University of British Columbia

# Randomized Control Trial of Booster Seat Education Material to Increase Perceived Benefit Among Parents

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# COMMUNICATING THE SAFETY BENEFIT OF BOOSTER SEATS

## Overview

Seatbelts protect people from injuries, by diverting crash forces to stronger anatomical structures: the ribcage and the pelvis.[1] Children between the ages of 4 and 8 years are typically not tall or heavy enough to wear the seatbelt correctly across the chest and hips, and instead wear it on their abdomen and neck (Figure 1, left). When worn in this way, seatbelts direct crash forces to these parts of the body causing serious damage to internal organs and even severing the spine.[2–4] For this reason, children of these ages need to use a booster seat. A booster seat is a safety device that prevents seatbelt related injuries, by raising the child and ensuring the straps are correctly worn across the thorax and hips (Figure 1, right). Unfortunately, in Canada, half of the children who should be using booster seats are prematurely restrained using only the seatbelt.[5] The present research project seeks to develop a new way to encourage booster seat use.

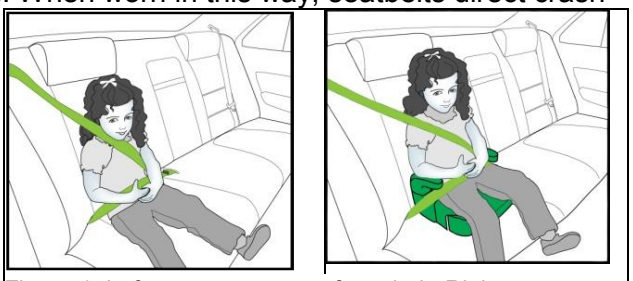

Figure 1. Left: premature use of seatbelt. Right: correct use of seatbelt in combination with booster seat

Research on booster seat use demands urgent financial support for four reasons: (1) Canadian children today are at higher risk of sustaining motor vehicle collision injuries, because they are spending more time in cars than a decade ago.[6] (2) The potential physical and emotional consequences of premature use of seatbelts can be devastating for children and families, because its associated injuries often lead to permanent paraplegia and, sometimes, death.[2,4,7] (3) Canada must capitalize on the political momentum created by the United Nations' Decade of Action for Road Safety.[8] As a participant country, our nation committed to significantly increase child restraint use during the years 2011 through 2020. In other words, we only have three years left to conduct more research and translate it into policies and programs.[9,10] Finally (4) given that premature use of seatbelt is a modifiable risk factor and is prevalent among half the population, the development and implementation of interventions to promote booster seat use is not just desirable; is imperative.

Canada has made notable progress in the promotion of booster seat use. Specifically, Canada's automobile research program has produced new booster seats that are easy to carry and install, as well as attractive to school age children.[11] Furthermore, nine provinces have now enacted laws mandating booster seat use,[12] and evidence-based education programs have been developed and implemented throughout the country.[13–15] Despite these advances, new approaches to encourage booster seat use are required, because legislation has proven insufficient to effectively promote booster seat use.[16–18] For example, in 2010, more than 10 years after booster seats became mandatory in Ontario and Quebec, the rate of utilization in each of the two provinces was only 25%.[5] Furthermore, recent research indicates that parents' perception of the safety benefit of boosters seats is the single, strongest predictor of use,[19,20] yet no study to date has tested an education intervention that increases perceived benefit.[21–34] Instead, studies conducted to date focus on teaching guidelines (i.e., minimum and maximum age, height, and weight to determine when a child should use a booster seat, and when it is safe for a child to use only the seatbelt).

My approach to encouraging booster seat use is novel, because I propose that, in addition to learning guidelines, parents need to understand two principles: (1) seatbelts prevent injuries by redirecting crash forces to stronger parts of the body (hips and chest); and (2), without booster seats, children would wear the seatbelt on their abdomen and neck, which directs crash forces to more vulnerable anatomical structures (internal organs and spine). Once parents grasp these two principles, they will appreciate the safety benefit of booster seats and, thus, will be more likely to use them.

