Door sound and image of cars

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Introduction

The quality of a car frequently is inconsciously rated on the basis of the sound produced by closing a door. If the sound is "tinny", the connotation is that the whole vehicle is cheap and not solid. On the contrary, a full saturated sound of the closing of a car's door has a connotation of luxury. In psychoacoustic experiments, subjects listening to the sounds of slamming car doors were asked to guess the type of car, and to give the corresponding brand name of the car. In this paper, the relations between type of car and image of manufacturer are given, i.e. which brand names of car manufacturers are related to luxury cars, sporty cars, economy cars, and so forth.

Experiments

Since the experiments have been described in detail in a companion paper (Kuwano et al. 2002), only some important features are mentioned here. Thirteen sounds produced by closing car doors were presented to 20 subjects. Among other things, the subjects had to assign the sound heard to different types of car like luxury car, economy car, pick up truck, and so forth. In addition, they had to write down in a questionnaire the brand name of the vehicle, from which they thought the sound of the closing door was recorded.

Results

Overall 260 sounds of closing car doors had to be rated. Figure 1 shows the distribution of the responses with respect to the different types of cars.

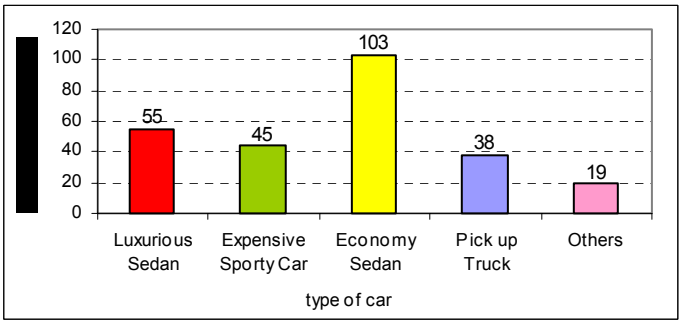

Figure 1: Distribution of responses with respect to different types of cars.

The results displayed in figure 1 show that most car door sounds (40%) were assigned to economy sedans, about 21% to luxurious sedans, and 17% to expensive sporty cars. Only for 15% of the car door sounds heard, the subjects thought they would come from pick up trucks, and in 7% of the presentations, the subjects thought it would be another type of car. Overall, the results displayed in figure 1 clearly show a dominance of the car door sounds presumed to stem from economy sedans.

Figure 2 shows the results for car door sounds assigned to luxurious sedans. The number of responses given for different brand names are displayed.

The results displayed in figure 2 clearly show that most subjects associate with a luxurious sedan the brand name Mercedes, followed by BMW and Audi. While 39% of the responses for luxurious sedans are related to Mercedes, only 5% are related to Renault.

Figure 3 shows the distribution for expensive sporty cars. The results displayed in figure 3 clearly show that most subjects (36%) connotated BMW with an expensive sporty car. Next follows Porsche with 16% of the responses, and for 13% of the responses, the subjects could not give the brand name (??) of the car.

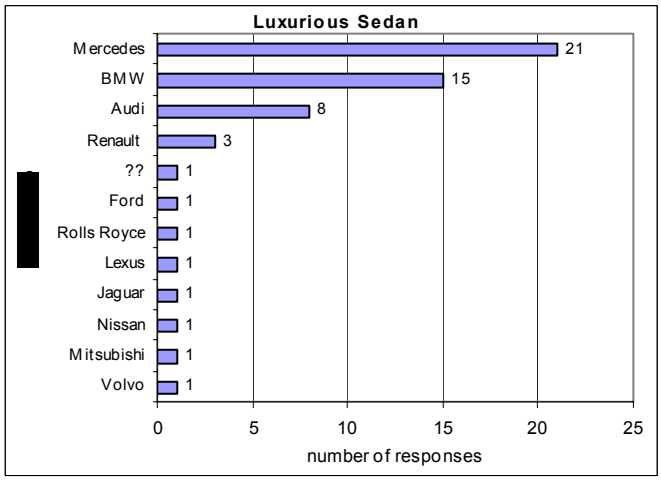

Figure 2: Distribution of brand names associated with luxurious sedans.

