



## Research Article

# A video-based approach to promote safe driving among foreign visitors to Japan

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## ABSTRACT

Recently, the demand for car rentals has been increasing at tourist destinations in Japan due to their convenience and the high degree of freedom they offer. On the other hand, there is a problem of a dramatic rise in the number of traffic accidents involving drivers from countries with different traffic customs and cultures from Japan. In order to examine measures to reduce the traffic accident risk of foreign drivers visiting Japan, an animation video to promote safe driving was created and its educational effects were tested in this article. First, through a driving survey of foreigners and a review of preceding studies, we identified information on Priority, Speed, and Comprehension (PSC) that must be learned by foreign visitors to reduce their accident risk. Next, drawing from the technique of branded contents in order to enhance the effects of educational videos, we created a short video that conveys the PSC philosophy that should be understood for safe driving in Japan. We then tested the educational effects of the video by conducting a survey of Taiwanese people. The results show that strengthening the video's appeal leads to improvements in educational effects and therefore safety awareness. We also realized that the effect was particularly significant among young people in their twenties. Lastly, the rent-a-car businesses evaluated the videos and basing on their input, we summarized effective ways for foreign rent-a-car users visiting Japan to use the video.

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## 1. Introduction

Recently, various policies to attract more foreign visitors to Japan, including the government's "Visit Japan Project," have begun to bear fruit, and the number of foreign visitors to Japan is dramatically increasing. At the same time, the form of tourism has diversified, and one of the consequences is the emergence of demand for car rentals to allow visitors go places where public transport is not well developed. In fact, the number of foreign users of rented cars in 2011 was 179,000, which saw an approximate four-fold increase to 705,000 in 2015 (Cabinet Office, Government of Japan [1]).

Rental cars serve to expand tourists' mobility and spread tourism benefits even in rural areas. On the other hand, because the driving environment in Japan is characterized by different traffic rules, road structures, and driving habits than the ones foreign drivers are accustomed to, it is feared that such differences would lead to traffic accidents. At present, the number of traffic accidents caused by foreign drivers is extremely low compared to the number caused by Japanese drivers. Hence, it is not yet seen as a problem. However, as Fig. 1

shows, the number of traffic related injury and fatal accidents caused by foreign visitors using rented cars has annually increased (as if mirroring the increase in the number of foreigners who rent cars) from 24 accidents in 2013 to 123 in 2017 (Cabinet Office, Government of Japan [1]). Fig. 1 also shows that although the number had continued to decrease gradually, the number of injury and fatal accidents caused by all rent-a-car users increased between 2016 and 2017 (Cabinet Office, Government of Japan [1]).

Furthermore, in the expectation that the number of foreign visitors to Japan will continue to grow due to, for instance, the Tokyo Olympics and Paralympics in 2020, it is expected that the risk of serious traffic accidents caused by foreign tourists will also increase. Traffic accidents caused by foreign tourists might cause a negative economic impact on the local community, losses to the drivers themselves, and damage to Japan's image through word of mouth. With regard to attracting more foreign visitors in the future, it is urgent to implement measures against traffic accidents by foreign users of rental cars before the problem becomes apparent. Thus now is the time to re-think about the safety problems related to the rent-a-car service not only for foreign drivers but also for Japanese drivers.

Against this background, the major policies to reduce the risk of traffic accidents targeting foreign drivers visiting Japan have been as follows: 1) handing out an educational leaflet; 2) awareness raising at

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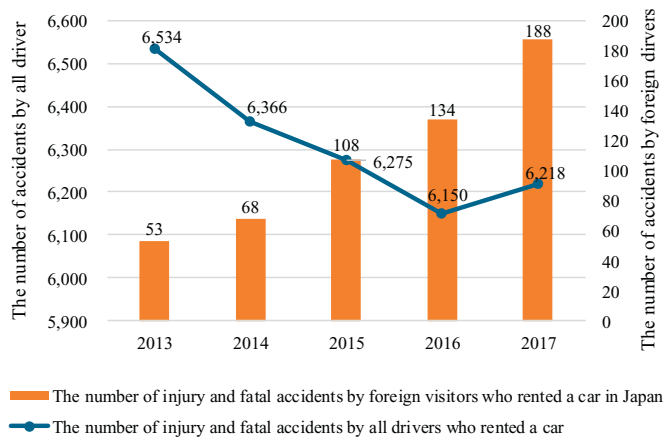


Fig. 1. The numbers of traffic accidents involving people renting a car.

the rent-a-car shops; 3) improving the designs of traffic signs that are different from the world standard (putting English on the sign and introducing multi-lingual signage); 4) raising awareness through colored tarmac, signs, and billboards at accident-prone places, and 5) displaying a sign on the vehicle indicating a foreign driver visiting Japan. Measures 1 and 2 are educational policies implemented before driving, but it is burdensome for foreign visitors to read through the leaflet and it puts excessive pressure on rent-a-car businesses to raise awareness in multiple languages in shops that might be very busy. On the other hand, Measures 3, 4, and 5 are policies to reduce the risk of accidents while driving, not policies to directly educate drivers or to change their awareness.

Accordingly, this study has elected to focus on implementing such efforts through videos as a medium that can be viewed easily with a device connected to the Internet, such as smart phones. And as an educational medium, it can be expected to change drivers' awareness in addition to conventional policies.

The study examines the format and content of a video that can educate viewers effectively and tests the effectiveness of the video based on the requirements of the educational contents.

