sampling International, and consent was implied by completion of the survey. Potential survey participants were identified as a convenience sample through various market research methods, including selecting from proprietary panels, as well as from partnerships with web sites and various online sources. Eligible subjects included adults ages 18–65 years old who owned or leased a vehicle and who were parents or primary caretakers of at

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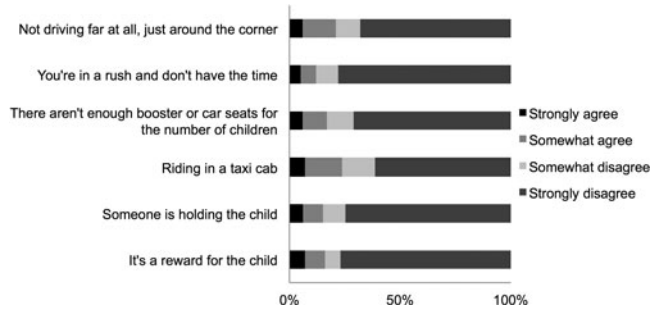

Fig. 1. Respondents' agreement, by scenario, with the statement, "It is acceptable for a child to ride in a car unrestrained when . . ."

least one child 10 years old or younger. Quality measures were completed for the sample, including digital fingerprinting to prevent duplication, spot checking via third-party verification to prove identity, and reward redemption quality procedures. Respondents received participation points upon completion of the survey, equivalent to US$0.50. Data were imported into Stata/IC version 13.0 (StataCorp, College Station, TX). The survey included multiple-choice, Likert-scale, and free-text questions. Outcomes measured included demographics; self-reported child passenger safety practices and attitudes; frequency of and reasons for not using restraints; and patterns of child-driven decision of restraint use.

Data Analysis

Standard descriptive summaries were used. Comparisons of categorical variables between subgroups were made using the chi-square test. Other associations were explored using univariate and multivariate analysis.

Results

There were 1,285 respondents who accessed the survey URL. Of those, 1,002 participants from 50 states and the District of Columbia completed the survey; 23.8% (95% confidence interval [CI], 21.3%, 26.6%) of respondents said they had driven with their child or children not fully buckled in their car seat or booster on at least one occasion; further, 53.2% (95% CI, 50.1%, 56.3%) said they knew of situations when other parents would permit their children to ride unrestrained, and 80.2% (95% CI, 77.7%, 82.6%) of respondents said they wear a seat belt every single time when riding in or driving an automobile (Table 1).

Respondents were given situations and asked whether they strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the statement, "It is acceptable for a child to ride in a car not fully buckled in their car seat or booster . . ." for each situation. Overall, 21.4% (95% CI, 18.9%, 24.0%) of parents strongly or somewhat agreed that it is acceptable for a child to ride in a car unrestrained when not driving far (Figure 1).

There were differences in responses by gender, age group, education, income, and race/ethnicity (Tables 2 and 3). In several scenarios, men were almost twice as likely as women to say that it is acceptable for a child to ride unrestrained: 23% of men said that it was acceptable as a reward for the child, compared to 12% of women ($P = .000$). Women were 45% less likely to agree that it is acceptable to ride unrestrained as a reward compared to men, controlling for other variables ($P = .002$). Participants in the highest income bracket ($100,000 and above) more frequently responded that it was acceptable for a child to ride unrestrained. The situation that the greatest proportion of respondents in this income group found acceptable was not driving far (34%), compared to 15% of respondents in the under $35,000 income group ($P = .000$). A greater proportion of parents 18–29 years responded that these situations were acceptable, compared to those 30–49 years; 27% of parents in the younger age group said that it would be acceptable for a child to ride unrestrained if not driving far, compared to 19% of parents in the older age group ($P = .000$).

A greater proportion of parents with the highest incomes said that it was acceptable for a child to ride unrestrained if they were in a rush compared to those with lower incomes: 22% of parents who earned more than $100,000 versus 9% of parents who earned less than $35,000, $P = .002$. Similarly, those with a graduate school education also more frequently said that nonrestraint was acceptable when in a rush (20%), compared to those with a high school education or less (10%), $P = .011$. Compared to respondents who earn less than $35,000/year, respondents in the highest income bracket ($100,000+) were 2.7 times more likely to agree that it was acceptable for a child to ride unrestrained when in a rush controlling for age, gender, education, region, and race/ethnicity ($P = .006$). However, there was not a statistically significant relationship between education and acceptability of riding when in a rush, controlling for other variables.

