

Effect of time perspective on aberrant driver behavior

أثر منظور الزمن على سلوك السائق المنحرف

- Khadidja Zerdoum*, Laboratory bank of Psychological, School and Professional Tests, University of Batna 1.

zerd.khadija@gmail.com

- Abir Djarallah, Laboratoire des Etudes psychologiques et sociologiques, University of Biskra

abir.djarallah@univ-biskra.dz

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Abstract:

The objective of this study is to examine the influential of Time perspective (TP) orientation that usually preferable and adequate in persuasive the driver's behavior of safe or at-risk. It is considered that the balance of TP orientation reflects that Future, Positive Past, and Hedonistic Present registers are more important to decreasing risky behavior, contrary to the Past Negative and the Present Fatalistic orientation. The study was conducted on 146 drivers who have more than five years of experience. The aberrant drivers' behaviors were evaluated using the mini-Driver Behavior Questionnaire (Mini-DBQ), and time perspective evaluated by the short version of the Zimbardo Time Perspective Inventory (ZTPI -15). The results of the multiple linear regression analysis showed that there is a significant effect of the five dimensions of TP on DB. The positive time perspective decreasing driver behavior risky. In conclusion, the study show that the attitude time perspective orientation determines temporal frameworks can be used to emerging safety.

Keywords: time perspective; aberrant behavior; risky driver, drivers.

ملخص :

يهدف هذا البحث إلى الكشف عن أثر منظور الزم المفضل والمناسب لتحديد سلوك السائق الآمن أو المعرض للخطر. حيث يعكس توازن ابعاد منظور الزمن سلوك السائق الآمن وذلك من خلال التوجه نحو المستقبل والماضي الإيجابي والحاضر الممتع أكثر من التوجه نحو الحاضر الحتمي والماضي السلبي. أجريت الدراسة على 146 سائق مركبة ممن لديهم من الخبرة أكثر من خمس سنوات. تم تقييم السلوكات المنحرفة باستخدام استبيان سلوك السائق المختصر،

* Khadidja Zerdoum

ومنظور الزمن باستعمال النسخة المختصرة لمقياس زمباردو لمنظور الزمن. أظهرت نتائج تحليل الانحدار الخطي وجود تأثير ذو دلالة إحصائية لكل من الأبعاد الخمسة لمنظور الزمن على السلوك المحفوف بالمخاطر. وخلصت الدراسة إلى أن التوجه الزمني ضمن الأبعاد الإيجابي، يحدد توظيف المعلومات التي يمكن أن تؤدي إلى اعتماد السائق على السلوكات الآمنة.

الكلمات المفتاحية: منظور الزمن؛ السلوك الخطر؛ السياقة الخطيرة، السائقين.

1. Introduction

In the field of traffic psychology, the notion of temporality can be approached in terms of Time Perspective (TP). This allows us to reflect on the means to be employed in the service of road safety. One of the most frequently associated traits with risky driving is sensation seeking (Zuckerman, 1971). Several studies have revealed a relationship between TP and risky driving, particularly in the dimensions of Present (sensation seeking, excitement) and Future (Zimbardo, 1997).

The continual flows of personal and social experiences provide time frames structured in temporal categories. So, TP it's omnipresent in people's lives and permeate them to seek information in order to create and prove mental constructs or to modify those constructs, which fit more personally with experience. Driver behavior is the result of a complex process that involves perception, cognitive processing, and behavior. A change in any of these factors can lead to an accident risk. According to the World Health Organization (WHO), 90% of traffic accidents are caused by human factors, such as driver distraction, speeding, and impaired driving. Over 1.3 million people die in road traffic accidents each year, which is an unacceptably high number. In facing face this situation, there are a number of things that can be done to reduce the risk of risky driving behaviors. One important step is to educate drivers about the risks of these aberrant behaviors and how to avoid them. Another important step is to create a social environment that discourages risky driving behaviors and encourages safe driving behaviors.