## 2. The background and position of the study

### 2.1. The problem of foreign drivers from the perspective of traffic culture

In addition to conventional standards, which deal with road safety such as traffic engineering, traffic psychology, and automotive engineering, we need to take into account different cultures and customs in order to solve the problem internationally and across different standards.

Here we review traffic culture and driving habits, drawing from the concept of cultural capital advocated by the sociologist Pierre Bourdieu. Having defined three forms of capital; economic, social, and cultural capital, Bourdieu further classifies the concept of cultural capital into the following three forms: 1) objectified, 2) institutionalized, and 3) embodied cultural capital. Furthermore, Bourdieu argues that living in a given environment surrounded by its cultural capital for a period of time causes a systematized disposition of perception and behavior adapted to the environment to manifest itself. This embodied disposition is called "habitus," and individuals unconsciously repeat their perception/thinking/behavior based on habitus.

To apply this to road safety for foreigners, we first note that there is embodied cultural capital, such as driving techniques and knowledge deeply rooted in the locality, as well as characteristics of traffic accidents and traffic offenses. There is also objectified cultural capital that includes traffic signs/displays, traffic lights, road structure, and the satellite navigation system; while institutionalized cultural capital, includes the driving license system, traffic regulations and patrols, and road safety education in each country/region (Fig. 2). Based on these factors, each

country/region will form its own distinct habitus for driving. We can now make sense of the reason why foreigners repeat their particular risky driving behaviors in Japan. It is because they are following a habitus that they are not aware of or that they cannot easily change.

In fact, an earlier study [2] showed through the analysis of statistical data on traffic accidents and offenses collected by the police that differences in traffic culture and habits are reflected in the tendencies in certain traffic accidents/offenses caused by foreign drivers in Japan. Also, Yannis et al. [3] have shown that in an unfamiliar road environment and under unfamiliar traffic regulations, the risk of traffic accidents caused by foreign drivers increases. Furthermore, Kim and Zhang [4] have shown through a revealed preference survey with foreign drivers in New Zealand that an unfamiliar road environment constitutes a risk factor for accidents by foreigners.

Taking the above into consideration, and in addition to conventional measures to promote safe driving, it is important to make foreigners aware of differences between the traffic cultures (cultural capital) of Japan and other countries. There is also need to make them aware of the differences between the driving habits (habitus) in Japan and abroad, which remain unclear to the foreign drivers. In so doing, their awareness of this unique situation will increase and thus reduce the risk of accidents.

### 2.2. Discussion of measures to reduce the traffic accident risk of tourists visiting Japan

The current article reports on some findings of a research project on this topic funded by the International Association of Traffic and Safety Science (Research Project 1710B and 1611A). As measures to encourage safe automotive journeys among foreign tourists visiting Japan, the project proposes a series of safe driving measures: 1) changes in the awareness of safe driving using an educational animation video, 2) On arrival in Japan, and 3) raising awareness during driving with an accident risk map. The project has further developed educational media to be used in these measures. The current article focuses on Measure 1, changes in awareness of safe driving outside Japan using an educational animation video, and tests its effectiveness.

With respect to Measure 2, the authors provided the technology for and supervised the production of the "Kyushu Rent-a-Car Driving Manual" (Fig. 3), produced mainly by the Kyushu Transport Bureau of the Ministry of Land, Infrastructure, and Transport. The manual provides simple explanations that allow the reader to confirm important points that foreign visitors to Japan should be aware of to drive safely in Japan by indicating them visually. Also, on those points where Japanese rules differ from those of other countries, such as the priority given at intersections, traffic lights and signs are explained with

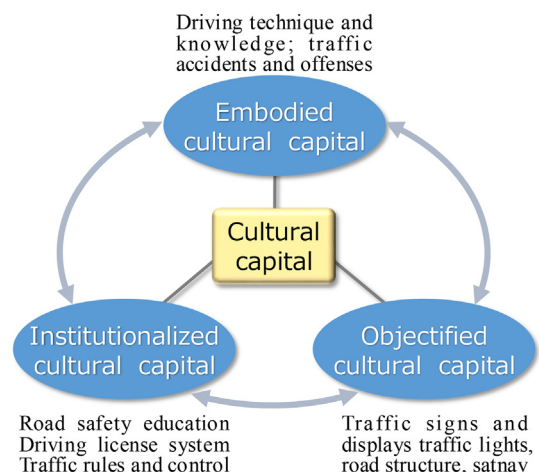


Fig. 2. Composition of cultural capital in the context of road safety.



Fig. 3. Proposed driving manual for foreign visitors.

illustrations for easy comprehension. The manual describes the types of traffic accidents foreign users of rented cars tend to cause and explains what to do in the case of an emergency. In order to make the manual more attractive to carry around, the manual has information and driving instructions about major tourist destinations and sightseeing information in Kyushu. As described above, the project has developed a pamphlet with high usability for both foreigners and rent-a-car businesses.

Turning to Measure 3, the project has visualized traffic accident risks for foreigners on the map. By presenting a 2D map (Fig. 4, left) to foreigners visiting Japan, drivers can see places with high accident risks beforehand and obtain information about safer routes. Furthermore, the 3D map depicting accident risk (Fig. 4, right) can be linked

to the satellite navigation system and ETC 2.0, which enables the driver to obtain real-time information, which is expected to encourage the selection of routes focused on safety.

### 2.3. Review of earlier studies

Road safety education is used across the world as the major method to reduce traffic accidents. Earlier studies evaluated the impact of educational programs by using various educational methods targeted at specific groups, such as young people or the elderly.