Thirty percent of respondents who identified as Latino said that it would be acceptable for a child to ride unrestrained if someone was holding the child, compared to 13% of white, 19% of black, and 23% of other races/ethnicities. The proportion of respondents who completed graduate school and found this situation acceptable was 28%.

Respondents from the Northeast and West Census regions generally found scenarios more acceptable than respondents from the South and Midwest. In the scenario where riding unrestrained is a reward for the child, 23% of respondents from the Northeast and 20% from the West said it was acceptable, compared to 8% in the Midwest and 15% in the South ($P = .000$). Compared to the Northeast, respondents from the Midwest, South, and West were less likely to agree that it is acceptable to ride unrestrained as a reward; however, the relationship was not statistically significant for the West ($P = .324$).

Discussion

Our study showed that although parents were aware of the need to keep their children restrained and were generally compliant with this practice, parents who were male, younger, with a graduate school education, in a high income bracket,

Table 1. Frequency and proportions of respondent characteristics

Characteristic	*N*	%	*N* ever unrestrained	% of row ever unrestrained
Age (years)				
18–24	131	13.1	36	27.5
25–29	243	24.3	68	28.0
30–39	334	33.3	82	24.6
40–49	218	21.8	41	18.8
50 or older	76	7.6	12	15.8
Gender				
Male	376	37.5	98	26.1
Female	626	62.5	141	22.5
Highest completed level of education				
High school degree/GED or less	239	23.9	46	19.2
Some college	294	29.3	61	20.7
College degree	356	35.5	91	25.6
Graduate degree	113	11.3	41	36.3
Region				
Region 1 (Northeast)	172	17.2	49	28.5
Region 2 (Midwest)	234	23.4	49	20.9
Region 3 (South)	376	37.5	92	24.5
Region 4 (West)	220	22.0	49	22.3
Total household income				
Under $35,000	297	29.6	63	21.2
$35,000 to $49,999	187	18.7	38	20.3
$50,000 to $74,999	233	23.3	65	27.9
$75,000 to $99,999	141	14.1	26	18.4
$100,000 or more	144	14.4	47	32.6
Race				
Caucasian/white	732	73.1	163	22.3
Black or African American	131	13.1	35	26.7
Asian	67	6.7	23	34.3
American Indian or Alaska Native	16[a]	1.6	4	25.0
Native Hawaiian or other Pacific Islander	6[a]	0.6	3	50.0
Other	50	5.0	5	10.0
Hispanic/Latino				
Yes	155	15.5	40	25.8
No	847	84.5	199	23.5
Restraint type[b]				
Rear-facing car seat	244	24.4	65	26.6
Front-facing car seat	487	48.6	119	24.4
Seat belts with a booster seat	509	50.8	132	25.9
Seat belts without a booster seat	197	19.7	45	22.8
Other/none	31	3.1	6	19.4

[a]Small base.
[b]Total percentages greater than 100% as respondents selected all that applied.

Table 2. Percentage of respondents who strongly or somewhat agreed, by scenario, by gender, age, and education

	Gender			Age group				Education			
Scenario	M	F	*P* value	18–29	30–49	50+	*P* value	High school/GED and below	Some college/college	Grad school	*P* value
"You're not driving far at all, just around the corner"	26%	18%	.003	27%	19%	8%	.000	18%	20%	37%	.000
"You're in a rush and don't have the time"	15%	10%	.045	16%	10%	3%	.001	10%	11%	20%	.011
"There aren't enough booster or car seats for the number of children"	22%	14%	.004	23%	14%	7%	.000	15%	16%	30%	.000
"Riding in a taxicab"	27%	22%	.056	28%	22%	9%	.001	20%	22%	39%	.000
"Someone is holding the child"	21%	12%	.000	22%	13%	4%	.000	15%	13%	28%	.000
"It's a reward for the child"	23%	12%	.000	19%	14%	9%	.039	14%	14%	29%	.000
Base: total respondents	376	626	—	374	552	76	—	239	650	113	—

Table 3a. Percentage of respondents who strongly or somewhat agreed, by scenario, by income and ethnicity

	Income						Ethnicity		
Scenario	<$35k	$35k–$49.9k	$50k–$74.9k	$75k–$100k	$100k+	*P* value	Latino	Non-Latino	*P* value
"You're not driving far at all, just around the corner"	15%	17%	27%	20%	34%	.000	36%	19%	.000
"You're in a rush and don't have the time"	9%	12%	10%	10%	22%	.002	28%	9%	.000
"There aren't enough booster or car seats for the number of children"	14%	14%	18%	15%	28%	.004	34%	14%	.000
"Riding in a taxicab"	21%	24%	24%	18%	33%	.023	43%	20%	.000
"Someone is holding the child"	14%	16%	14%	12%	24%	.026	30%	13%	.000
"It's a reward for the child"	11%	15%	16%	16%	26%	.004	33%	13%	.000
Base: total respondents	297	187	233	141	144	—	155	847	—

or Latino were more likely to agree that it is acceptable to keep children unrestrained given certain circumstances. This situational unrestraint is concerning, particularly because nearly half of all MVCs have historically occurred within 5 miles of the driver's residence (NHTSA 2008).

