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Car seat safety: Typologies of protective health and safety behaviors for mothers in West Virginia

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Abstract

Objective—Parenting practices differ for a variety of reasons, and three parenting behaviors may be directly influenced by research, policy, and overall parenting trends: car safety seats, vaccination, and breastfeeding. Mothers were categorized in terms of their rear-facing car safety seat utilization and its relationship to other parental health and safety behaviors.

Methods—A cross-sectional, online survey of mothers of children under 3 years of age (n=124) was conducted. Items assessed mother's perceived risk and worry about being in an automobile accident, as well as duration of rear-facing car seat utilization. A cluster analysis based on these variables was performed to differentiate the sample into four distinct groups. Outcomes were knowledge of car safety seats, breastfeeding duration, and adherence to vaccination schedules.

Results—The sample was predominantly White, had an average age of 32 years, had breastfed, and had at least some college education. Two groups of interest had (Group 1) long duration of rear-facing use with low perceived risk and worry and (Group 2) short use with high perceived risk and worry. Fisher's Exact test indicated Group 1 had higher knowledge of airbag use with car seats (p=0.035), lower intentions to use the recommended vaccinations schedule (p=0.005), and were more likely to breastfeed (p=0.044) for longer duration (p=0.012).

Conclusion—Propensity for mothers' risk aversion may be the crucial element in both an appropriate duration of rear-facing car safety seat use and refusal of recommended vaccination schedule.

Keywords

car safety seats; vaccination; breastfeeding; mother; child health

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Introduction

Parenting practices differ for a variety of reasons, and three parenting behaviors may be directly influenced by research, policy, and overall parenting trends: car safety seats, vaccination, and breastfeeding. Utilization of car safety seats is one of the most visible parenting practices that perhaps has the best research foundation, clearly preventing automobile-related fatalities and injuries among children. Car safety seats may reduce the risk of serious injury by over 70% in children less than one year and by over 50% in children aged two to four years (Centers for Disease Control and Prevention (CDC), 2014b). The CDC found that in almost one third (33%) of the child mortality caused by car crashes in 2011 the child was unrestrained (Sauber-Schatz, West, & Bergen, 2014a), and this study is supported by other studies finding improperly restrained children were more likely to be admitted to emergency departments for trauma after car accidents (Macy, 2013; Stewart, Moscariello, Hansen, & Moulton, 2014). Despite the clear benefit of car safety seats, the proportion of child mortalities due to car crashes has increased considerably from 1985 to 2014 (Insurance Institute for Highway Safety, 2016). Thus, car safety seat utilization is an important area of study, and exploring parental health and safety behaviors surrounding car safety seats could be helpful in understanding (1) the differential morbidity and mortality as a result of automobile accidents and (2) broader risk protective behaviors in parents.

Although the need for car safety seats is clear, controversy may emerge for utilization for the two different types of seats: rear- vs. forward-facing (Macy et al., 2015). Rear-facing car safety seats for infants are perhaps the least controversial; rear-facing car seats have superior effectiveness in preventing serious injury in infants from car crashes (Henary et al., 2007; Hodges & Smith, 2014). Children < 24 months riding in rear-facing car seats were 1.76 times less likely be seriously injured from all types of car crashes relative to children riding in forward-facing safety seats (Henary et al., 2007). For side crashes, children < 24 months riding in forward-facing car seats were 5.5 times more likely to get injured as compared to those riding in rear-facing car seats (Henary et al., 2007). Accident data (such as from Sweden) indicate that increased duration of rear-facing car safety seat usage can decrease injuries and deaths relating to automobile accidents (SafetyBeltSafe USA, 2013).