Stojanová and Blašková [5] determined the economic efficiency of the Czech Republic's nationwide road safety campaign, "Think or you'll

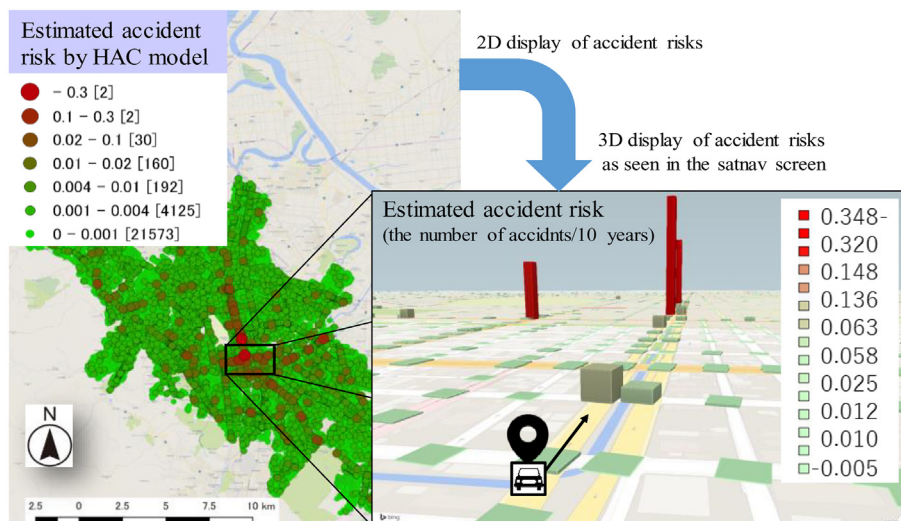


Fig. 4. Mapping of estimated accident risks.



pay,” by comparing the economic losses due to traffic accidents to the cost of the campaign. Gerber et al. [6] classified young people based on their risk profiles and attempted to draft road safety education strategies for different categories of drivers by analyzing the characteristics of communication and media use of each category. On the other hand, Twisk et al. [7] evaluated five short RSE (road safety education) programs targeting young people to show that there is no difference in the impacts of fear-evoking and cognitive programs. Furthermore, Cuenena et al. [8] evaluated a road safety education program targeting high school students that used the testimonies of victims (or their relatives/acquaintances) of traffic accidents. In addition, Hawley et al. [9] performed an evaluation of the impact of a road safety education program targeting the elderly delivered in a classroom, while Ben-Bassat and Avnieli [10] evaluated road safety education for kindergarten children using changes in parents' awareness as an index. Furthermore, Wang et al. [11] evaluated BBS education for commercial drivers and showed that the most effective method was a coaching method using statistical data and real graphics. Phillips et al. [12] carried out a meta-analysis of 67 studies of road safety education programs carried out in 12 countries between 1975 and 2007 and determined the average impact of road safety education.

As seen above, many studies have been conducted on road safety education. On the other hand, there has been no such study of road safety education delivered in a short period of time targeting foreign tourists. Consequently, the current article examines an educational method for safe driving that uses a video, which can be expected to produce results in a short period of time. This is in order to raise awareness of foreigners about road safety in Japan.

The study focused on a video that can be easily provided to foreigners visiting Japan regardless of their location. Palmiter et al. [13] have shown that a demonstration using animation immediately contributes to faster and more accurate task execution than does written instruction. On the other hand, they have also shown that in the environment in which the content is applied, the group that learns with written material shows higher effectiveness. Their study therefore suggests that animation does not necessarily lead to deeper understanding. Ercan et al. [14] identified the effects of teaching materials using animation on the academic achievement and attitudes of seventh graders in the field of science and technology. While the pupils achieved deep understanding of the content of the teaching material by virtue of the animation, it was shown that there was no impact on attitudes towards science and technology themselves. Jia [15] has shown that teaching materials with animation are better than those without animation with respect to effectiveness, efficiency, and learning possibilities. These studies suggest that education/awareness raising using animation is effective to a certain degree. Drawing from these studies, this study examines the educational contents of the video and tests the educational effects of the produced video.

### 3. An examination of educational content based on a driving survey of foreigners

#### 3.1. Outline of the survey on driving a rented car in Hokkaido

Table 1 shows an outline of the survey of foreigners on driving a rental car in Hokkaido that was conducted as part of this study to investigate foreign drivers' confusion and sense of danger while driving in Japan. The survey was carried out in Hokkaido, a very popular destination among foreign visitors to Japan, in October, when there is a relatively large number of visitors and there is no snow on the ground. The participants were recruited from students and graduates of Japanese universities whose laboratories deal with transportation related research. Then three South Koreans and three Taiwanese who had obtained a driving license in their home countries and who had very little driving experience in Japan but more than three years of driving experience in their mother country participated in the survey. The

**Table 1**

The survey outline.

Dates	From Saturday, October 22, 2016, to Sunday, October 23, 2016 ※There was no snow on the ground during these two days.
Participants	3 Koreans and 3 Taiwanese drivers licensed in their home countries with very little driving experience in Japan, but with more than three years' experience driving in their home countries.
Method	Driving a rental car to the destination using satnav in their mother tongue. The drivers took turns driving with a maximum turn of 3 h to avoid the impact of fatigue. Interviews were conducted afterwards.
Drive routes	A sight-seeing route that is very popular among foreign visitors to Japan (normal road). First day: New Chitose Airport→Sapporo→Otaru→Sapporo (about 125 km). Second day: Sapporo → Otaru → Yoichi → Niseko → New Chitose Airport (about 219 km).

traffic expenses, accommodation charges and daily allowance were fully paid to them.