**Background**

Motor Vehicle Collisions are the leading cause of unintentional injury death for Canadians between the ages of 1 to 14 years.[35] Injuries to underage vehicle occupants are the leading cause of mortality and second cause of hospitalization.[36] Compared to other age groups, child occupants aged 4 to 8 years are at higher risk of motor vehicle injury because approximately half of them are prematurely restrained in seatbelts, which provide less than optimal protection. In effect, using a booster seat in combination with a seatbelt reduces the risk of injury during a collision by an average of 45%, considering all crash directions, and by 68% and 82% in near- and far-side impact crashes, respectively.[37]

Previous efforts to increase booster seat use in Canada and reduce premature use of seatbelt have led to significant advances. One study, which involved direct observation of children inside cars at randomly selected intersections across country, found that the proportion of parents who forgo the use of booster seats and prematurely restrain their children in adult seatbelts decreased from 63% in 2006 to 50% in 2010.[5] More recently, province-wide surveys show that rates of booster seat use have reached 77% and 95%, in Alberta and Nova Scotia respectively. However, it is important to note that these figures are likely inflated, because the methods used (parking lot surveys and self-report) are susceptible to self-selection and self-report bias.

In Canada, interventions to promote booster seat use fall in at least one of three categories known as the Three E's of Injury Prevention[38]: engineering, enforcement, and education. *Engineering* interventions have developed booster seats that are portable, easy to install, and attractive to more mature children. The *Clek*, for example, is an award-winning booster seat developed within Canada's automotive research program, and funded by NSERC and the automobile industry.[11]*Enforcement* interventions involve enacting legislation mandating the use of booster seats. In this area, Canada has also seen progress: in 2005, only two provinces had legislation mandating use of booster seats.[16] However, today booster seat laws are in place in most jurisdictions, except the province of Alberta and the territories.[12] Lastly, *education* interventions constitute the bulk of prevention efforts to promote booster seat use, and frequently target parents' behaviours. National organizations dedicated to educating parents include Transport Canada (which provides online information for parents), Parachute (a charity organization dedicated to reducing the burden of injuries in Canada), and the Child Passenger Safety Association of Canada, an organization that certifies and supports child seat educators from all provinces. At the provincial level, private and public organizations like the Automobile Association of BC and Saskatchewan Government Insurance, offer car seat clinics, where parents are given hands-on training on booster seat use. Most of these education interventions follow evidence-based practice; that is, they combine booster seat distribution programs with education on guidelines.[14]

*Why the new approach is necessary*

As Canada progresses in the promotion of booster seat use, researchers and practitioners recognize that more advances can be readily made, particularly given the success in promoting the use of other child restraints. While booster seat use is only 37% nationally, utilization rates of other types of car seats are estimated at 90% for children one year old or younger, and 80% for children between 1 and 4 years.[5] Furthermore, while most Canadian provinces have adopted a booster seat law, legislation has shown a modest effect in the absence of education. An ecological study comparing rates of booster seat use across provinces with and without legislation showed that booster seat laws increase use, but this effect is limited in the absence of campaigns to inform the public about these devices and the law itself.[17] A study that compared rates of booster seat use in Nova Scotia before and after legislation reached a similar conclusion.[18] Finally, a cross-sectional study with 1,700 parents from provinces with and without legislation found that the best motivator for booster seat use is parents' perceived safety benefit

(i.e., an understanding of the injury risk reduction afforded by booster seats in case of a crash).[19] This finding was replicated in a second study with 1,500 parents across Canada.[20]

It follows, then, that educating parents on the safety benefit of booster seat is necessary to increase the effect of legislation. Nevertheless, current education interventions rarely include strategies to directly address parents' perceptions of the safety benefit of booster seats. Indeed, all 14 published and unpublished education interventions documented since 1987 involve education on guidelines (i.e., minimum and maximum age, height, and weight to determine when a child should use a booster seat, and when it is safe for a child to use only the seatbelt).[21–34] Out of those, five address benefit or importance without explicitly mentioning *safety* benefit;[21,25,28–30] three include a description of the potential injuries prevented by booster seats;[21,24,34] and only one describes in detail the safety benefit of booster seats (i.e., explains how booster seats ensure crash forces are redirected to the hips and chest).[39] Furthermore, none of these interventions include perceived safety benefit as an intermediate outcome measure, and instead focus on knowledge of guidelines,[21,22,31] support for booster seat law,[22,31] and reasons for not using or purchasing a booster seat.[31,32]