Consistent with research, the American Academy of Pediatrics (AAP) and National Highway Traffic Safety Administration (NHTSA) have developed evidence-based practice guidelines for car safety seat use, which vary by the size and weight of the child, emphasizing the use of rear seats among infants less than 2 years of age (AAP, 2013; NHTSA, 2014). States have implemented their own individual mandates for car safety seats, with stringent recommendations from the AAP incorporated into law in New Jersey and Oklahoma and with states including West Virginia (WV) and North Carolina having the most lenient requirements (Bae, Anderson, Silver, & Macinko, 2014; NCPSC, 2013). WV requires that children under 7 years be restrained in a car safety or booster seat, without specifying timing of transition. Yet, these policies do not exist in a vacuum, and the best health related decisions are made jointly by health care team members and parents.

Clearly, differences among state requirements, AAP and NHTSA recommendations, individual pediatric provider recommendations, and emerging data can be confusing to

parents who must make decisions about when to transition their child. Early transitioning from rear-facing to forward-facing car seat is one of the most problematic misuses of car safety seats (Snowdon, Polgar, Patrick, & Stamler, 2006). Studies across the United States indicate variable compliance with newly-developed AAP and NHTSA guidelines, with approximately 60% compliance in Alabama and Indiana (Cease, King, & Monroe, 2011; O'Neil, Slaven, Talty, & Bull, 2014) and nationwide, 14 percent of infants less than one year of age were not riding in rear-facing car seats at all (NHTSA, 2013). Further, a study in Georgia found that less than 50% of caregivers were aware that children below 1 year of age and 20 pounds should be riding in a rear-facing car seat (Strasser, Whorton, Walpole, & Beddington, 2010). Thus, car safety seat use among caregivers is highly variable and indicates a need to better understand this parenting practice.

Breastfeeding and vaccination are two other health and safety behaviors that are recommended along with car safety seats for young children. The AAP currently recommends exclusive breastfeeding for a least the first 6 months of life, continuing to breastfeed while incorporating solid foods from 6 to 12 months, and after one year it can be continued based on the desire of the mother (AAP, 2012). Also, CDC and AAP recommend a range of vaccinations to take place between birth and 36 months. For all children, these include hepatitis B, rotavirus, DTaP (diphtheria, tetanus and acellular pertussis), Haemophilus influenza type b, Pneumococcal conjugate, inactivated poliovirus, MMR (Measles, mumps, and rubella), and influenza (CDC, 2015). These recommended health and safety practices, in addition to appropriate car safety seat use, are decisions mothers can make to help keep their child healthy. Although different parts of the country vary in their parenting practices, the Appalachian state of WV has a confluence of factors making it more conservative in parenting practices: (1) the 2nd lowest breastfeeding rate in the country (CDC, 2014a), (2) the strictest vaccination exemption policy (only when medically necessary) (WVDHHR, 2016), and (3) few car safety seat regulations. Understanding the factors associated with car safety seat use among caregivers and their association with other parenting practices can help us to more effectively translate evidence-based recommendations into practice.

The Parallel Process Model from Leventhal (1970) can help to elucidate factors associated with car safety seat use and other parenting practices. The model asserts that in response to a health threat, such as injury from automobile accidents, adaptive behaviors are guided by both cognitive (attempts to control the danger or risk) and affective/emotional (attempts to control fear) processes. Cognition and affect are independent and interacting, and they guide a behavioral response (Rice & Atkin, 2013; Shen, 2013; Stroebe, 2000; Witte, 1992), such as car safety seat use. In the case of car safety seats, perhaps the most salient affective process is worry about having a child in an automobile accident, but no previous studies examining the association of worry about being in a car crash to use of car safety seats were identified. Cognition may include knowledge about how to use a car seat use and belief about the likelihood of an automobile accident (perceived risk); low levels of car safety seat knowledge and perceived risk of being in an accident are barriers to the use of car seats (Kakefuda, Yamanaka, Stallones, Motomura, & Nishida, 2008; Koppel et al., 2013; Muller et al., 2014). Indeed, these three factors: cognition about car seat safety, worry about being in a car crash, and duration of rear-facing car seat use may reveal typologies in this health

and safety behavior. These typologies may be associated with other health and safety behaviors (e.g., breastfeeding and vaccination) and may be suggestive of an underlying causal link or trend in parenting behavior.

