# ATSB Road Safety Research Grant T2000/0469

# Final report:

Behavioural intervention using rewards increases child car restraint usage by 4-6 year old rural school children'

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#### **EXECUTIVE SUMMARY**

The Buckle Up Child Car Regional Town Restraint Project designed, implemented and evaluated an intervention targeted at increasing appropriate child car restraint usage in 4-6 year old rural school children. Rewards were given to 298 children for using car restraints over one month, where they were given stickers in the school car parks by the research team and in-class rewards by the class teachers. In addition, vouchers for the free fitting and provision of child car seats and/or harnesses were provided to encourage appropriate use of child car restraints, and free fitting and checking clinics were provided by the RACWA. During the study, all parents at the participating schools were asked to complete a questionnaire about child car restraints and their usage.

The project resulted in an increase in child car restraint usage amongst rural kindergarten, pre-primary and primary school children and education of children and parents about the need for using appropriate child restraints. In addition, the project resulted in the development of materials and protocols that may be generalised to other rural areas in Australia. The study has since been extended, confirming that the increase in child car restraint usage is maintained up to 6 months after the intervention, which has been funded by a matching grant from the Office of Road Safety, Western Australian Government.

The major findings of the study were:

- The overall child car restraint usage was significantly increased from 79% to 90% from pre-intervention to post-intervention
- The wearing of age-appropriate child car restraints significantly increased from 45% to 69% from pre-intervention to post-intervention
- Increasing child car restraint usage had no effect on adult seat belt usage; at preintervention driver's use of seat belt was observed to be at 91%, and at postintervention it was 94%.

In addition, the following was found:

- The main seating positions for children were either the rear/side of a vehicle or the front side of a vehicle.
- 38% of children not wearing a child restraint were seated in the front passenger seat of a vehicle
- 17% of children climb out of child car restraints or do not like to be strapped in the child car restraint
- 40% of parents consider that child restraints are too expensive
- 85% of parents believe that not everyone can tell if a child restraint is incorrectly worn or installed in a car

Information leaflets and brochures of child car safety and age appropriate child restraints were handed out to parents during the intervention period. This information was seen as instrumental in raising parent awareness of the importance of restraining their children with age appropriate car seats. However, further education of child safety when travelling in vehicles is warranted, as there are still a number of parents who do not ensure their children are restrained appropriately on every trip.

The checking of child restraints is a valuable service that was offered to all parents with children at the schools. However, only 15 parents of a total pool of some 598 families, representing less than 3% took the opportunity to have their child restraints checked. Of the 15, six were found to have issues that needed rectifying, potentially suggesting that the safety conscious people bok advantage of the free service. It was expected that more parents would have responded to the invitation as a high percentage (85%) of parents who responded to our questionnaire believed that not everyone could tell if a child restraint is installed correctly.

## Recommendations

- 1. Replication of this study is recommended in other rural areas to validate the results of this study.
- 2. Retailers of child restraints should be encouraged to train their staff to provide installation and fitting services, or at least to be able to refer customers to a local installation and fitting service
- 3. Children under 12 should be seated in the back seat of a vehicle
- 4. RACWA checking service days should be organised through the schools' Parent and Citizens committees, which could lead to an increase in parents using the free service.
- 5. Brochures and information leaflets on child car safety and age appropriate restraints should be available through local schools, kindergartens and playgroups.

#### **BACKGROUND**

Road transport injury is the leading cause of death in Western Australia for children aged 0-14 years. It is also the second largest cause of hospitalisation for this age group (Injury Control Program, 1998). Every year an average of nine child passengers die, and 186 are hospitalised. The majority of child deaths occur in rural areas (62%), and over half of the children hospitalised lived in rural areas. Rural children are therefore much more likely than metropolitan children to die or be hospitalised from road injury.

The higher prevalence of death and hospitalisation of rural children from road injury is accompanied by a higher proportion of non-use of child restraints in rural areas. A recent study by Health Department of Western Australia (Injury Control Program, 1998) showed that 10.8% of metropolitan children do not wear child restraints whilst 15% of rural children do not wear car restraints. The proportion of non-use of child car restraints in rural Western Australia is replicated in international studies (e.g. Agran et al., 1998; Kostaridou et al., 1997). Therefore, encouraging rural children to wear child car restraints must therefore be seen as a high priority.