The participants were asked to drive to the destination specified by the experimenter according to satellite navigation in their mother tongue. So as not to be impacted by fatigue due to long driving, the drivers took turns every 3 h at most. After the drive, we interviewed the drivers and asked them about the confusion and sense of danger they experienced while driving.

The driving routes were set to destinations popular among foreigners. In this survey, all the routes avoided using automobile-only roads.

#### 3.2. The confusion and sense of danger felt by foreign drivers while driving in Japan

##### 3.2.1. Road traffic signs/displays

There are major differences in traffic rules and traffic signs/displays between Japan and other countries. The current section describes the confusion and sense of danger the foreign drivers felt about traffic rules and signs/displays during the driving survey. One source of confusion that all participants mentioned is that the speed limit was unclear. In South Korea, the speed limit is displayed on the satnav, and in Taiwan there are many signs displaying the speed limit. However, the participants could not find many such signs/displays during the driving survey, and as a consequence, they drove so as to match their speed to that of other cars.

In addition, it was pointed out that the Japanese stop sign was difficult to understand. Fig. 5 shows four stop signs. In South Korea, Hong Kong, and Taiwan, the stop sign is a red octagon. On the other hand, in Japan it is a red triangle. In addition, although the stop signs have been increasingly updated or replaced with ones with “STOP” added, many existing signs only say “stop” in Japanese. This appears to be a major source of confusion among foreign drivers.

In addition to the above two points, it was stated that because the lines on the road, and in particular the center line, differ in color and shape depending on the location, it was not clear which was the center line. In fact, it was unclear which lane to proceed to after turning right at an intersection.



**Fig. 5.** Cross-national comparison of stop signs.

### 3.2.2. The traffic light/signaling system

Traffic lights are not only devices to secure a smooth flow of traffic but also devices to secure safety by preventing the intermingling of vehicles and pedestrians at intersections by clearly indicating priority by direction. There are some differences in the traffic light/signaling system from country to country, and because these differences pose a threat to traffic safety, the current section focuses on these differences.

The most important difference is the length of the traffic light cycle. The traffic light cycle in Japan is relatively short compared to the rest of the world, at about 60 to 90 s. On the other hand, South Korea and Taiwan, the native countries of the participants in the survey, and Southeast Asian countries have many intersections where the traffic light cycle lasts for about 180 s. It was stated for this reason that drivers tend to enter the intersection without reducing speed when the light is amber or changing to red in order to avoid waiting for the traffic light to change back to green. In addition, they claimed that traffic signal quickly turns from yellow to red before entering an intersection. This is because their perception of the duration of yellow light is shorter than that in their countries. During the driving survey, we also witnessed dangerous entries into intersections when the traffic light was changing.

It was also pointed out that differences in the traffic lights themselves lead to confusion. Although this is not universally applicable, in Japan, traffic lights are often placed at the back or far side of the intersection; on the other hand, in some countries, traffic lights are often placed at the entry to the intersection, in other words, in the middle of the stop line and intersection. A Taiwanese driver stated it was difficult to see the traffic lights during the survey because they were placed at the back of the intersection. Furthermore, some participants stated, for example, that the traffic lights were weak and difficult to see, which made it difficult to understand which direction the arrow light was indicating, and that the lights were positioned differently.

### 3.2.3. Differences in driving habits

This section discusses differences in traffic customs and safety awareness. The biggest difference in this regard is driving lanes. Japan is one of only a few countries in which cars drive on the left; in many of the countries such as South Korea and Taiwan, from which visitors come, cars drive on the right. In the driving survey, all six foreign drivers agreed that it was easy to get used to the driving lane once they had driven for about half an hour. On the other hand, there was a statement that they may make an error when something happens.

### 3.3. Understanding traffic accident risk based on a comparison with earlier studies

The driving experiment in this study identified differences in signs/displays, the traffic light/signaling system, and the driving lane as major accident risk. In a previous study by two of the authors [2], it was shown that foreign drivers tend to commit more traffic offenses related to “comprehension” than Japanese drivers, in other words, those related to knowledge/understanding of traffic rules, and the current study agrees with this finding. It has also been shown that Asian drivers tend to commit traffic offenses related to “priority,” i.e., priority on the road, and that they are more likely to suffer accidents at intersections. The driving survey in the current study confirmed that stop signs placed at intersections without traffic lights and the traffic lights controlling the intersection generate confusion and a sense of danger in foreign drivers. It has been suggested that because of low “comprehension” (knowledge/understanding) of traffic signs and lights indicating the priority given in the intersection, the “priority” at intersections under which vehicles and pedestrians intermingle is not observed.

## 4. Producing a safe driving education video and testing its effects

### 4.1. Branded contents

Recently, branded contents, also known as branded entertainment, which blend advertisement and entertainment, have been spreading in the world of marketing. This is a new advertising technique that seeks to achieve empathy by conveying the company's story or philosophy and by attempting deep communication with viewers, unlike conventional (TV) commercials, which simply convey the product's attractiveness and promote its sales (Hudson & Hudson) [16]. Many branded contents emphasize “self-projection” in order to increase customer engagement and try to attract consumers. This study adopted the branded content method for road safety education and produced a video to educate viewers by engaging their empathy.