2. Aberrant behaviors

Aberrant behaviors constitute the sources of risk in traffic. Drivers who underestimate the risks of risky driving behaviors are more likely to engage in them. Winter & Dodou (2010) have identified several risky behaviors, such as speeding, driving under the influence of alcohol, refusing priority, and aggressive deviations. According to the results of various studies (Reason, Manstead, Stradling, Baxter, & Campbell, 1990; Parker, Reason, Manstead &

Stradling,1995, Abdelfatah,2005), they have explained aberrant driver and subdivided theme into three categories: violations, errors, and lapses. Aberrant behaviours reflect the component of the short version of the Driver Behaviour Questionnaire, which are concerning how often do the driver about nine behaviors: speed, tailgate, drive through red lights or stop signs, change lanes without signaling, use a phone while driving, misjudge gaps in traffic, fail to see hazards on the road, get lost while driving, and get tired or fall asleep while driving. Many studies categorises three aberrant behaviors.

- Violations are intentional breaches of traffic rules or conventions, such as speeding, tailgating, and running red lights. Violations are the most serious type of driving behavior and are the most likely to lead to accidents. Examples of violations include Speeding, Tailgating, running red lights, driving under the influence of alcohol or drugs, and making illegal turns.

- Errors are unintentional mistakes made while driving, such as misjudging a gap or making a wrong turn. Errors are less serious than violations, but they can still lead to accidents. Examples of errors include misjudging a gap, making a wrong turn, failing to yield the right of way, not seeing a pedestrian or cyclist

- Lapses are momentary lapses in attention or awareness, such as daydreaming or missing a traffic sign. Lapses are the least serious type of driving behavior, but they can still be dangerous if they occur at the wrong time. Examples of lapses include day dreaming, get distracted by passengers or music, missing a traffic sign, falling asleep at the wheel.

These behaviors can be used to identify drivers who are at risk of accidents. It is important to note that all drivers make errors and lapses from time to time. However, drivers who frequently engage in violations are at a higher risk of accidents. But many studies found that there is a correlation between the demographic and types of driving behavior. Female were more likely than male to careful driving, and the older the driver and the less driving experience (Li, Shi, and Liu, 2017).

3. Time perspective and risky behaviors

TP offers a sense of reality of the past and the future in the present moment (Lewin, 1942, Zimbardo and Boyd 1999; Fortunato & Furey, 2009, 2010), it allows to relating to the three temporal registers with their subcategories: past (positive, negative), present (hedonistic, fatalistic), and future. It can be used to develop interventions to reduce driving accidents and improve road safety. The

predominance of one or the other register in the behavioral construction can be a variable that differentiates individuals and groups, as well as the behaviors depending on the specific situations. This cognitive process gives rise to the patterns that constitute risky behavior or safety. The attitude of temporal orientation is maintained by self-regulation, which achieves TP balance. The perturbation of TPs orientation projected for action and emergence of risky behavior.

Time Perspective conceptualized and developed by Zimbardo and Boyd (1999), which divided into five dimensions.

- Past-Positive: This dimension represents positive construction of the past, sentimental, warm, and nostalgic.
- Past Negative-TP: reflects a pessimistic or aversive attitude toward the past and negative construction. Is associated with focusing on personal experiences that were aversive or unpleasant.
- Future-TP: reflects planning for and achievement of future goals, characterizing a general future orientation. People with future TP tend to be more successful than others.
- Present Hedonistic-TP: This dimension reproduces a hedonistic cognitive pattern. Individuals live in the moment (here and now), enjoy high intensity activities, and seeks thrills and new sensations.
- Present Fatalistic-TP: This TP dimension reflects a fatalistic, helpless, and hopeless attitude toward the future and life. Individual beliefs in outside forces control one's life, for spiritual or governmental forces.