Another major risk factor for children is the incorrect fitting of a child car restraint (Henderson, 1994). A survey undertaken by Kidsafe WA (1998) indicated that 62% of child car restraints were fitted incorrectly. This supports US studies where they found that a large number of children were occupying car seats that were not installed correctly (e.g. Anonymous, 1995, 1998; Decin & Knoebel, 1997). It is therefore seen that any intervention to increase the use of child car restraints must also consider increasing the incidence of correct fitting.

Studies indicate that there are several primary reasons for non-use of child car restraints. These include inadequate access to child restraints (Injury Control Program, Health Department of WA, 1998), lack of knowledge about which child car restraint to use, parents being forgetful or are in a hurry to get somewhere, too many passengers in a car, and short journeys (Gielen et al., 1984; Margolis et al., 1992; Webb et al., 1988). Children aged from 3-14 years have the lowest restraint use

(Webb et al., 1988) and children at 4-6 years of age are likely to find car restraints uncomfortable (Road and Traffic Authority Road Safety Bureau, 1991).

Significant increases in child car restraint use and in adult seatbelt use have been observed when children are rewarded when their parents are reminded to restrain them in vehicles (Bowman et al., 1987, Roberts & Fanurik, 1986, Roberts & Layfield, 1987). Usage rates declined rapidly when the rewards were discontinued. The present study extended these studies by including three innovative aspects: intermittent reinforcement was used to maximise long-term behavioural change (Williams, 1973); the use of teachers to provide rewards to generalise and maintain the effect; and the provision of ready access to child car restraints.

This Child Car Restraint Project designed, implemented and evaluated an intervention to increase child restraint usage by targeting five schools in three rural locations. The three small towns selected are about 120-160 km south of Perth, Western Australia. The locality of Brunswick has a population of 1 327. The locality of Harvey has a total of 4 442 people living in the area and Yarloop has a population of 863 (Harvey Shire Dwelling Statistics, 2000).

Targeted children were aged from four to seven years, and attended kindergarten, preprimary and year one in the three locations. The research comprised of observation of parents' use of child car restraints on dropping children off at school carparks, and questionnaires that were sent to parents through the schools. In addition, data was collected from the Royal Automobile Club of Western Australia checking station days.

# **Observational Study**

In this study, three observations were undertaken at all five of the participating schools. These included two pre-intervention observations and one post-intervention observation which was conducted after a four week intervention period at each of the five schools. Two pre-intervention observations to ascertain the effect of parents' knowledge that an intervention was to occur.

#### Method

## **Participants**

Parents and children associated with Yarloop Primary School, Harvey Primary School, Saint Anne's Catholic School - Harvey, Brunswick Primary School and St Michael's Catholic School - Brunswick took part in the observational study. In total there were 598 families that had the potential to be involved in the study. The observational study involved all children at the schools.

The classroom intervention was targeted at 289 children that attended kindergarten, pre-primary and year one from the participating schools. Where there were classes with grade one-two splits, the grade two students in those classes also participated in the study. The age range for these children was 4 years of age to 7 years of age.

## **Materials**

An observational data sheet was used to collect the data, and is available from the authors on request. Items on the data sheet included number of children, whether restraints were used, age appropriateness (whether the car restraint was age appropriate for the child), seating position, restraint type, driver gender and whether they were wearing a seat belt.

# **Procedure**

The study consisted of two baseline observations, an intervention period and a post observation to measure the increase in restraint. The observations were undertaken at random by several research assistants at each of the five schools. Observations targeted all children attending the various schools in the mornings when they were being dropped off at school.

The intervention consisted of two parts. Part one consisted of a one month intervention period where the kindergarten, pre-primary and year one children were rewarded by their teachers for wearing a car safety restraint, in order to reinforce this behaviour. At least two or three times a week the teachers asked the children whether they were 'Buckled Up' when being driven to school or the last time they were a passenger in a vehicle. If the children answered yes, then they were rewarded with a sticker and the teacher noted this with a tick on a reward chart. When the children had five ticks they were given a larger reward. The class rewards consisted of a small gift such as a slinky (coiled spring toy), pen highlighter (3 colours in 1), pencil, notebook, or frisbee.

Part two of the intervention involved a number of research assistants handing out stickers to qualifying children at the five schools in their respective school car parks. To qualify for a sticker the child had to have been wearing a restraint on arrival at school. During this part of the intervention period, brochures and information sheets on child car safety and child car seats were handed out to parents in the school car parks.

Vouchers for the free provision of child booster seats and child car harnesses were distributed via the school to parents of the kindergarten to year one children. In addition, parents were invited to have their children's restraints checked through the school RACWA checking days.