### 4.2. The production of the road safety education video

First, the video was animated so as to attract everyone's attention. The video was non-verbal and visual so that the content could be conveyed without sound, although it did use sound to a certain extent. In addition, in order to enable self-projection onto the video content, different characters are used in different countries/regions. The video shows a character renting and driving a car in Japan. More concretely, in the English version, the character is a teddy bear, while the Chinese version uses a panda bear in traditional costume and the Taiwanese version an Asian black bear (Taiwan bear). The video blends educational contents with entertainment.<sup>(note)</sup>

Rather than trying to teach all of Japan's detailed traffic rules, the emphasis was placed on conveying the PSC philosophy that should be comprehended in order to drive safely in Japan. In other words, the video consisted of the following contents: 1) an overview of traffic accidents caused by foreign drivers in Japan; 2) provision of basic information regarding the rules of driving in Japan; and 3) an explanation of priority in preventing serious accidents, i.e., the raising of speed awareness. The video was about 4 min long so as to convey in a short period of time the PSC philosophy that needs to be comprehended to drive safely in Japan.

### 4.3. A survey at the Taipei International Travel Fair to test the video's effectiveness

#### 4.3.1. Hypotheses to be tested and outline of the survey

The study tested the hypotheses that by watching the video “it is possible to learn differences in the rules of driving between Japan and one's own country and to be motivated to drive carefully” and “it is possible to promote changes in awareness so as to better observe speed limits and priority to prevent serious accidents.” In order to test these hypotheses, a survey was carried out mainly among Taiwanese visitors to the Taipei International Travel Fair (hereafter, ITF), where many people come who are interested in visiting Japan. Table 2 shows an outline of the survey.

As for survey content, questions were created evaluating the video's appeal, based on the results reported in Section 3. In addition, with reference to motivations for safe/careful driving after watching the video and the results reported in Section 4, questions about changes in the viewer's awareness of priority and speed were constructed. At the survey site, after a preliminary section asking the respondents about their basic attributes, there was a video viewing section, followed by a questionnaire on changes in awareness after watching the video.

#### 4.3.2. Respondents' attributes

There were 452 effective responses, of which 448 responses were from Taiwanese, and of which 324 responses were from licensed drivers. The current article mainly focuses on the responses of the licensed drivers in its analysis.

**Table 2**  
The survey outline at the Taiwan International Travel Fair.

Subject	Mainly involved Taiwanese who appeared to be interested in travelling
Survey content	Impressions and responses to the educational video on safe driving in Japan. In the case of licensed drivers, awareness of driving in Japan
Survey method	Web-based survey (using Survey Monkey in Taiwanese and English). A leaflet with the URL of the survey site was handed out at the Fair. Participants were asked to participate by publishing the URL on the ITF's official web page.
Survey period	Leaflets were handed out at the fair venue on October 28 and 29, 2017. The URL was published on the ITF's official Facebook page from October 30, 2017. The survey site was closed on December 1, 2017.
The number of leaflets handed out/responses	With help from the National Traffic University, 958 leaflets were handed out. We received 452 effective responses, of which 324 were from licensed drivers. (Break-down of nationality: Taiwanese 448, Hong Kongers 4, Malaysians 2)

Fig. 6 shows respondents' attributes. By gender, 34% of the respondents were male, and 66% were female. As for age, young people under the age of 29 accounted for 45% and those between 30 and 39 years old accounted for 32%, thus yielding a relatively high response rate among young people.

Table 3 cross-tabulates the number of visits to Japan for sightseeing by the licensed drivers and the number of days they spent driving in Japan. Of the respondents, 86% had been to Japan and about 30% were very frequent visitors who had been to Japan five or more times. The proportion of respondents who said they have driven in Japan was about 14%. As the number of visits to Japan increases, the proportion of those with driving experience in Japan increases, and among frequent visitors, the proportion who have driven in Japan is 27%.

#### 4.4. The video's educational effects and change in awareness after watching the video

The respondents were asked to evaluate the video's appeal using an 11-point scale (0: I do not think so at all, 5: I do not feel anything, 10: I agree completely; Table 4). The mean scores of all questions were five or more, which demonstrates the video's appeal to a certain extent. The highest mean score for both driving and non-driving licensed drivers was given to "the video was easy to understand." With regard to the differences between the mean scores of driving and non-driving licensed drivers, there was hardly any difference in the item "the video was easy to understand." On the other hand, the largest difference among

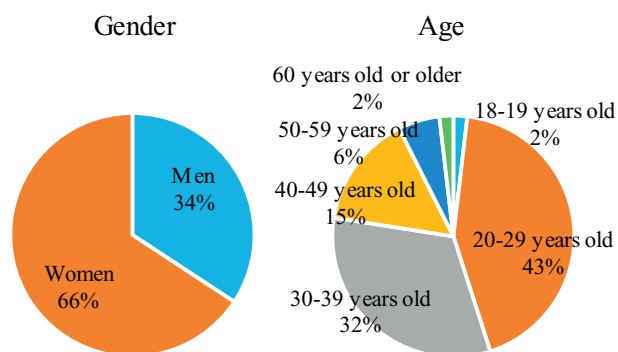


Fig. 6. Gender and age of respondents.

**Table 3**  
The number of visits to Japan by participants and the number of times they drove in.

The number of visits to Japan (for sightseeing)						
(For sightseeing) The number of driving days	0 times	1–2 times	3–4 times	5 or more times	Total	Proportion
0 days	45	110	53	70	278	85.8%
1–2 days		4	2	2	8	2.5%
3–4 days		2	3	5	10	3.1%
5–6 days		2	3	10	15	4.6%
7 or more days		4	0	9	13	4.0%
Total	45	122	61	96	324	100.0%
Proportion	13.9%	37.7%	18.8%	29.6%	100.0%	
The percentage of those with experience of driving	0.0%	9.8%	13.1%	27.1%	14.2%	

the four question items was found for "I learned something new from the video." These results suggest that the video produced for the study was easy for anyone to understand, while at the same time providing some new information to licensed drivers who had knowledge of driving.