In summary, Canada has seen important advances in the promotion of booster seat use, in the past decade: engineers have developed booster seats that accommodate the needs and expectations of Canadian parents; legislation is in place in most jurisdictions; and evidence-based education programs have been implemented in most provinces. Despite these advances, more can be done to further increase booster seat use in Canada. Cross-sectional studies suggest that booster seat legislation should be complemented with education interventions that increase parents' perceived safety benefit of booster seats. However, no education intervention study to date has explicitly used perceived safety benefit as the main vehicle to encourage use.

**Theoretical framework: how to increase perceived safety benefit of boosters seats**

The proposed approach to educate parents on booster seat use was inspired by fuzzy-trace theory (FTT), a psychological model of decision making with applications in health.[40] FTT postulates that people often make health decisions based on stereotypes of medical conditions (e.g., "cancer are tumours," "sexually transmitted infections are fluid-borne"). Drawing upon this tenet, I hypothesize that many parents do not use booster seats because they tend to see injuries to vehicle occupants as resulting from ejection, and thus, are more concerned about the child being thrown through the windshield. This fixation on ejection takes parents' attention away from the dangers of early and incorrect use of seatbelts. The resulting thought process may be characterized as follows: "injuries to children riding in cars are ejection related; seatbelts prevent ejection; therefore, seatbelts alone are safe enough (i.e., booster seats are not needed)." Indeed, research on parental attitudes and knowledge about booster seats indicates that parents believe that seatbelts provide enough protection.[32,41,42] I have termed this misconception, the *ejection stereotype*.

Preliminary evidence for the ejection stereotype was obtained through an online psychological experiment with 312 child seat technicians, researchers, and professionals in child passenger safety. Participants had varying degrees of experience (from 0 to 39 years) and knowledge of guidelines (from 0 to 100% scores in a 9-item questionnaire). Child seat technicians, researchers, and professionals were used in this study, to examine the role of knowledge and experience in the ejection stereotype: if knowledge or experience attenuate the ejection stereotype, then participants with more experience or knowledge would be less susceptible to it.

This preliminary study used a pretest-posttest design, where experts' judgments of the safety benefit of booster seats were compared across 2 conditions: (1) At the beginning of the survey, participants were asked to rate from 0 to 100% how much booster seats, used in combination with seatbelts, reduce the risk of injury. (2) At the end of the survey, participants were asked the same question with a small modification: this time non-ejection injuries were made salient by

listing all injuries that a child passenger can sustain, including those caused by premature use of seatbelts (see Figure 2). 14 questions on attitudes and knowledge were placed between conditions 1 and 2 to reduce the influence of the first question on the next. A participant was considered to have the ejection stereotype, if his or her ratings of the injury risk reduction were higher in condition 2 than in condition 1.

Condition 1: Compared to seat belts alone, the combination of booster seat and seatbelt, used as shown in the picture, is ____% effective in reducing the risk of *injury*.

Condition 2: Compared to seat belts alone, the combination of booster seat and seatbelt, used as shown in the picture, is ____% effective in reducing the risk of injuries to the **head, neck, spine, abdomen, internal organs, as well as injuries resulting from ejection.**

Figure 2. Pretest-Posttest study on experts' perceived benefit of booster seats. Condition 1 was presented at the beginning of the online survey and Condition 2 at the end.

A Wilcoxon Sign and Rank Test indicated that, indeed, experts' ratings of the injury risk reduction afforded by booster seats were significantly higher in Condition 2 than in Condition 1 ($Z = 3.157$; $p = 0.002$). Moreover, multiple linear regressions showed that this difference was not associated with participants' knowledge of guidelines and experience, even though, the study had 96% chance of detecting a very small effect ($R^2 = 0.05$).