Prior studies have shown that ethnic minorities and socioeconomically disadvantaged families are more likely to have inappropriately restrained or unrestrained child passengers (Brixey et al. 2011; Gunn et al. 2005; K. C. Lee et al. 2008; S. L. Lee 2012; Macy et al. 2014; Macy and Freed 2012; Winston et al. 2006). Given the self-reported nature of this survey and that we explored attitudes toward situational nonrestraint and not overall nonrestraint, our findings are not directly comparable to previous studies. However, the finding that higher-income parents and parents with more education were more willing to say that is acceptable for a child to not ride restrained, particularly given certain circumstances, suggests that educational efforts may need to be strengthened among groups not typically perceived as at risk. Some parents may believe that the risk of being injured in a crash is significantly low, with the risk of getting caught unrestrained as being more likely. These parents, particularly those with higher income/higher education, may intentionally choose to forego the time cost associated with securing the restraint with that of the actual cost of receiving a ticket for having their child unrestrained.

Another example of the potential need for awareness and education is the finding that, when controlling for other factors, respondents in the highest income bracket were 2.7 times more likely to agree that was acceptable for a child to ride unrestrained when in a rush. Though parents may be concerned about the effect that a harried lifestyle has on their children, they may not be considering the risk of injury by not properly restraining their children in order to get to a destination faster.

Hyperbolic discounting is a model of temporal decision making in which individuals value present rewards over the future consequences, to the point that possible negative future outcomes are ignored (Story et al. 2014). It is possible that our findings may reflect this: that parents consider the convenience of nonrestraint use in certain situations (e.g., short trips or being in a rush) more of a priority over the potential risk of being unrestrained. Similarly, although parents may realize the benefits of restraint use and the consequences of nonrestraint, they may consider the risk minimized in certain situations, which then justifies their situational nonrestraint.

Although parents with higher education and income were more likely to find it acceptable to have their child unrestrained in certain situations, it is important to note that disparities in overall restraint use still exist, with less use in ethnic minorities and socioeconomically disadvantaged individuals. Therefore, car seat education and distribution programs that are focused in communities where there is a need are still important. However, results from this study show that additional, targeted education should be directed toward parents who, although they may have been considered low risk in the past, may have beliefs that serve as barriers to consistent restraint use for their children. Such education could be directed in the primary care setting, included with child restraint purchases, reinforced in child care and schools, and promoted in public service announcements targeted to this parental audience.

There were limitations of the study that should be noted. The voluntary nature and online source of this survey could have lead to a response bias and may not be a representative sample. However, prior research using this data source has shown the sampling method and quality measures to minimize

Table 3b. Percentage of respondents who strongly or somewhat agreed, by scenario, by race and region

	Race				Region				
Scenario	White	Black	Other	*P* value	Region 1 (Northeast)	Region 2 (Midwest)	Region 3 (South)	Region 4 (West)	*P* value
"You're not driving far at all, just around the corner"	20%	19%	29%	.067	27%	17%	20%	25%	.050
"You're in a rush and don't have the time"	10%	15%	19%	.005	19%	5%	11%	15%	.000
"There aren't enough booster or car seats for the number of children"	15%	19%	26%	.006	20%	11%	18%	21%	.019
"Riding in a taxicab"	21%	29%	33%	.002	28%	18%	22%	28%	.031
"Someone is holding the child"	13%	19%	23%	.006	20%	9%	15%	18%	.012
"It's a reward for the child"	13%	24%	26%	.000	23%	8%	15%	20%	.000
Base: total respondents	732	131	139	—	172	234	376	220	—

these biases. Additionally, there could have been acquiescence bias, particularly for proper child restraint, which is socially desirable. Similarly, this was a self-reported behavior and not directly observed practices. If present, however, these biases likely would have led to an underrepresentation of the actual prevalence of, and reasons for, restraint nonuse.

There are certain situations for which parents find it acceptable to leave their children unrestrained in motor vehicles. This has implications for targeted child passenger safety efforts designed to maximize consistent restraint use.

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