Thus, the current study was guided by two research questions surrounding car seat safety, including (1) How are mothers of young children utilizing car safety seats in a low regulation state? and (2) Are typologies in car safety seats associated with other parental health and safety practices? Thus, the goals of this study were to define typologies based on cognition, affect, and behavior (i.e., rear-facing car seat utilization) and to examine their associations with other health and safety practices: following CDC guidelines for vaccination (CDC, 2015) and the AAP recommendation for breastfeeding (AAP, 2012). Based on the Parallel Process Model, we expect that those typologies with high worry, elevated perceived risk, and longer car safety seat utilization will also have longer duration of breastfeeding and greater intent to vaccinate than those with low worry and perceived risk.

Methods

Participants and Setting

Eligible participants were mothers who had at least one child < 36 months of age. Two types of participants were included: (1) a purposively-selected group of women (based on age, race, and socio-economic status) for the cognitive interviewing portion of the study and (2) a convenience sample of women recruited via social media (e.g., Facebook), list-serve emails, fliers placed in the community, and WV Extension. The county extension service is a university-lead effort to provide a “mini campus” in each of WV’s 55 counties with the goal of addressing community issues. All women resided in WV or the surrounding counties. WV was chosen due to the leniency of laws associated with car safety seat use.

Procedure, IRB and Consent

Our protocol, consent form, and advertisements were approved by the West Virginia University Institutional Review Board prior to cognitive interviewing. To aid in survey development, cognitive interviewing was conducted by graduate research students utilizing a purposive sample of parents, representing a diversity of ages, races, and socio-economic statuses (n=8). Cognitive interviewers were instructed to stop the participant at a minimum of every five questions for feedback. Individuals in the cognitive interviewing portion received a small, university-themed gift for participation. Notes were taken, the survey was reviewed with the research team, and the survey was revised accordingly. Once revised, the IRB-approved survey was programmed to an online [SurveyMonkey.com](https://www.surveymonkey.com) platform where it was reviewed for accuracy and readability through extensive beta testing. Social media, fliers, and county extension were utilized to reach women who were mothers of children < 36 months, and responses to the surveys were monitored. As surveys were completed, the responses were monitored to see which skip patterns were used and how the participants learned about the study.

Measures

Characteristics of the mother—Variables assessed included age, race (white or other), household income (less than \$25,000, \$25-50,000, or greater than \$50,000), rurality defined by Rural-urban Continuum Codes (RUCC) (metro or non-metro counties) (United States Department of Agriculture, 2013), and education (< high school, some college to a bachelor's degree, or > bachelor's degree).

Cognition—Table 2 Scale Development (n=124) Table 3 Descriptive statistics for each of four groups identified using the cluster analysis on the rear-facing car seat duration, perceived risk score, and worry score (n=123 unless otherwise stated).

Affect—The worry scale assessed worry about the mother being in an automobile accident with a four item, five-point Likert-type response scale from strongly disagree to strongly agree. A mean scale score and the individual items are listed in Table 2. Both the perceived risk and worry scales were prefaced with instructions to answer each item as they pertain to being with their child.

Health Behavior—Rear-facing car seat duration of use was assessed by asking “How long did you/do you plan to (post-hoc analysis indicated it was appropriate to merge these two groups) keep you child in a rear-facing car seat?” (trichotomized: 0-12 months, >12 to 24 months, and > 24 months, to reflect AAP and NHTSA recommendations). Vaccination intentions were assessed with “Are you planning to follow the recommended vaccination schedule in the future?” to which they responded “Yes” or “No.” This was coded as a binary variable. Breastfeeding was considered in two ways: whether or not they breastfed and length of breastfeeding. Breastfeeding duration was assessed with an open ended item asking “How long did you breastfeed?” (trichotomized: <6 months, 7-12 months, and >12 months).