The aspects of human behavior reflected the powerful influence of the time perspective, which revealed their relationship positively or negatively with the five dimensions of TP orientation. TP as cognitive function supposed that was used in encoding, storing, and recalling experienced events, as well as in forming expectations, goals, contingencies, and imaginative scenarios (Zimbardo & Boyd, 1999). The risky behavior displayed results from the elaboration process done by TP orientation to past positive or negative, present hedonistic or fatalistic, and future after new circumstance. These TP input applied a positive or negative action deeply connected to exercising an effect on the outcomes such as aberrant behaviors. Many studies (Zimbardo, Kelli, Keough, Boyd, 1997) showed these forms of relationship found that Present Fatalistic orientation is related positively to ego control, risky

driving, whereas positive TP orientation considered as efficiency in avoidance of risky behaviors. These forms of temporal orientation are efficacies for staying safe on the road; they are related to the regulation of cognitive preconceptions. And diminish peer pressure, avoid unfocused while driving, pay attention to other vehicles and pedestrians, and driving prudently in hazardous conditions.

4. Objectives

Our objective is to study the interaction between individual behavioral risk characteristics and temporal orientation attitude regarding the level of exposure to the risk of accidents, by examining the following hypotheses.

- 1- To identify the correlations between the variables, that the existence of correlations is expected.
- 2- To evaluate the effects of TP (Past positive, past negative, Future, present hedonistic and present fatalistic) on the driver's behavior direct and indirect effects are predicted.
- 3- To identify the existence of differences between the five dimension of time perspective and driver behavior, according to age and level of education. In this objective, significant differences are expected.

Operationalization of the study variables to describe the role of TP on DBQ and accident risk is based on an explanatory model of the relationship between time perspective and driver behavior.

5. - Method

We used the descriptive statistics, correlation and multiple linear regression that serves the hypotheses of the study. To conduct statistical analysis, we used SPSS.25.

5.1. Population

The sample consists of 146 drivers who have driving experience more than five years, age ranged from 22 to 65 years old. The survey was conducted over the period, from March 2, 2022, to January 5, 2023. Table (1) summarizes the sociodemographic characteristics of the population.

Table 1.- Sociodemographic characteristics

Caractéristiques	Sous -groupes	Nombre	Pourcentage (%)
Sexe	Female	26	17,81
	Male	120	82,19
Age (32.87±11.55)	20 - 30 years	44	30,14
	30 - 40 years	28	19,18
	41-50 years	61	41,78
	Over 50 years	13	8,90
Level of education	Primary	22	13,69
	Middle school	35	30,82
	Secondary	44	32,87
	University	23	22,60

The table above of sociodemographic characteristics clarify the different percentages of the different subgroups. Results shows that the average age ($m = 32.87$; $sd = 11.55$), The majority of the sample was male (82,19%), women present 17,81 %. According to age groups, drivers of group 41-50 is the high frequency (41,78 %) and the group over 50 years represent the minimum frequency (8,90 %). Characteristics depending on the level of education presented from high to low percent, secondary 35,62 %, middle school 28,77 %, university 18,69%, and primary 17,12 %.

5.2. – Tools of the study

-Short version of the Driver Behavior Questionnaire (DBQ): The Driver Behavior Questionnaire (DBQ) (Reason et al. 1990) used to measure driver aberrant behavior. The Arabic version of the DBQ (Bener et al. 2008) has previously been validated by Bener, Özkan, Lajunen, (2008). We used 9 items of the short version DBQ as the presence of a second-order structure for the DBQ (Martinussen, Lajunen, Møller and Özkan, 2013) . The Mini-DBQ is a valid and useful short measure of aberrant driver behavior. Participants are

asked to indicate how often in the previous year they undertook each of the 9 behaviors. The Items were scored on a 5-point Likert scale, with 1 indicating "never" and 5 indicating "always". A higher total score indicates more frequent engagement in risky driving behaviors.

