

# Basic Psychological Needs and Enhancing the Driver Experience for Routine Trips

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## ABSTRACT

driving experience is proposed that establishes a connection between the driving experience and basic psychological needs. The model represents factors relating to the technical characteristics of the car and the perceived qualities associated with those characteristics. It is argued that by taking this approach, it is possible to obtain handles for generating ideas with the aim of enhancing the driving experience associated with routine trips.

## Categories and Subject Descriptors

H.1 MODELS AND PRINCIPLES H1.2 User/Machine Systems, Human Factors

## General Terms

Design, Experimentation, Human Factors, Standardization, Theory.

## Keywords

User Experience, Automobile User Interface, Theoretical Modeling, Experience Research.

## 9. INTRODUCTION

For some time I have been thinking about a model capturing factors that affect the driving experience. The model, inspired by models such as Davis (1993), Venkatesh et al. (2003) and Hassenzahl et al. (2000) is shown in Fig. 1. On the left, factors relating to the technical characteristics of the car are shown, capturing the power, equipment, design etc. In the middle, the perceived qualities are shown associated with the technical characteristics. The relation between the technical characteristics and the perceived qualities are moderated by a number of factors such as physical context, social context and driver characteristics. On the right the psychological effects are shown, representing the basic psychological needs which are fulfilled by the driving activity (Reis et al., 2000; Sheldon et al., 2001).

For the time being, the intention is not to validate the model by collecting questionnaire data and fitting the model by statistical techniques such as done by Venkatesh et al. (op. cit.), but rather to use it as a conceptual framework for analysis. Secondly, at the moment the model only captures the experience related to driving. To turn it into a more comprehensive model capturing the driver

experience, components should be included for multitasking activities such as made possible by smartphones (emailing, calling etc). Possibly, this can be done by stacking additional layers on top of the model, turning it into a 3D model, and establishing connections between the perceived qualities of the different applications. For instance, the ergonomic quality associated with the driving activity may be influenced by the ergonomic quality of an additional task, because of the cognitive load induced by the two activities and the resulting dual task decrement. Extending the model is beyond the scope of the present paper. Instead, we may use it as a tool for analysis or source of inspiration for thinking about the driver experience, e.g. in the case of routine trips. The productivity of the model will then have to be evaluated by how well it enables us to come up with ideas to enrich the driver experience.

In the current context, the main merit of the model is its emphasis on the psychological effects relating to basic psychological needs. This emphasis paves the way for thinking about how people give meaning to their everyday activities in the context of driving. In general, people engage in certain activities in order to achieve certain goals, and ultimately the motivation for activities is to achieve certain psychological effects, such as building competence, achieving something, actualizing one's own potential, feeling stimulated or pleasant and so on.

Figure 1. Driver Experience Model.

Furthermore, we should keep in mind that activities and goals may be hierarchically related. We drive to work because work enables us to actualize our potential, or to earn money for living. In that sense, the working activity is intended to mediate these basic psychological needs, and the driving is instrumental: it helps us to get to the place where we work. However, the instrumental activity itself provides opportunities for satisfying certain basic psychological needs as well. For instance, while driving to work,

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we aim for autonomy, stimulation or pleasure, and in fact the means for getting to the office is affected by these basic psychological needs. That is, in the way we implement the instrumental activity, again we will make choices that enable us to give meaning to our everyday activities and achieve our basic needs.

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## 10. DRIVER EXPERIENCE FOR ROUTINE TRIPS

We may assume that the driving activity involved in routine trips provides little opportunity for fulfilling basic needs. The driver knows the route quite well and the skills needed to drive the route are over-trained, so that the trip poses little difficulty. In sum, routine trips offer little opportunity for pursuing basic needs such as competence and stimulation (although it should be kept in mind that decreasing the ergonomic quality may create opportunities for fulfilling the basic need of competence). On the other hand, since in many cases routine trips take place in high traffic density conditions, autonomy is at stake: the desire of other drivers to move efficiently from A to B interferes with the driver's desire to do so him or herself. Autonomy needs to be traded against aggregate efficiency for the collective (known as the social dilemma). Thus, applications that facilitate the driver in dealing with the social dilemma, enhancing his actual autonomy or feeling of autonomy, offer a first opportunity for enhancing the experience associated with routine trips.

Another basic need concerned is pleasure/stimulation. In the

applications might address the need for building competence and feeling competent. Existing applications for Eco Driving such as Fiat's ecodrive are based on these considerations.

Identity formation, confirmation and expression are needs that appear relevant to the driving context. Although inventories such as those of Sheldon and Maslow do not mention identity as a separate need, theorists such as Burton (1990) do. Also, it has been argued that identity formation is related to the extent to which the basic needs of competence, autonomy and relatedness are fulfilled (Luyckx et al., 2009), strengthening the relation between identity and other basic needs and putting identity formation, confirmation and expression on the agenda for those who connect the user experience to basic need fulfillment. In the driving context we may apply the notion of identity, and in particular the need to express one's own identity as a handle for idea generation. Employing advanced technology, we could think of using the car as a display allowing people to express identity information (which in fact is already done by conventional technology – see Fig. 2 for a picture from the aviation context); of course we would need to provide a proper definition for the notion of identity.

Pursuing on this and considering the need for expressing oneself, which is so evident in social media, we may apply it to the driving context, not only in connection to expressing one's own identity, but also in connection to expressing more temporary aspects such as mood and emotion, giving rise to concepts such as the Emoticar, which conceives of the car as a display for expressing one's own emotion.

Finally, since routine trips usually take place in a social context (even if we do not always appreciate the presence of other drivers around us), relatedness appears very relevant to the driving situation, offering opportunities for idea generation. Clearly, this is associated with the need for expressing one's own identity (or group membership) such as evident in clothing and expressing oneself in general.

## 11. CONCLUSION

In this paper, we have established a connection between the driving experience and basic psychological needs, and we have argued that, taking the basic psychological needs as a starting point, we obtain handles for generating ideas for enhancing the driving experience associated with routine trips.

## 12. ABOUT THE AUTHOR

I was trained as a cognitive psychologist. In recent years my research activities have focused on advanced driver assistance and information systems, taking a user-centred design perspective. In addition, I have broadened my interests to include the emotional and motivational aspects of the user experience as well. In the context of automotive research, I am interested in understanding the driver experience and methodology supporting this research.

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Figure 1. Source: [http://raf-112-squadron.org/raf\\_112\\_squadron\\_photos\\_1941.html](http://raf-112-squadron.org/raf_112_squadron_photos_1941.html).

context of routine trips, there appears little opportunity to relate pleasure/stimulation to the driving activity. The driving activity is felt as unchallenging, unexciting and boring, so that many drivers engage in other activities while driving, such as listening to music, making phone calls and handling e-mails – with obvious consequences for safety. Using gaming elements, we could explore ways to make routine trips more challenging and satisfy the drivers' need for pleasure/stimulation. In addition, such

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