**Study rationale and hypothesis**

Drawing from the aforementioned theory and preliminary findings, I hypothesize that the perceived safety benefit of booster seats can be increased by eliminating the ejection stereotype. More specifically, I postulate that people become aware of the additional injury risk reduction afforded by booster seats, after they learn that: (a) seatbelts redirect crash forces to the child's thorax and pelvis; (b) booster seats ensure children wear the seatbelt correctly across the hips and chest; and (c) booster seats, used in combination with seatbelts, prevent injuries to head, neck, spine, abdomen, internal organs, as well as injuries resulting from ejection.

To examine this hypothesis, I have formulated a research project comprising two parts: (1) a *development phase*, where I will produce a new booster seat education material designed to increase perceived benefit of booster seats; and (2) a *Phase II proof-of-concept randomized controlled trial*, where the effects of the new education material on perceived safety benefit and, ultimately, intention to use will be tested in controlled conditions.

**Research Plan and Methods**

*Development phase*

Objective. To develop booster seat education material that corrects the ejection stereotype.

Participants. Twelve mothers and twelve fathers of children 4 to 8 years old, residing in the Greater Vancouver area, who speak English and drive with their children at least once a month. I chose this cut-off point, because use of all types of child seats (including booster seats) has been reported to be lower among families that drive their children less than once a week compared to more than once per week.[43] Participants will be excluded if their child has a physical condition that requires special transportation arrangements. Parents will be invited to participate, irrespective of whether they use booster seats always, occasionally, or never. This will not affect the scientific value of the focus group interviews, because the intervention is intended to increase perceived safety benefit, irrespective of the current habits around booster seats. I hypothesize that even parents who consistently restrain their children on booster seats will exhibit the ejection stereotype (e.g., some parents may be using booster seats, because it is mandated by law, not because they understand its safety benefit). Participants will receive $40/each for taking part in the focus group.

Recruitment. Participant recruitment will take advantage of a large scale study with parents of school-aged children, led by the applicants' graduate supervisor, Dr. Mariana Brussoni. Participants for both studies will be recruited through Facebook and snowball methods. In this way, the present study will have the support of a recruiting team comprising four research assistants and a full-time research manager.
Procedure. The new booster seat information material will be created by taking Transport Canada's[44] online material (click here to open link) and then by adding an introduction that explains: (a) seatbelts redirect crash forces to the child's thorax and pelvis; (b) booster seats ensure children wear the seatbelt correctly across the hips and chest; and (c) booster seats, used in combination with the seatbelts, prevent injuries to head, neck, spine, abdomen, internal organs, as well as injuries resulting from ejection. See Appendix 1. Three focus group interviews (one with fathers only, one with mothers, and one mixed) will be conducted to test the enhanced material. Focus group discussions will revolve around knowledge and beliefs about booster seats and seatbelts, as well as opinions regarding the content, wording, and format of the education material.

Analysis. The focus group interviews will be audio recorded and participants' feedback will be used to improve the material's *concept* (i.e., whether the message produced the intended effect) and *execution* (i.e., whether the material effectively conveys the intended message), as appropriate.

*Randomized Controlled Trial*
Objective. To determine if the enhanced Transport Canada online material is better than the current version at increasing perceived safety benefit and intention to use booster seats.

Design. An internet-based Phase II proof-of-concept trial (with a control group) will be conducted, in order to test if the intervention produces the intended psychological effect. The trial will use a concurrent two-group parallel randomized controlled design. The use of a control group is necessary to address threats to validity stemming from repeating observations on the same participants: learning and carry-over (i.e., learning something in the first question that then informs subsequent answers), sensitization (i.e., becoming more sensitive to differences by subsequent questions), and demand effects (i.e., noticing that the researcher wants a different response in the second question).

Randomization. Randomization schedule will be generated using the sealedenvelop.com. Randomization will be stratified by province, gender, and socioeconomic status. Additionally, randomization will be blocked to ensure balanced groups throughout allocation.

Blinding. Both researchers and participants will be blinded to allocation, even during data analysis.

Intervention. The intervention will be the enhanced Transport Canada booster seat material that was developed in the previous phase. The intervention material will be the same as the one for the control group in all respects (font size, formatting, etc.), except that it will contain an introduction explaining, in plain language: (a) seatbelts redirect crash forces to the child's thorax and pelvis; (b) booster seats ensure children wear the seatbelt correctly across the hips and chest; and (c) booster seats, used in combination with the seatbelts, prevent injuries to head, neck, spine, abdomen, internal organs, as well as injuries resulting from ejection. The final version of these introduction and accompanying figures will be decided, based on input from the focus groups.