-Brief measure of the Zimbardo time perspective inventory: This version developed by (Zhang, Howell, & Bowerman (2013). The Arabic version of the Zimbardo Time Perspective Inventory ZTPI-56 items (Djarallah & chorfi, 2009). We used in this study 15 items, it measures the five TP dimensions (Present-Hedonistic, Past Negative, Future, Past-Positive, and Present-Fatalistic). Each item assessed on a 5-point Likert scale ranging from 1 (very uncharacteristic) to 5 (very characteristic). A higher total score indicates more TP orientation to the dimensions

6.- results

6.1. - Correlations between variables

The hypothesis says that, there is a significant correlation between time perspective and DBQ among drivers". To check the validity of this hypothesis, we calculated Pearson correlation coefficients (table 2).

Table 2- Correlations between TP dimensions and Aberrant behaviors

	correlation	Mean	Mean
Past Positive	-0,264**	3,535	0,760
Past Negative	0,234**	3,125	0,810
Future	-0,233**	3,370	0,767
Present Hedonistic	-0,280**	3,710	0,684
Present Fatalistic	0,165*	2,703	0,884
Aberrant behaviours	-	3,118	0,493

Note: * $p \leq 0,05$; ** $p \leq 0,01$

The results show that the mean of past present hedonistic is the highest ($m = 3,710$), and in present fatalistic is the lower ($m = 2,703$). There are strong correlations between the variables. Past positive is correlated negatively with aberrant behaviors ($r = -0,264$, $p < 0,01$), future is correlated negatively ($r = -0,233$, $p < 0,01$) and present hedonistic is correlated negatively with aberrant behaviors ($r = -0,280$, $p < 0,01$), In contrary, past negative is correlated positively ($r = 0,234$, $p < 0,01$) and present fatalistic is correlated positively ($r = 0,165$, $p < 0,05$). This finding confirms the hypothesis.

6.2. - Effect of time perspective dimensions on aberrant behavior

To identifying how TP's orientation effect BDQ, a multiple linear regression was used to test if past positive, and present hedonistic, future, present fatalistic and the past negative significantly predicted aberrant behavior. The table (3) we summarize results of regression analysis.

Table 3: Results of regression analysis

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	0,584	0,341	0,324	0,712
F (5, 141) = 4,151, Sig =,001				

Results revealed that, the coefficient of determination ($r^2 = 0,341$) which indicates that 34.1% of the variance in the aberrant behavior scores can be explained by the dimension of TP orientation. Adjusted R-squared is 0,324 for comparing the fit of different regression models to one another. And there is sufficient evidence to conclude that the regression model fits the data better than the model with no predictor variables, ($F = 4,151$, p -value is 0.001). This finding is good because it means that the predictor variables in the model really improve the fit of the model. Table (4) present results of coefficient of regression analysis.

Table 4: Coefficient of regression Analysis

Modèle	B	Erreur standard	Bêta	t	Sig.	Intervalle de confiance à 95,0% pour B	
						Borne inférieure	Borne supérieure
(Constante)	3,104	0,212		3,947	0,000	0,418	1,253
PP	-0,158	0,074	0,234	-3,039	0,010	-0,078	-0,369
PN	0,124	0,076	0,291	3,397	0,032	0,108	0,407
F	-0,154	0,064	0,198	-2,415	0,011	-0,028	-0,279
PH	-0,198	0,051	-0,126	-2,363	0,005	-0,109	-0,382
PF	0,159	0,065	0,169	2,363	0,008	0,126	0,268

The results revealed that PT A has a significative effect on BDQ. A negative relationship between past positive with aberrant behavior, ($\beta = -0,234$, $t = -3,039$, $p \leq 0.01$), future ($\beta = -0,198$, $t = -2,415$, $p \leq 0.05$) and PH-TP orientation ($\beta = -0,126$, $t = -2,363$, $p \leq 0.05$;), which means that decreases their risk of being

involved in an accident. Whereas, the past negative showed a significant positive effect on aberrant behavior ($\beta = 0,291$, $t = 3,397$, $p \leq 0.001$) and the present fatalistic ($\beta = 0,169$, $t = 2,363$, $p \leq 0.01$). Individuals who present more orientation to PN and PF are more likely to engage in risky driving behaviors. This finding confirms the hypothesis.