# Alterations to initial project plans

First, the project could not be run on the basis of hiring out car seats as set out in the original proposal to Australian Transport Safety Bureau. The RACWA was no longer in a position to hire out car seats as planned in the initial proposal, and the University could not support the project based on hiring out child restraints on the basis of risk assessment.. We therefore provided vouchers for free provision of car seats and harnesses for fitting by the RACWA. The vouchers were offered to parents without age appropriate child restraints, for their kindergarten, pre-primary and year one children who took part in the intervention. These changes resulted in the project being revised accordingly, with a revised budget forwarded to the ATSB in June 2000 before the University signed the contract.

Second, the project took more time than initially anticipated to establish, and so a request was made to the Australian Transport Safety Bureau to extend the period of the study. The delay was due to time required developing resources and relationships with schools and the teachers.

Third, the study required double the number of research assistants originally envisaged. This was because we found that two teams of two observers were necessary to obtain observations in school carparks. Typically, there are two pickup/drop off zones in each primary school. As we found that it was difficult to obtain volunteers, research assistants were hired.

Fourth, it was decided that the statistical analysis of the data should be carried out by an experienced statistician rather than have undergraduate students undertake the analysis. Therefore, funding of that position was placed into expenses for the project with Australian Transport Safety Bureau.

#### **Results**

## **Restraint Usage**

Data was collected from each of the five schools that participated in the research before and after the four week school intervention. In total there were 900 observations made.

The results revealed that there was an overall increase in child restraint usage after the intervention period. The overall figures for child restraint usage was 79% at the first pre-intervention observation period, 88% for the second pre-intervention observation and 90% at three months post-intervention as shown in Table 1 below.

A chi square statistical analysis was used to determine group differences for the number of children restrained. A cross-groups overall comparison of the number of children restrained at pre-intervention (first observation) and three months post-intervention revealed a significant  $\chi^2$  (1) value of 14.993, p=0.002. This confirms that the observed increase in number of children restrained from 79% at pre-intervention to 90% at post-intervention was statistically significant.

The two baseline figures obtained at pre-intervention varied significantly ( $\chi^2$  (1) value of 12.336, p=0.006) indicating that the awareness of the project in the area had impacted on the children's and parents' behaviours before the school intervention was fully implemented. Awareness may have come through the schools' newsletters, teachers' talk to the students of the upcoming project activities and the research assistants' presence at the first observational study.

Table 1: Observed usage of car child restraints

	Used		Not used		Total	
Pre-intervention 1	263	(79%)	71	(21%)	334	
Pre-intervention 2	277	(88%)	37	(12%)	314	
Post-intervention	227	(90%)	25	(10%)	252	

# **Age-Appropriateness of Child Restraint Use**

Age-appropriateness of child restraint use refers to children observed to be restrained appropriately for their ages. Observations of age-appropriateness were based on the judgement of the observers, and dependent on the age and size of the child and type of restraint used. By far the most common inappropriate usage of restraint was the observation of younger children using adult lap and sash seatbelts only.

The results revealed that as a result of the intervention, there was an increase in the number of children being appropriately restrained for their age. Age appropriate child car restraint usage was at 45% at the first observation pre-intervention, 51% at the second observation pre-intervention and 69% at three months post-intervention (see Table 2 below, which shows numbers of observations, percentages, and categories of observation. Note that there is a category 'undetermined' indicating that it was not possible for the observer to judge whether the child car restraint was used appropriately).

A chi square statistical analysis was used to determine whether there was a statistical difference across the groups for age appropriateness of child car restraints. The difference between pre-intervention levels at initial observation and at three month post-intervention for age appropriate usage revealed a  $\chi^2$  (1) = 37.476, p <0.0009 indicating a significant difference across the groups for age appropriateness of car child restraint usage. A statistically significant increase in age-appropriate child car restraint usage was also observed between the second observation pre-intervention, and at three months post-intervention (51% to 69%,  $\chi^2$  (1) = 29.507, p <0.0009).

Table 2: Age-appropriate observed usage of car child restraints

	Used	Not used	Undetermined	Total
Pre-intervention 1	149 (45%)	109 (32%)	76 (23%)	334
Pre-intervention 2	161 (51%)	116 (37%)	37 (12%)	314
Post-intervention	173 (69%)	46 (18%)	33 (13%)	252

# **Types of Restraints Used**

There was an increase in observed booster seat - lap sash wearing, and observed use of lap and sash seatbelts amongst the children. Booster - lap sash usage increased from 8% to 14%, whereas lap sash belt usage increased from 54% to 66% (See Table 1 for all observational data figures of various restraint usage). These figures support the finding of an increase in age appropriate car child restraint usage, as the majority of the children who participated in the intervention (kindergarten to year one children) would be of age and size to be using a booster seat.