Fig. 7 shows the results concerning changes in awareness of safe driving after watching the video. There were four options for responses: "I am more aware of this," "no change," "I am less aware of this," and "I don't know." After watching the video, the majority of responses for all items reported an improvement in safety awareness. In particular, the safety awareness of more than 60% of respondents regarding the following six items improved: "If I see a sign or display about the speed limit, I will drive within the limit," "I will not drive if I have had any alcohol," "At an intersection without traffic lights, I will stop so that other cars can go ahead," "If I see pedestrians near the pedestrian crossing, I will stop or reduce speed to give them priority," "I will drive more carefully and safely in Japan than in my own country," and "Before driving in Japan, I will learn Japanese traffic rules."

#### 4.5. Analysis of the appearance structure of the video's educational effects

In order to test the structure through which awareness of foreign visitors to Japan changes in a safer direction, we hypothesized that "the video's appeal" and "educational effects" directly or indirectly influence "change in awareness" and examined the structure derived from covariant structure analysis. For the analysis, "SEM," a statistical analysis software package in R, was used. The path coefficient in this article is shown as a standardized estimate.

Fig. 8 shows the results of the analysis for respondents of all ages and the observed variables of each constitutive concept. The values of CFI = 0.981 and RMSEA = 0.056 confirm that the fit of the structural model of change in awareness used in this study is good, and the analysis show that the paths from "the video's appeal" to "educational effects" and from "educational effects" to "change in awareness" are statistically significant. In other words, a structure was tested in which the stronger the video's appeal, the stronger the educational effects, thereby contributing to a change in the awareness of viewers. In the structural model shown in Fig. 8, in addition to "the video was easy to understand," "the appropriateness of the video length" and "nice characters (ease of

**Table 4**  
The video's appeal.

Item	Mean score	
	License holders	Non-license holders
The video was easy to understand	8.50	8.52
I learned something new from the video	7.86	6.46
Nice characters	7.29	6.87
The video length was appropriate	6.84	6.39
I want to drive in Japan	6.60	–

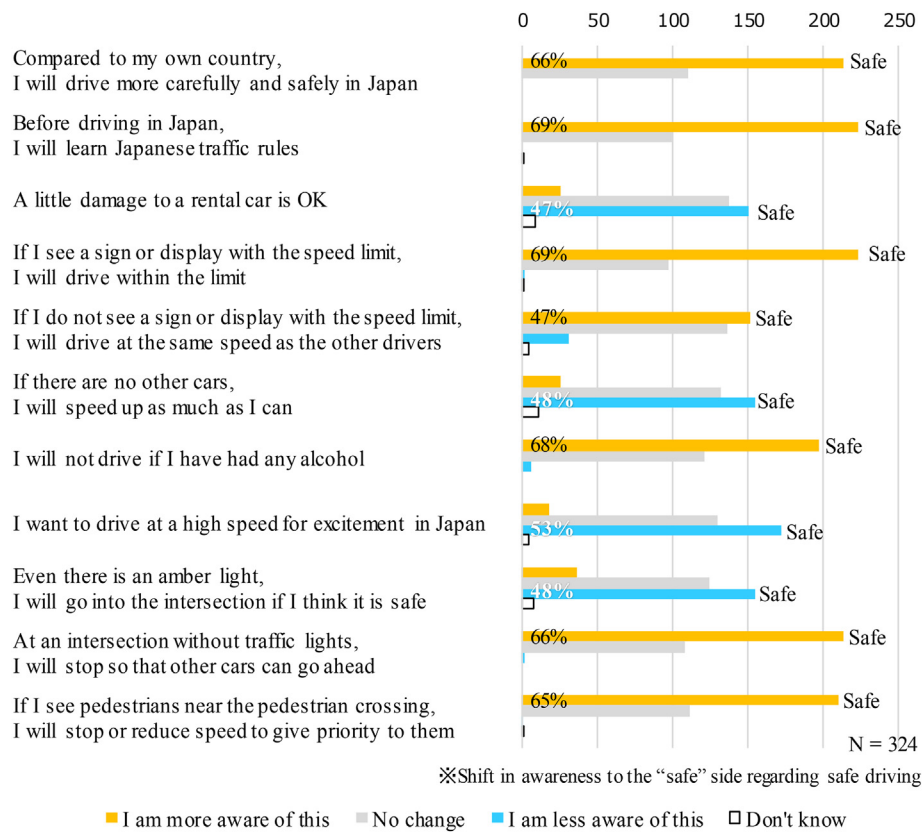


Fig. 7. Changes in awareness of safe driving.

self-projection) are considered explanatory factors of the video's appeal, and among them, "the appropriateness of the video length" has the highest exploratory power. This result suggests that a video with a length appropriate to attracting and maintaining the viewer's attention is particularly important in enhancing its educational effects.

Similar analyses for each gender and age groups (e.g. 30–39) were applied to examine the strength of the influence of the video's appeal on the change in awareness. Then the calculated coefficients among the latent variables were compared. As a result, the coefficients of the analysis for people aged 20–29 are larger than those of the other age groups. Fig. 9 shows the result of the analysis for young people aged 20–29. The values CFI = 0.958 and RMSEA = 0.089 indicate a good fit

in the model. This result suggests that the video's appeal has stronger influence on educational effects and change in awareness among young people.