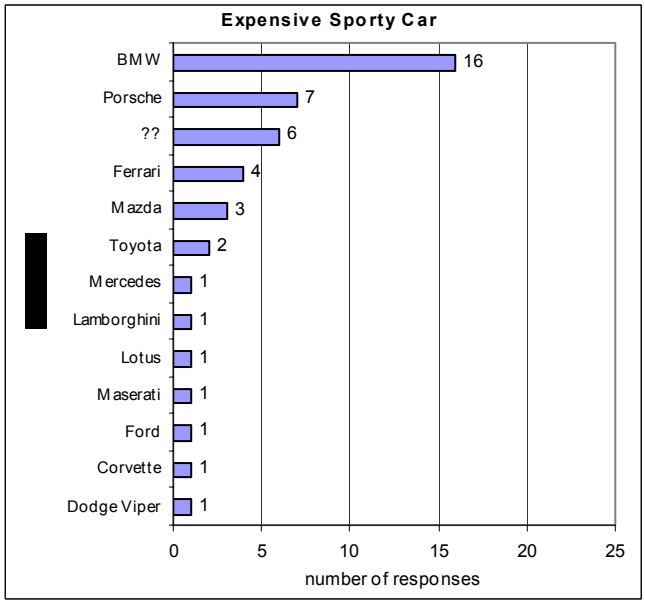

Figure 3: Distribution of brand names associated with expensive sporty cars.

The fourth, fifth and sixth rank in figure 3 are obtained by Ferrari, Mazda and Toyota, respectively. It is interesting to note that BMW surpasses Porsche in nominations of an expensive sporty car. This result may be partly due to the fact that many subjects live in the region of München, where the BMW headquarters are located. Further it is interesting to note that Mazda and Toyota are mentioned as expensive sporty cars, while the price of some of their cars is much lower than the price of the other brands mentioned.

Figure 4 shows the results for economy sedans. The results displayed in figure 4 clearly show that Volkswagen (VW) is the leader associated with economy sedans. This result is not unexpected, since in Germany economy sedans are characterised by the term "Golf-Klasse", i.e. a product of VW called Golf (in US Rabbit) is considered to be typical for a whole class of vehicles.

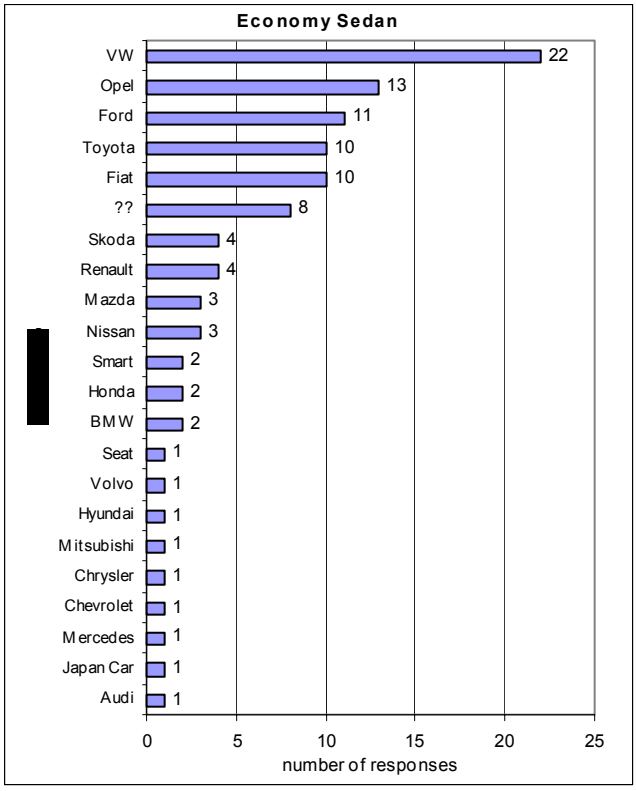

Figure 4: Distribution of brand names associated with economy sedans.

Next follow Opel and Ford which also are typical economy sedans on the German market. Interestingly, the Japanese car manufacturer Toyota catches up with the European car manufacturer Fiat.

Figure 5 shows the results for pick up trucks.

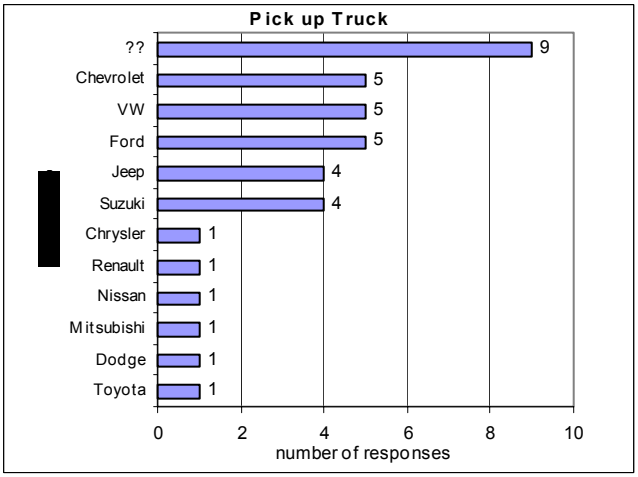

Figure 5: Distribution of brand names associated with pick up trucks.