During the observational study, it was not always possible to observe the type of restraint used and this was noted accordingly. The figures include observations of children who were appropriately restrained by a lap/sash belt.

Table 3: Observed types of restraints used

	Pre int	Pre int 2	Post int
Lap/sash belt	180 (54%)	170 (54%)	167 (66%)
Baby restraint	7 (2%)	13 (4%)	4 (2%)
Child seat	20 (6%)	13 (4%).	6 (2%)
Harness & Booster	4 (1%)	9 (3%)	NIL
Lap sash & booster	28 (8%)	34 (11%)	35 (14%)
None	67 (20%)	38 (12%)	19 (8%)
Not recorded	28 (9%)	37 (12%)	21 (8%)
Total	334	314	252

## **Seating Arrangements within Vehicles**

The results of the study indicated that a large number of children sat either on the rear/side of the vehicle (about 45%) or the front/side of the vehicle (about 40%). Observational data for each group and data collection time is shown in Table 4 overleaf.

Some 38% of the children not using a car restraint were seated in the front passenger seat of a vehicle. Children who are seated in the front passenger seat are at greater risk for injury in the event of an accident especially when they are not appropriately restrained in a vehicle. In addition, with the advent of air bags engineered for adults in newer vehicles, the practice of seating children in the front passenger seat is of increasing concern.

Table 4: Seating Arrangements within vehicles

	Pre int	Pre int 2	Post int
Front middle	11 (3%)	7 (2%)	5 (2%)
Passenger front	140 (42%)	122 (39%)	107 (43%)
Rear side	155 (46%)	153 (49%)	106 (42%)
Rear mid	26 (8%)	27 (8%)	21 (8%)
Not determined	2 (1%)	5 (2%)	13 (5%)
Total	334	314	252

## **Driver Restraint Usage**

The results from the observational study revealed that there was no increase in seat belt usage among the adult drivers. Observed adult seat belt usage increased from 91% (pre intervention 1) to 94% (post intervention).

Table 5: Observed use of drivers seatbelt

		Pre intervention 1	Pre intervention 2	Post intervention
Drivers	wearing			
seatbelt		174/192 (91%)	168/173 (97%)	132/141 (94%)

## **Discussion**

This Child Car Restraint Project achieved its objective in that car restraint usage amongst rural kindergarten, pre-primary and primary school children was increased. Moreover, the significant increase in usage of age appropriate child car restraints indicates that the project was successful in educating children and parents about the need for using appropriate child restraints.

The authors of this report are especially concerned over the number of children who sit in the front passenger seat of vehicles as, in the event of an accident, children are more at risk of being injured, especially those who are not wearing an age appropriate child restraint. This is pertinent as most new cars are now fitted with passenger airbags, which can cause injury to children who are inappropriately restrained. There is a need for parents to be informed of the risks of transporting children in the front passenger seat. In Western Australia, it is not illegal for children to be seated in the front passenger seat. However, in Victoria children under 12 years of age are not allowed to be seated in the passenger front seat of a vehicle. This policy should be considered in other States in Australia.

# **Questionnaire Study**

A child car restraint questionnaire was used to assess parents' attitudes towards child car restraints and their usage. Copies of the questionnaire are available from the authors on request. 139 (23%) parents responded to the questionnaire. 55 (40%) questionnaires were returned by post to Edith Cowan University. 84 questionnaires (60%) were placed in the boxes provided at each school.

The response rate was considerably lower than an expected response of 30-40%. There are several reasons why there was a low response rate. One reason is that we do not know if the parents received the questionnaire as the children were given the questionnaires at school to take home. Secondly, several school principals made a comment that most parents of their school were apathetic about returning any form of paperwork. Thirdly, the questionnaires were sent to all parents with children at the schools but the intervention was aimed at kindergarten to year one children. Therefore parents of children not taking part in the classroom intervention may have been less inclined to fill out the questionnaire. In retrospect, it would have been better for questionnaires to have been sent in the mail from school, with reminders being given through the school administration. It is possible to ensure confidentiality by having a tear-off slip indicating completion being returned separate from the survey itself.