Data Analysis

Data were exported from the online survey tool to SPSS Version 22.0 and cleaned. For the new knowledge, worry, and perceived risk scales, Principal Component Analyses and Cronbach's alpha statistics were assessed. Principal Component Analysis (PCA) is a data reduction technique that selects a subset of variables based on correlation or covariance (validity). Cronbach's alpha is a measure of internal consistency of the scale (reliability). The threshold values of Principal Component Analysis and Cronbach's alpha were more than 0.4 and 0.7, respectively. Due to missing values in one survey, a cluster analysis was performed on a total of 123 surveys to classify four groups of mothers based on three characteristics: (1) duration of rear-facing car seat use, (2) perceived risk, and (3) worry. Knowledge was not considered in the cluster analysis as it had inadequate internal consistency. These variables were chosen to maximize within-group homogeneity and minimize between-group homogeneity. Since multiple variables were measured for each observation, proximity matrices were calculated to give squared Euclidean distance. To identify groups, a dendrogram using Ward linkage was utilized. Clusters were visually inspected and a decision rule of 10 iterations was introduced to reveal a satisfactory solution. To compare the groups for differences in knowledge items, breastfeeding, and vaccination,

Fisher's Exact test was performed when 20% of cells had an expected count of less than five (this test was used for bivariate relationship between cluster and demographic characteristics, knowledge, vaccination, and breastfeeding items), otherwise Chi-Square test was performed. Post-hoc analysis was used to determine which groups differed.

Results

In total, 186 unique individuals accessed the survey and 178 had a child with age 36 months. There were 124 participants with relevant scale items completed (5 items for perceived risk and 4 items for worry). In terms of demographics (age, race, household income, and education), there were no significant differences between the 178 and 124 groups (see Table 1). To perform a cluster analysis on a set of variables, there can be no missing values in that set. One more survey had to be removed at this point due to missing information on duration of rear-facing car safety seats. There were 123 completed surveys analyzed.

The perceived risk and worry scale items with mean, standard deviation, component score, and overall Cronbach's alpha (for each scale) are presented in Table 2. The majority of the sample was white (reflective of the region (US Census, 2015) 95.1%), had a household income of > \$50,000 (74.3%), had at least some college (98.6%), lived in a metro county (78.7%), and mean age of 32.5 years (SD = 4.9).

Because women in the study sample had such high levels of knowledge of car seat safety, the knowledge scale did not have adequate internal consistency and was not included in the cluster analysis. The five knowledge items which were considered separately included: outgrowing rear-facing car seat (77% correct), car seat safety use with airbags (98% correct), placement of harness straps (83% correct), riding without a car seat (91% correct), and example weight requirement (99% correct).

Four groups were identified by cluster analysis and had characteristic cognitive, affective, and behavioral features (Table 3). Group 1 (long rear-facing; low risk and worry) had the longest rear-facing car seat duration, low perceived risk, and low worry. Group 2 (short rear-facing; high risk and worry) had the shortest rear-facing seat duration, moderate perceived risk, and highest worry. Group 3 (short rear-facing; low risk and worry) had short rear-facing seat duration, low perceived risk, and moderate worry. Group 4 (moderate rear-facing; high risk and worry) had moderate rear-facing seat duration, highest perceived risk, and high worry.

These four groups differed as a function of knowledge and behavior. For intentions to follow the recommended vaccination schedule, Group 1 (long rear-facing; low risk and worry, n=28) had the fewest women who planned to follow the recommendations (67.9%) compared to groups 2, 3, and 4 (93.3%, 97.3%, and 90.5%, respectively; FET = 11.73, p = 0.005). For ever breastfeeding, Group 3 had the fewest mothers who had ever breastfed at 83.8% while Groups 1, 2, and 4 had 100%, 95.3%, and 100%, respectively (FET = 6.68, p = 0.044). For duration of breastfeeding, Group 1 had the fewest mothers breastfeed for less than 6 months (25%) compared to Groups 2 (66.7%), 3 (38.7%), and 4 (26.8%) (FET = 16.10, p = 0.012).