A very interesting feature of the data displayed in figure 5 is that most subjects cannot give the brand name (??) of a pick up truck, of which they thought they heard the sound of a closing door. Whereas for the other types of cars we have a clear winner with respect to the brand name assigned to a typical class of vehicles, for trucks obviously subjects frequently do not know the brand name. The second rank is equally distributed to Chevrolet, Volkswagen and Ford, and the third rank to Jeep and Suzuki.

Figure 6 gives the results for the category Others, i.e. for car door sounds which do not fit into the four categories described above.

Overall, few sounds (7%) were assigned to this category with a lead of no brand name (??). The second rank goes to Skoda, the third to BMW and VW Compact. In general, subjects seem to have difficulty to assign car door sounds to this category, and even more to suggest a brand name.

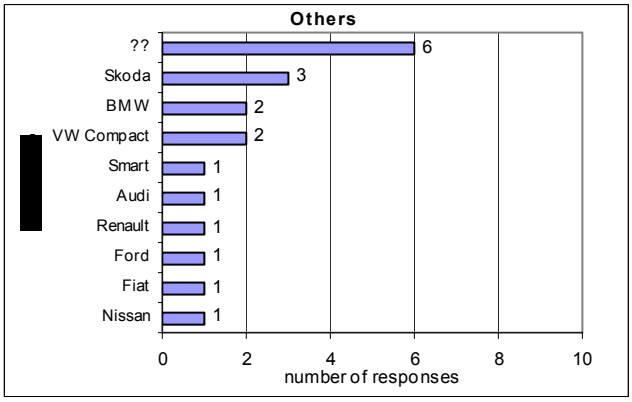

Figure 6: Distribution of brand names associated with others.

Table I gives a ranking of car manufacturers published by the German Automobile Association (ADAC). For each brand name ranked in the statistics of the ADAC, the ratings obtained by the number of responses for the different types of cars are given. For example, in the ranking of the ADAC, Mercedes gets the first place, which nicely corresponds to the highest rating (1) of Mercedes in the category of luxury cars. The second rank of ADAC goes to BMW which obtained the top rating by the subjects in the category of expensive sporty cars.

Ranking of car manufacturers	*Rating 1-4 in each class by subjects*
1. Mercedes	Luxurious 1
2. BMW	Sporty 1, Luxurious 2, Others 3
3. Audi	Luxurious 3
4. Volkswagen	Economy 1, Pick up 3, Others 4
5. Porsche	Sporty 2
6. Toyota	Economy 4
7. Peugeot	-
8. smart	-
9. Renault	Luxurious 4
10. Ford	Economy 3, Pick up 4
11. Opel	Economy 2
12. Skoda	Others 2

Table I: Ranking of car manufacturers by ADAC and rating of brand names by subjects for the different categories.

In general, the ranking of car manufacturers by the ADAC shows high correlation to the rating of different brand names for door sounds of different types of vehicles.

Discussion

When subjects listen to the sounds of the slamming of car doors, they have a connotation to different types of vehicles as well as different brand names. This relation can be taken as an indication of the image of a specific brand. The results show that Mercedes, BMW and Audi are considered as brand names of luxurious sedans, BMW and Porsche are typical for expensive sporty cars, Volkswagen, Opel, Ford, Toyota and Fiat are considered as typical for economy sedans. For pick up trucks and other types of vehicles, the connotation is not so clear, i.e. there is no clear leader in the number of responses for the specific type of car.

In a next step we will present the same sounds to Japanese subjects to get an indication of the rating of brand names. It is anticipated that some of the brand names preferred by German subjects also will appear in the responses of Japanese subjects. However additional brand names, which are not so frequent in Germany, may appear in the histograms.

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References

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Kuwano, S., Fastl, H., Namba, S., Nakamura, S., Uchida, H., (2002), Subjective evaluation of car door sound. In: Proceedings SQS 2002.