#### Method

#### **Participants**

The questionnaire was distributed to the 598 families associated with Yarloop Primary School, Harvey Primary School, Saint Anne's Catholic School - Harvey, Brunswick Primary School and St Michael's Catholic School - Brunswick.

#### **Materials**

The questionnaire used in this research was modelled upon one used by Reark Research for the Injury Control Program of the Health Department of Western Australia Report (1997). Several modifications were made to suit local conditions. The questionnaire consisted of eleven items, nine of which measured parents' attitudes

to child car restraints and their use (see Table 6 overleaf). The responses to these questions were either 'agree' or 'disagree'. The three remaining questions asked information about the distance travelled to school, how many times a week parents drove their children to school and whether the parents wore a seatbelt whilst driving.

## **Procedure**

The questionnaires were distributed to all families through the participating schools. Parents could either return the questionnaires to boxes provided at the schools, or mail them directly to Edith Cowan University in reply paid envelopes that were provided. Each school reminded the parents through the school newsletter to send back the questionnaires.

#### **Results**

### **Main Findings**

The results from the questionnaire indicate three main concerns for effective child restraint usage. Firstly, many parents who responded to the questionnaire (40%) consider that child restraints are too expensive to be purchased. Secondly, a high percentage of children (17%) climb out of the child car restraint whilst travelling or do not like to be strapped in their child car restraints (9%). Thirdly, most parents (85%) believed that not everyone can tell if a child car restraint is incorrectly used or fitted in a car. Table 6 (overleaf) gives details of the questions, number of responses and the percentage of responses in each category.

Table α Questionnaire Responses

Question	Agree	Disagree
1. Is it safe for children to be held by another passenger while	2	137
travelling?	(1.4%)	(98.6%)
2. For short journeys it is not always necessary to restrain	5	134
children.	(3.6%)	(96.4%)
3. Everyone can tell if a child car restraint is incorrectly used or	21	118
fitted in a car.	(15.1%)	(84.9%)
4. My children do not like to be strapped in restraints.	12	125
	(8.6%)	(89.9%)
5. My children sometimes climb out of restraints while travelling.	24	115
	(17.3)	(82.7%)
6. If I am in a rush, I sometimes do not bother with the restraints.	4	135
	(2.9%)	(97.1%)
7. If the car is crowded, I sometimes do not bother to use the	3 **	134
restraints	(2.2%)	(96.4%)
8. Child care restraints are too expensive.	56 **	79
	(40.3%)	(56.8%)

<sup>\*\*</sup> indicates missing data for this question.

The parents were asked how often they drove their children to school, the distance children travel to school and whether they as parents wear seatbelts whilst driving. 65% of the parents who responded to the questionnaire indicated that they drive their children to school at least four days a week.

# **Distance Travelled to School**

The range of the distance that children travel to school was zero kilometres to 40 kilometres. The median distance was 2 kilometres and the distribution was bimodal at both 1 and 2 kilometres. The study revealed that 70% of families lived within 5 km of the school with a further 15% living between 5 and 10 kms away and a total of 93% of the families living within 15 kms of the school.

# **Adult Seat Belt Usage**

The majority of the parents (98.6%) claimed that they always use their seat belt whilst driving.

#### **Discussion**

Most parents (85%) disagreed with the statement 'everyone can tell if a child car restraint is installed correctly'. It is recommended that distributors of child car restraints should provide professional installation of all child car restraints sold, or at least provide details of service providers who are able to install and check child car restraints.

The cost of child car restraints is also an issue. Around 40% of parents stated that child car restraints are too expensive, and this is likely to be a constraint in buying them. The issue of affordability of child car restraints and resultant lower usage of child car restraints in the age group 4 - 6 has been raised in previous research (Health Department Report, 1997). This could explain the relatively low rate of age appropriate usage that has been found in this study.

The areas chosen to participate in this study are generally of lower socio-economic and rural families. Rural families have limited resources and places to access information leaflets and brochures on child restraints. It is worth noting that the information leaflets that were handed out to parents during this study came from New South Wales as there was no place in Western Australia that had large quantities of leaflets and brochures to meet the demands of this project.

The explanation of non-usage of child car restraint on account of them being too expensive is inconsistent with the response to our offer of free child car restraints associated with the intervention. From the achieved response rate of 16 fitted restraints, it seems that parents were reluctant to take up the offer of a free booster seat and/or harness. Despite this comparative lack of take up, it should be noted that the intervention described in this report led to a significant increase of age appropriate usage of child car restraints.