Outcome measures. The primary outcome measures are perceived safety benefit of booster seats and intention to use them, as assessed by the Booster Seat Attitudes Scale (BSAS).[20] The BSAS has been validated and tested in a Canadian sample of parents, and the Benefit and Intent subscales of the BSAS reported good internal consistency (Cronbach's alpha of 0.85 and 0.84, respectively). Secondary outcome measures are information recall (when it is safe to start using a booster seat, how to install it, how to use it, and when it is safe for a child to use only the seatbelt) and self-efficacy (as measured by the Perceived behavioural control subscale of the BSAS; Cronbach's alpha of 0.87), their subjective estimates of the risk reduction afforded by booster seats (from 0 to 100%), their subjective estimate of the impact of the intervention on other parents, time they spend reading the material, clicks on links to additional booster seat information.

UPDATE 27 OF JUNE 2019: Factor validation of the BSAS revealed that using the Benefit subscale actually comprises Perceived Benefit (i.e., understanding that booster seats prevent injuries) and Key Benefit (i.e., understanding that booster seats prevent life threatening injuries to the spine and abdomen). Similarly, the Intent subscale of the BSAS was found to have factors: Intent to Use and Intent to Learn (i.e., intention to attend a car seat clinic or workshop). The projected intent scale, developed for this study also had two factors: Projected intent to use and projected intent to learn. These new subscales constitute the updated outcome measures.

Participants. 303 mothers and 303 fathers of children 4 to 8 years old residing in any Canadian province, who speak English and drive with their child at least once a month. Participants will be excluded if their child has a physical condition that requires special transportation. Parents will be invited to participate, irrespective of whether they use booster seats always, occasionally, or never. A sample of 606 participants provides sufficient power to detect a mean difference of 0.4 points in the Benefit subscale of the BSAS. This difference in benefit scores has been found to distinguish those parents who consistently restrain their child in booster seats from those who do not. Sample size was estimated with the `TwoSampleMean` function for trials that test superiority of interventions (TrialSize package for R). Participants in the trial will receive $1/each for the completion of the survey. Based on information from studies with similar characteristics, the expected response rate is 40%.

Setting and Procedures. The trial will be conducted entirely online. The online trial will be pilot-tested with a sample of 10 parents, recruited through the same procedure used for the focus groups. Each participant will be asked to complete the online trial, in the presence of a researcher, at their home, office, or the researcher's lab located in the BC Children's Hospital. Each participant will be asked to speak out loud as he or she navigates the online trial. The researcher will ask probing questions if participants understand the question in an unintended way, do not understand what they are supposed to do, move the mouse erratically, or express frustration and/or confusion. Participants will then be debriefed to identify any potential misunderstanding of the information provided (e.g., incorrectly inferring that seatbelts are inherently dangerous for children rather than necessary safety devices that must be used in combination with booster seats). At the end of the pilot test, participants will receive $40/each. The online questionnaire and education material will be improved or corrected, as appropriate.

After pilot-testing is complete, participants will be recruited through an online market research firm, Maru/Matchbox, which maintains a nationwide panel of 130,000 individuals whose distribution represents the Canadian population. Maru/Matchbox will send an email invitation to participate along with a link to the online survey. The landing page of the survey will provide description of the study for parents to read. The online survey will be set up in such a way that participants won't be able to start answering questions, unless they consent by clicking the "I

agree" button. Participants, will be advised to print and keep a copy of the consent form either as PDF or as hard copy. After consenting to participate, the online trial will proceed as follows:

1. Participants will complete a demographics questionnaire, the BSAS, and four questions on booster seat guidelines (e.g., minimum and maximum ages, heights, and weights to determine when a child should use a booster seat, and when it is safe for a child to use only the seatbelt).
2. The system will randomly assign the participant to either the intervention or the control group. Randomization will be stratified by sex, child age, and jurisdiction to ensure both groups are equal. This stratification is necessary because, in Canada: (a) fathers and mothers differ in their attitudes regarding child vehicle safety,[45] (b) booster seat use decreases as the child gets older,[46] and (c) provinces differ from one another in terms of legislation and booster seat education programs.[47]
3. Participants in the intervention group will be presented the enhanced booster seat material, while participants in the control group will be presented the current Transport Canada booster seat material. Material provided to both groups will be stripped of logos (Transport Canada logos and corporate identity), but will be properly cited.
4. Participants will complete again the BSAS and the questions on booster seat guidelines.
5. Participants in the intervention group will be asked one or two multiple choice questions to ensure they did not misunderstood the information in an unintended way. These questions will be designed based on the information on adverse effects collected during the focus groups and the trial's pilot. If a parent answers incorrectly, the system will clarify the information immediately after.
6. Participants in the control group will be given the option to view the enhanced booster seat material, in order to give them the opportunity to benefit from the intervention.

Analysis. The online version of the Booster Seat Attitudes Scale will be factor-validated and Cronbach's alpha of each BSAS subscale will be calculated to determine reliability. The effect of the intervention on the Benefit, Intention, and Self-Efficacy subscales of the BSAS will be examined through linear mixed effects models with random effects by province (to account for between-province differences in legislation and booster seat education programs). Multiple imputation will be used to address missing data. Intention-to-treat analysis will be conducted, by doing two separate analyses: one with the entire sample of participants and one with only participants who complete the trial. In addition, mediation analysis will be conducted to determine if perceived safety benefit mediated the effect of the intervention on intent to use booster seats. Dropout curves will be used to examine in which part of the trial participants in each condition were more or less likely to drop out. *Student's t*, *Wilcoxon Sign and Rank*, or *Mann-Whitman's U* tests will be used to compare, across groups, subjective estimates of the impact of the intervention on other parents, time spent reading the material, number of clicks on links to additional booster seat information, and pre- versus post-intervention difference in subjective estimates of the risk reduction afforded by booster seats and by seatbelts.

UPDATE 27 OF JUNE 2019:
*Increase in perceived safety benefit of booster seats (primary outcome) and increase in intention to use booster seat (a secondary outcome)* were evaluated by, first calculating the difference between the post-intervention score and the pre-intervention score for each participant. This difference was then compared with t tests (two-tailed). Parents' judgments of the impact of the intervention on their peers (a secondary outcome), which was assessed post-intervention only, was compared across study arms with the t tests (two-tailed). The same statistical analysis was used to evaluate the other secondary outcomes (parents' recall of booster seat information, Interest in booster seat information).
Intent to treat analysis was conducted by examining the sensitivity of the study to extreme values. Two additional statistical analyses were conducted for each outcome measure; one where missing values resulting from participant dropouts were imputed the highest possible score, and one where missing values were imputed the lowest possible scores.

*Ethical considerations*

There are three ethical considerations in the present research project: (1) informed consent, (2) risk to participants, (3) withholding a potentially beneficial treatment to participants. Informed consent will be obtained in both phases of the project. Consent to participate in the focus groups and pilot test will be signed on paper, and consent to participate in the online trial will be digital.

Focus groups in the development phase do not entail any known physical risk. Furthermore, psychological risks to participants in the focus groups meet the TCPS2 definition of minimal risk.[48] The topics, information, and content to be discussed or provided to parents is in the public domain (i.e., how booster seats work, and current booster seat legislation and guidelines). As a result, the risk of psychological reactions (unpleasant emotions and stress) to the information or survey questions is not greater than the risk they would experience when looking at online information on booster seats. Moreover, if parents are not aware that such information is available, it is actually beneficial for them to know it exists. Social risks to participants in the focus groups (embarrassment, stigma) also meet the definition of minimal risk. It is conceivable that some participants may reveal that they do not restrain their children in a booster seat, which is mandatory in British Columbia. However, non-use of booster seats is easily observable by any person standing near the vehicle (e.g., neighbor, passerby). Thus, participation in the focus groups poses no greater risk of embarrassment or stigma than that encountered by the same parents in their own neighborhood or a parking lot.