From the model output, the coefficients allow us to form an estimated multiple linear regression model:

$$BDQ = 3,104 - 0,158*(PP) + 0,124*(PN) - 0,154*(F) - 0,198*(PH) + 0,159*(PF)$$

For each additional of TP dimensions is associated with an average increase BDQ. One unit increase in PN score 0,124 degrees, in PF score 0,159 degrees. But, each additional one unit decrease in PP points score of 0,158 degrees, in F score of 0,154 degrees and in PH score of 0,198 degrees, are associated in being aberrant behaviors.

6.3. - Differences in TP dimensions and BDQ according to sociodemographic characteristics

To examine the existence of differences between means values of TPs dimension and of levels of the BDQ categories, according to gender age, grade, and level of education among the drivers. We conducted a T-tests and one way ANOVA to compare the means of PT and DBQ between sociodemographic subgroups. The results are summarized in Table (5).

Table 5: Variance of the means of measures according to sociodemographic characteristics

	Gender (t-test)	Age categories F (3 , 142)	Le vel of education Subgroups F (3 , 142)
Past Positive	-2,034	2,561	0,164
Past Negative	0,413	2,885	0,933
Future	0,819	5,888	4,339
Present Hedonistic	0,012	0,460	1,976
Present Fatalistic	1,867	8,338	0,547
Aberant behaviors	0,819	5,888	4,339

Results show that there are no statistically significant differences in the five dimensions of TP and BDQ between male and female ($t = 1.18$; $p = 0.18$). The ANOVA analysis show that there are no statistically significant difference between the different age groups in the dimensions of TP orientation (Past Positive, Past Negative, Future, Present Hedonistic and Present Fatalistic), and in mini-BDQ ($F(3, 142) = 2.54$, $p = 0.08$). Also, according to level of education there is no statistically significant difference between subgroups in the dimensions of the five TP dimensions and mini- BDQ.

this finding does not confirm the hypothesis.

7. Discussion

The results show that most of the variables studied are significantly correlated. Past positive time perspective orientation, future and present hedonistic correlated negatively with BDQ which indicate this TP orientation increase whereas aberrant behavior decreases. But there is positive correlation between PN and PF with the BDQ, that meaning these two TP orientation variables increase occurrence of aberrant behaviors and accident drivers. A similar result found by Zimbardo, Keough, Boyd (1997), particularly the present time perspective is significantly correlated with reported risky driving behaviors.

The findings of the study confirm the hypothesis, which was that TP are important factors in the risky drivers. The results indicate that positive TP orientation PP, F and PH can meaningfully used to emerging safety, and decrease apparition of aberrant behaviours. Whereas, negative TP orientation PN PF increase apparition of aberrant behaviours in this sample of the study. A similar result found by Luthar and Cicchetti (2000) about the relation between past negative and potential risky resources. The comparable results found by Măirean, Diaconu-Gherasim (2023), they confirm that the persons reporting higher levels of past negative and present fatalistic time perspectives also reported higher risky driving behaviors, and those with high level of future time perspective indicated low risky driving behavior. These variations explain that dimension of TP orientation can predict avoidance of aberrant behaviours as we have expected.

The third hypothesis identified that the socio demographic characteristics differences don't chow distinction between subgroups in the five TP orientations, and behaviors' drivers risky. The results of this study do not support the hypothesis. We note that these finding is not consistent with results

reported in the study of Martinussen et al., (2013) and Zimbardo, Keough, Boyd (1997).

Conclusion

This study has been well clarified the role of time perspective in aberrant behaviors. That allows assessing the link among positive time perspectives (past positive, present hedonistic and future) and risky driving behaviors. The study shows that TP in thus forms of balanced of orientation categories (past positive, future and present hedonistic) can be used to emerged safety behaviors and explicitly individuals decrease risky driving behaviors. However, other study should be realized with large sample and general population experienced accident to more identifying the effect of TP that reflect risky of aberrant behaviors or safety behavior.

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