For knowledge, Group 2 had 86.7% answered the item on car seat usage with airbags correctly, while Groups 1, 3, and 4 had 100%, 97.3% and 100% correct, respectively (FET = 5.81, $p = 0.035$). Group 2 was the only group with ethnic/racial diversity (36.4%).

Discussion

Our goal was to categorize and describe mothers in terms of psychosocial variables and their use of protective behaviors. The newly developed scales for worry and perceived risk demonstrated solid psychometric properties, and these nine items with the addition of duration of rear-facing car seat utilization, helped us achieve the goal of understanding the different typologies of rear-facing car seat utilization. Guided by the Parallel Process Model, clustering was accomplished, resulting in 4 groups. Groups 3 and 4 were expected as previous research indicated that car safety seat usage increased with perceived risk (Will & Geller, 2004), and the Parallel Process Model posits increased cognition and affect would be associated with an increase in optimal health behavior. Group 3 may need added motivation through fear appeals (Maddux, 1983; Witte, 1992) and risk education to increase duration of rear-facing car seat use. Group 4 is optimal according to the Parallel Process Model; however, sustained worry about being in a car crash and high feelings of risk may contribute to other negative psychological sequelae in mothers (Grupe & Nitschke, 2013).

Groups 1 (long rear-facing; low risk/worry) and 2 (short rear-facing; high risk/worry) are neither consistent with previous research nor the Parallel Process Model. Group 2 is consistent with the established notion that small amounts fear and worry can be helpful to a point, but that high levels of fear could be counter-productive, making them less likely to engage in the behavior (Witte & Allen, 2000). These results indicate why conducting a cluster analysis to understand the typologies of rear-facing car seat use is so important. Relationships between car seat safety, worry, and perceived risk are not linear. Some with elevated perceived risk and worry will engage in the target behavior, but others will not. Thus, Groups 1 and 2 appear to be unique in the literature, and they also have differences in terms of knowledge and protective behaviors.

Overall, WV mothers in this study had very good scores on the knowledge items, which contrasted with a previous study that found parent's demographics were a significant predictor of knowledge about car safety seat use (Vaca, Anderson, Agran, Winn, & Cheng, 2002). Although participants in the study were drawn from Appalachia, a population known for its lower socio-economic status, lower levels of education, and poorer access to healthcare (Behringer & Friedell, 2006), most of the study sample had at least some college education. The high levels of knowledge in the sample are encouraging, but the lack of variance posed problems for the use of knowledge items as a scale and ultimately for their inclusion in the cluster analysis. Group 2, which had short rear-facing car safety seat use and high risk and worry, had the worst scores on the knowledge questions as a whole, indicating that legislation combined with marketing and education may improve use of rear-facing car safety seats for this group, as was true with a Canadian study of policy change (Yanchar, Young, & Langille, 2015).

Like many other cultural phenomena, parenting behaviors are subject to current trends that change over time. Now, it can be trendy to use a car safety seat, breastfeed, and forego vaccination. In the past, car safety seats were infrequently used, breastfeeding was not the norm, yet vaccination was routine. Another key result for discussion is the contrast between Groups 1 and 2 with regards to other preventive health and safety practices: vaccinations and breastfeeding. For the most part, the mothers in Group 1 did not plan to follow the recommended vaccination schedule but had the highest percentage of mothers who breastfed 6 months or longer. Again, these mothers were predominantly well-educated, non-minority, and had an income of more than \$50,000 annually. Mothers who were using rear-facing car safety seats the longest and had the lower risk and worry (Group 1) also did not intend to follow the recommended vaccination schedule while participating in the arguably more difficult protective health and safety practice of breastfeeding.