The trial phase also poses minimal risk to participants. There is no known physical risk. In addition, psychological risks are not greater than the risk parents experience when looking at information on booster seats, because the information provided to the control and intervention groups is available to any parent interested in booster seat information. Social risks are less of a problem, given that the survey will be conducted entirely online. It is conceivable that a small number of participants may incorrectly interpret the information as "seatbelts are unsafe." However, any potential of misapprehension of the information provided to the control or the intervention group will be reduced during in the development phase and during pilot testing.

Finally, the trial design implies that half of the participants will not be exposed to a potentially beneficial intervention. To remedy this problem, participants in the control group will be exposed to the intervention after they complete the trial. The same safeguards to prevent misinterpretation will be applied to them.

**Knowledge Translation potential**

Findings from the present study can be quickly implemented in many settings, considering how ubiquitous the internet is and how fast the information online can be updated. Transport Canada, Parachute, BCAA, and Saskatchewan General Insurance, ICBC, and any other stakeholder with online presence can enhance their booster seat information page, by adding

the proposed intervention. Furthermore, pediatricians, family doctors, and emergency physicians, who often give safety advice to parents,[49] can also use this information by providing parents with a link to any aforementioned websites. In terms of knowledge translation, the most useful feature of the intervention is that information about how seatbelts and booster seats prevent injuries remains true regardless of legislation differences between jurisdictions. Thus, the potential impact of this research extends across provinces, countries, and continents.

An important advantage of the narrow scope I adopted here is that I am developing and testing a psychological principle that can be applied in different contexts: if the present study successfully and safely demonstrates that explaining the concept of redirecting crash forces increases perceived benefit and intention to use booster seats, then the same principle can be tested in face-to-face child seat clinics or social marketing campaigns.

**Budget**

| | Source | Justification | Subtotal |
|---|---|---|---|
| PhD Student stipend | UBC, Public Scholars Initiative | $7,000/year | $7,000 |
| Compensation focus group and RCT piloting | Evidence to Innovation Seed Grant | (16 focus groups + 10 RCT pilot) × $50 each1 | $1,300 |
| Participant recruitment for RCT | Evidence to Innovation Seed Grant | $9.40 × 606 completed surveys | $5,700 |
| **Total** | | | **$14,000** |

**Timeline**

| Activity | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug |
|---|---|---|---|---|---|---|---|---|---|
| Development of education material | | | | | | | | | |
| Focus group testing and adjustments | | | | | | | | | |
| Ethics certificate amendment | | | | | | | | | |
| Data collection | | | | | | | | | |
| Data analysis | | | | | | | | | |
| Report writing | | | | | | | | | |

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## Study Information

### Education and attitudes towards booster seats and seatbelts

The purpose of this study is to evaluate parents' reactions to two different information materials about booster seats and seatbelts. You are being invited to participate, because you drive with a child 4 to 8 years old at least once a month. If you choose to participate, you will be:

1. Asked to complete an anonymous questionnaire about booster seats and seat belts.
2. Randomly assigned to read one of two different information materials (50-50 chance).
3. Asked to complete a second questionnaire.
4. Given the opportunity to review the information material you did not get to see.

Your participation is voluntary.

No risks are expected as a result of participating in this study. Just note that the information we provide is general and does not constitute specific advice on booster seats and seatbelts. By participating in this study, you may increase your general knowledge of booster seat and seatbelts. If you want to learn more, we will give you a list of resources.

This study is part of Mr. Takuro Ishikawa's doctoral thesis. Mr. Ishikawa is a student in Experimental Medicine Program at the University of British Columbia, and is supervised by Dr. Mariana Brussoni, an Associate Professor in the Department of Pediatrics.

The information collected is subject to the privacy and confidentiality conditions of the Maru Voice of Canada and Maru/BLUE.

**By completing the questionnaire, you are consenting to participate in this research.**

**Questions about this study?**
Contact the Principal Investigator, Dr. Mariana Brussoni: 604-875-3712 – mbrussoni@ubc.bcchr.ca.

**Concerns about my rights as a participant in this study?**

Please contact the Research Participant Complaint Line in the University of British Columbia Office of Research Ethics at RSIL@ors.ubc.ca or 604-822-8598 (Toll Free: 1-877-822-8598).

O I agree to participate.

O I do not agree to participate.