#### 4.6. The video's effectiveness from the perspective of the rent-a-car business

So far, evaluation has been carried out from the perspective of video users. For the current section, in order to apprehend the views of businesses, we carried out a survey of rent-a-car businesses with shops near major international airports. A total of 201 questionnaires were sent out and 24 (response rate: 11.9%) were returned. Because of the low response rate of this survey, it is possible that the interpretation

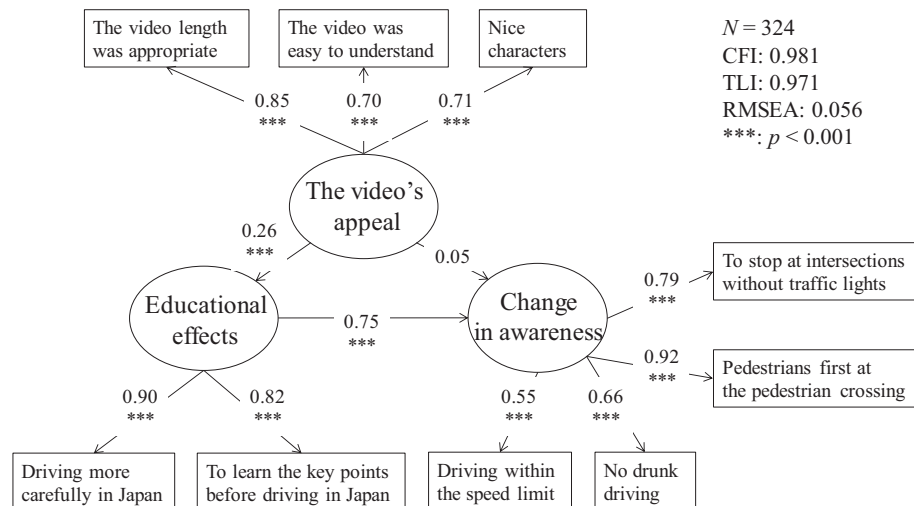


Fig. 8. Covariance structure analysis across all ages.



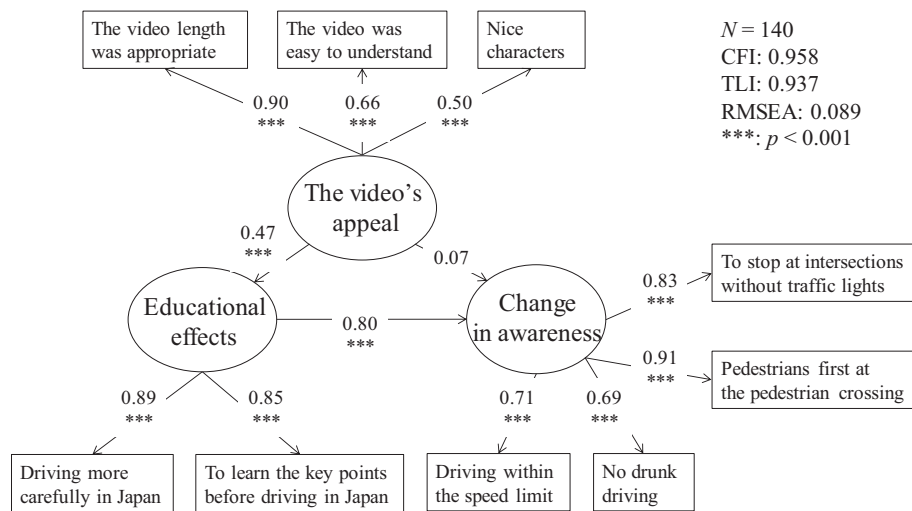


Fig. 9. Covariance structure analysis with young people.

below covers only the opinions of the rent-a-car businesses that joined our survey. Fig. 10 summarizes the businesses' evaluations of the video. In this questionnaire, the respondents were asked to respond using an 11-point scale from 0 (I don't think so at all) to 10 (I agree completely). The mean score of all question items exceeded 5, which shows that the video was evaluated positively by businesses as well. Respondents want the video to be produced in many languages and to publish the video on the booking site for car rentals. A certain number of responses held the video's length not to be appropriate. Fig. 11 shows a list of the safety information the rent-a-car businesses convey at the shop (multiple choice). "The type of petrol to put in" and "rules about parking" are pieces of information that rent-a-car businesses see as most important, but the video produced for the study does not include them. It is assumed based on this evaluation that some important information is missing from the video and it has been suggested that its length is inappropriate. However, as the video provides information to prevent traffic accident on the road, this demonstrates its usefulness.

## 5. Conclusion

This study summarizes the key points in creating an animation video to raise the safe driving awareness of foreign visitors visiting Japan. Its educational effects among potential Taiwanese visitors was tested at the ITF.

First we conducted a driving survey of foreigners and investigated the confusion and danger foreign drivers feel when driving in Japan.