The contrast of following AAP guidelines for rear-facing car seats and following CDC guidelines for breastfeeding while not following CDC guidelines for vaccination is perplexing and perhaps helps to shed some light on the anti-vaccination movement (Smith et al., 2011). One potential explanation is risk aversion in Prospect Theory (Kahneman & Tversky, 1979). Using a rear-facing car safety seat up to and beyond the recommended time avoids risk of their child's injury or death and has no publicized potential for harm, if used properly. On the other hand, for vaccination, mothers must weigh the risk of developing a vaccine-preventable illness versus the risk of an adverse effect of the vaccination. In this case, the sin of commission, vaccination, is seen as much worse than the sin of omission, not having vaccination (Hayward, Asch, Hogan, Hofer, & Kerr, 2005). Further, Prospect Theory posits that low-probability events are over-rated, while high-probability events are under-rated. Adverse events to vaccination, some of which are not even reliant on vaccination to occur, are an example of these over-estimated, low-probability events. Being risk averse, these mothers may avoid the low probability of a potentially large loss from an adverse event (including the scientifically refuted risk of autism and the potentially minute exposure to thimerosal) by delaying (legal in WV) or refusing (required for children attending school) vaccination.

Our study had both strengths and limitations. Despite not conducting individual interviews on each participant, cognitive interviews with a diverse sample of women were conducted in preparation of the final version of the survey. Although this study was retrospective for some participants, recall of information was helped by the criteria that mothers had child less than 36 months of age. The sample only included those mothers who volunteered to participate and completed variables of interest to our study; however, there were no differences in demographic data between those who completed the survey versus those who completed part of the survey. Further, this online survey was performed on a convenience sample resulting in mothers who were mostly non-minority of moderate socioeconomic status, which may not be representative of the larger WV population. However, mothers were recruited through extensions throughout the state to improve representativeness, and the online format increased feasibility and efficiency of the study. Reduced representativeness notwithstanding, the findings show that even well-educated women can have sub-optimal health behaviors.

Conclusion

With the assistance of two new scales for worry and perceived risk, four typologies of mothers of young children who performed protective health and safety practices differently were identified. As delineated above, each of these groups of women may be responsive to different types of interventions. Fear appeals may be more likely to increase rear-facing car seat utilization for some women; while educational efforts may be more helpful to others. Research clearly indicates a benefit for extended rear-facing car seat utilization, which is exemplified by Group 1. However, Groups 1's delay or refusal of vaccination is perplexing and consistent with other middle class women who refuse or delay vaccination across the country, avoiding a sin of commission, preventing unlikely negative outcomes for their children, at the potential cost of exposing their children, and the children around them, to additional risk. Thus, the data clearly indicate a benefit to identifying underlying typologies of mothers, both for understanding the women in these different groups and the health and safety decisions they make for their children.

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Significance

Mothers with children less than 36 months were surveyed about health and safety practices, and scales were developed for perceived risk and worry of being in a car accident. Mothers were grouped into typologies based on perceived risk, worry, and rear-facing car seat usage, and these typologies of mothers differed in terms of vaccination intention and breastfeeding. Newly-developed scales and typologies can help to identify a unique sub-set of mothers who will be more amiable to atypical interventions.

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Table 1
Comparing demographics of total surveys (n=178) to those included in the cluster analysis (n=123)

	Full Set (n=178)	Cluster Set (n = 123)	p-value⁺
Age of mother, Mean (SD)	32.06 (4.70)	32.22 (4.91)	0.776
Race, n (%)			0.779
White	168 (94.4%)	117 (95.1%)	
Other	10 (5.6%)	6 (4.9%)	
Household Income, n (%)			0.999
< \$25,000	16 (9.0%)	11 (8.9%)	
\$25-50,000	32 (18.0%)	22 (17.9%)	
> \$50,000	129 (72.5%)	89 (72.4%)	
Missing	1 (0.5%)	1 (0.8%)	
Education, n (%)			0.635
<=High school	1 (0.6%)	2 (1.6%)	
Some post-high school to bachelor's degree	95 (53.4%)	63 (51.2%)	
> bachelor's degree	82 (46.1%)	58 (47.2%)	

⁺ The p-value for the mean difference is for the unpaired t-test and the frequency comparison is for the chi-squared test.