It is possible that the offer of free child car restraints may be more effective over a longer period of time, and that the school setting may not be ideal. We recommend that playgroups and child infant centres be targeted for intervention for the future.

## Car child restraint checking and fitting study

A Royal Automobile Club of WA Checking Service Day was programmed for each of the five schools involved in the Buckle Up Bug Child Car Restraint Project. All parents were invited to have the child car restraints checked and seat belts checked, however, due to lack of numbers, the checking service was limited and two days were cancelled.

#### Method

A total of 598 families from Yarloop Primary School, Harvey Primary School, Saint Anne's Catholic School - Harvey, Brunswick Primary School and St Michael's Catholic School - Brunswick were invited to have their child car restraints and seat belts checked at no cost by the RACWA at their children's schools.

The information was recorded on a data sheet. The checklist items included type of vehicle, type of child restraint being checked, fitting of child car restraint, anchorage of child car restraint and installation of the child car restraint. Copies of the data sheet are available from the authors on request

Information notices of the upcoming RACWA checking days were sent home to all parents of the schools participating in the study. The parents who wanted their child car restraints checked returned the tear off slip at the bottom of the notice back to the school. The coordinator arranged times with the parents to have their child car restraints and seat belts checked as the RACWA checking days were operated by appointment.

#### **Results**

A total of twenty-six families responded to the invitation to have restraints and seat belts checked. However, only 15 families actually had their child car restraints and seat belts checked. Of the 11 families who did not attend six had either cancelled at the last minute or did not turn up on the day. One family found the designated days not suitable, two families sent their forms back after the RACWA checking days had been held and two families upon booking stated that they no longer required to have their child car seats and/or seat belts checked. Discussion with the local RACWA manager indicated that this low response rate was not unusual.

The RACWA checking service stations checked eight booster seats (without harnesses), and four convertible child seats. Also, two families had boosters and harnesses checked and one family had a baby restraint checked. The RACWA checked all seatbelts in the vehicles for adult use.

Of the 15 families who had their restraints and seat belts checked, six were found to have issues that needed rectifying, potentially suggesting that the safety conscious people took advantage of the free service. It was expected that more parents would have responded to the invitation as a high percentage (85%) of parents who responded to our questionnaire believed that not everyone could tell if a child restraint is installed correctly.

Some of the recommendations made to families by the RAC were as follows:

- □ Adjust shoulder harness.
- ☐ Main mounting/anchor point be strengthened and fixed to the floor.
- ☐ Full harness be fitted and used. New booster seat. Use the free voucher.
- □ Check with supplier about belt adjusting buckle -> slips through buckle.
- □ Suggest booster seat and harness be used in rear.
- □ All 3 rear seat belts jam when pulling out. These require adjustment to rectify problem.
- Suggest boy go into booster seat with harness. Girl use booster seat and harness.

It is recommended that parents' committees at participating schools organise checking services, which may lead to an increase in parents using the free service.

#### **General Discussion**

This project followed the original intervention strategies outlined in the grant proposal. Firstly, the children were positively rewarded to increase child restraint usage and this provided a good success rate for this behaviour change. Secondly, information on age appropriate child restraints and general information on child car safety was distributed to the parents through the schools. Thirdly, child restraints were made available to parents through the use of vouchers for a free child restraint/harness. The voucher covered the full cost of seats and harnesses, as well as their fitting. These vouchers were limited to parents whose children were participating in the classroom intervention. Vouchers were used instead of setting up a hiring system, as we were unable to find a local organisation to hire out the car seats/harness. Fourthly, RAC checking station days were offered at all five of the schools participating in the study. The observational study showed the effectiveness of the intervention strategies, as more children are wearing a restraint that is appropriate for their age.

In addition, materials and protocols were developed for this project that could be utilised in further research that replicates this study. For example, the Buckle Up Bug logo design was used for the rewards, posters and participation certificates for the children. The design of these resources was undertaken by the project coordinator and an early childhood trained professional who is currently working as a kindergarten teacher.

The RACWA checking service stations, which were provided at all participating schools were not used by many parents. However, the parents who took up the opportunity to have their child's car seat checked were appreciative of the service. Organisations that have provided this same service have had a similar response to their RACWA checking days (Personal Communication). It is suggested that future projects make use of the Parent and Friends Association to help organise RACWA days at the schools. This recommendation was suggested by a principal from one of the schools participating in this project.

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