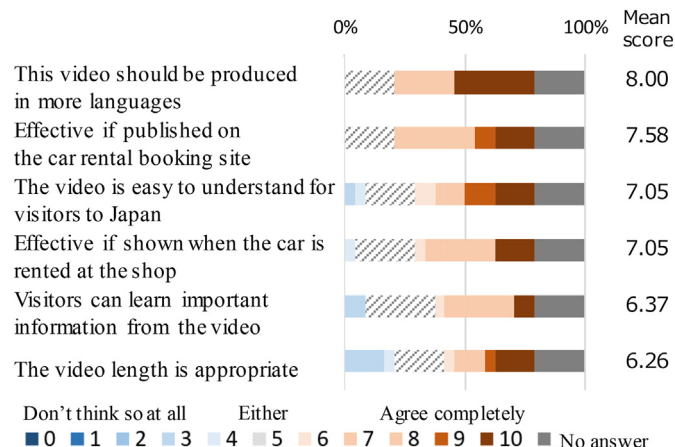


Fig. 10. Evaluation of the video by the rent-a-car business.

It was confirmed, in line with the findings of earlier studies, that stop signs, which are often installed at intersections without traffic lights, and the signals that control the intersection induce confusion and a sense of danger among foreign drivers. Furthermore, it has been suggested that these feelings are due to a low "comprehension" (knowledge/understanding) of traffic signs and of lights that indicate priority at the intersection, thus leading foreign drivers not to observe the priority at intersections where vehicles and pedestrians intermingle.

Drawing on the results of the driving survey, a road safety educational video for foreign visitors to Japan was produced using the method of branded contents. In other words, instead of teaching traffic rules in detail over several hours, a self-projection (engagement) style of video using an animated story that conveys the PSC philosophy in a short period of time was created by combining entertainment and educational information.

Furthermore, the study tested the video's educational effects among potential visitors to Japan. The video itself was largely well received. In particular, the evaluation of the ease of comprehension of the video, the freshness of the content, and the characters used was relatively high, which suggests that the blending of educational effects and entertainment and reflecting the result of the driving survey were effective. A degree of positive change in awareness of safe driving was observed in respondents after they watched the video. In addition to learning Japanese traffic rules before driving in Japan and driving more carefully in Japan than in the respondent's home country, we observed a significant change in items related to priority and speed ("If I see a sign or display about the speed limit, I will drive within the limit," "I will not drive if I have had any alcohol," "At an intersection without traffic lights, I will stop so that other cars can go ahead," and "If I see pedestrians near the pedestrian crossing, I will stop or reduce speed to give them priority").

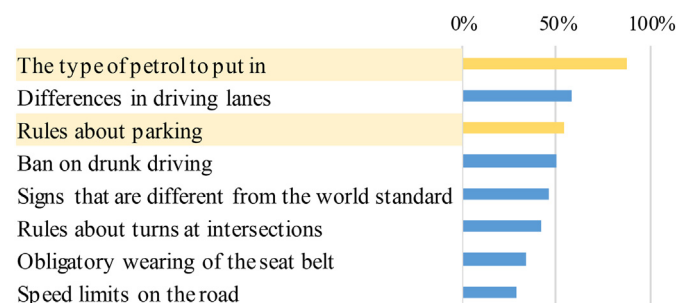


Fig. 11. Safety information provided by the rent-a-car business at the shop.



Furthermore, we investigated the appearance structure of the video's educational effects using covariance structure analysis. The results show that the video's appeal consists of the video length, its ease of comprehension, and the pleasant characters used in it, and thus it motivates viewers to learn the traffic rules in Japan and attempt to drive carefully, and in turn encourages the observation of priority and speed rules and regulations. This was particularly significant among young people who are familiar with media use.

The study produced a road safety promotion video targeting foreign visitors to Japan and confirmed the video's educational effects and effects on changing awareness. On the other hand, the evaluation of the videos length among potential visitors to Japan and by rent-a-car businesses in Japan was relatively low. However this result doesn't cover the whole rent-a-car business's opinion in Japan because the response rate of this survey is only 11.9% (24 responses). This could be due to the fact that the authors' intention in creating the video was to emphasize the branded contents method, which resulted in a discrepancy in awareness with the rent-a-car businesses, which see the comprehensive provision of information to the user as their mandate.

In light of these results, in addition to prompting the change in awareness brought about by the video produced for the study, it is desirable to devise integrated information provisions combining Measure 2 (provision of information about traffic rules using a driving manual when picking up the rental car in Japan), and Measure 3 (raising awareness before and during driving using the accident risk map) in a complementary manner.

Furthermore, the video can be viewed on smart phones by visitors coming to Japan and it can be linked to a variety of sites, including overseas sites promoting tourism in Japan, web pages for booking car rentals, on the plane to Japan, or on the shuttle bus taking the tourists from the airport to the rent-a-car shop. These possibilities make the video a very versatile medium.

This study aimed to build a new relationship in which foreign visitors to Japan watch the video as pre-travel preparation and become aware of safe driving rules as part of road safety education before they come to Japan. As the study's results show, we confirmed that the branded contents induce changes in attitudes based on sympathy and that the videos are effective and useful in promoting safe driving by foreign visitors to Japan and in educating them. On the other hand, while the survey of potential visitors to Japan demonstrated a change in awareness after watching the video, we did not test whether the effect will last. Consequently, our future research agenda includes testing the change in awareness with the passage of time and the determination of the optimal timing and places of education based on the results.

## Note

The educational video in Taiwanese used in this study is published on the "IATSS channel" on YouTube. The videos in English and Chinese are also accessible. Each video has both short and long versions. The long versions include the information on the difference in the traffic rules between Japan and other countries while the short versions

consist of minimum information. Please refer to the following URLs: [https://www.youtube.com/channel/UCP1V\\_Q6OGouVPX5JBsb63Ag](https://www.youtube.com/channel/UCP1V_Q6OGouVPX5JBsb63Ag)

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