Table 2Scale Development ($n=124$)

Perceived Risk Scale Items ($n=124$)	Mean	SD	Component 1	Cronbach's α
I am at risk for having a car accident.	3.14	0.98	0.80	0.79
It is possible I will be in a car accident while driving.	3.62	0.87	0.80	
It is unlikely I will be in a car accident. (Reverse coded)	3.08	0.86	0.76	
Within the next year, I will be in a car accident.	2.62	0.63	0.67	
My risk for being in a car accident is high.	2.23	0.78	0.67	
Worry Scale Items ($n=124$)	Mean	SD	Component 1	Cronbach's α
I worry about being in a car accident.	3.27	1.15	0.85	0.78
Being in a car accident is a big concern for me.	2.95	1.14	0.88	
Worrying about being in a car accident determines how often I drive.	2.00	1.06	0.68	
I do not worry about going on car rides. (Reverse coded)	2.48	1.17	0.69	

Table 3

Descriptive statistics for each of four groups identified using the cluster analysis on the rear-facing car seat duration, perceived risk score, and worry score ($n=123$ unless otherwise stated).

	Group 1	Group 2	Group 3	Group 4
	Long rear-facing with low risk and worry	Short rear-facing with high risk and worry	Short rear-facing with low risk and worry	Moderate rear-facing with high risk and worry
	(n=28)	(n = 15)	(n=37)	(n=43)
Cluster Defining Variables				
Rear-facing duration (months)				
0-12	0	15	0	0
Over 12 to 24	0	0	31	25
> 24	28	0	6	18
Perceived risk scale score, Mean(SD)				
	2.70 (0.46)	2.64 (0.74)	2.60 (0.50)	3.47 (0.33)
Worry scale score, Mean(SD)				
	2.26 (0.53)	3.03 (0.80)	2.51 (0.95)	2.92 (0.86)
Demographic Variables				
Age (years), Mean(SD)				
	32.36 (5.07)	31.73 (4.64)	32.62 (4.61)	31.95 (5.26)
Race				
White	28	11	36	42
Other	0	4	1	1
Household income (n=122)				
< \$25,000	4	3	0	4
\$25-50,000	6	2	8	6
> \$50,000	18	10	28	33
Education (highest completed)				
<=High school	1	0	1	0
Some post-high school to bachelor's degree	16	5	21	21
> bachelor's degree	11	10	15	22
Rurality				
<i>Metro</i>	21	13	32	33
<i>Non-metro</i>	7	2	5	10
Knowledge items				
A child can continue riding in the same rear-facing seat until the child outgrows the rear-facing seat. (Correct: Agree)				
Correct	26	12	26	31
Incorrect	2	3	11	12
Children in rear-facing car seats can be placed in the front passenger seat if the car has airbags. (Correct: Disagree)				

	Group 1	Group 2	Group 3	Group 4
	Long rear-facing with low risk and worry	Short rear-facing with high risk and worry	Short rear-facing with low risk and worry	Moderate rear-facing with high risk and worry
	(n=28)	(n = 15)	(n=37)	(n=43)
Correct	28	13	36	43
Incorrect	0	2	1	0
For a rear-facing car seat, harness straps should be placed at/or below the child's shoulder. The harness straps are the straps in a car seat to hold a child in. We want to know where the straps should come out of the top of the seat. (Correct: Agree)				
Correct	25	11	28	38
Incorrect	3	4	9	5
How often has your child ridden in a car without a car seat? (Correct: My child always has a car seat)				
Correct	27	12	36	37
Incorrect	1	3	1	6
An 11 month child weighing less than 20 pounds should always ride in a rear-facing car seat. (Correct: Agree)				
Correct	28	14	37	43
Incorrect	0	1	0	0
Vaccination item				
Are you planning to follow the recommended vaccination schedule in the future? (n=122)				
Yes	19	14	36	38
No	9	1	1	4
Breastfeeding items				
Have you ever breastfed?				
Yes	28	15	31	41
No	0	0	6	2
How long did you breastfeed? (n=114)				
<i>0-6 months</i>	7	10	12	11
<i>7-12 months</i>	7	5	11	17
<i><12 months</i>	14	0	8	13