International Journal of Psychological Research and Reviews

(ISSN:2639-6041)

Risk taking, cultural values and beliefs: Cameroon-France comparison

Hélène Chantal Ngah Essomba*[1,2], Julien Cestac[3], Edouard-Adrien Mvessomba[1], Raymond Mbédé[1], Patricia Delhomme[3]

[1]University of Yaoundé 1, FALSH - Faculty of Arts, Letters and Human Sciences, Department of Psychology. PO Box 337 Yaoundé, Cameroon; [2]University of Paris 8, CHART Laboratory 2, rue de la liberté 93526 Saint-Denis, France; [3]IFSTTAR, AME, LPC, 78000 Versailles, France

ABSTRACT

Risk-taking related to road mobility of vulnerable users can be different from one country to another, from one culture to another. Vulnerable users (pedestrians, cyclists and motorcyclists), who are those whose exterior protections are most lacking compared to drivers of cars or trucks, constitute almost half of the individuals killed in road accidents (WHO, 2015). Contexts, cultural values and beliefs are likely to play a role in risk taking (Cestac et al., 2016; Delhomme & Meyer, 1995; Kouabenan, 2007;). This research aims to compare Cameroonians to French in terms of beliefs, cultural values and motivation for protection and identify the predictors of attitude and intention to infringe the red light. It was conducted among 156 Cameroonians and 131 French using a self-assessment questionnaire. Results showed differences in beliefs, motivation for protection and cultural values. Cameroonians have a strong religiosity compared to the French. The differences observed in terms of beliefs are in line with the reflection of Ingelhart (1999) who shows that there are more beliefs in Africa than in Europe. Cameroonians have a strong religiosity compared to French. The differences observed in terms of beliefs are in line with Ingelhart' (1999) positions who shows there are more beliefs in Africa than in Europe.

Keywords: culture, beliefs, Cameroon, France, risk taking, vulnerable users.

*Correspondence to Author:

Hélène Chantal Ngah Essomba

University of Yaoundé 1, FALSH - Faculty of Arts, Letters and Human Sciences, Department of Psychology. PO Box 337 Yaoundé, Cameroon;

Introduction

Many road accidents result from non-compliance with the legal rules of the Highway Code. Vulnerable road users, who are pedestrians, cyclists and motorcyclists, are the most exposed to the risk of road accidents. Among vulnerable road users and especially young people, it is not uncommon to observe pedestrians crossing the street outside pedestrian crossings, cyclists who do not have a break at the stop sign or running a red light, motorcyclists who violate the speed limit or who do not wear helmets. There are differences in accidents, transgressions and risk perceptions between countries. We will focus in this article on the perception of risks that can be influenced by cultural values and beliefs (Kouabenan, 1999; Kouabenan, 2006; Slovic et al., 1981;). Ngah Essomba et al. (2020) in the context of the comparison of risk perception between Cameroonians and French, notice that participants develop different beliefs. Certain beliefs such as religious, traditional and control beliefs may be related to a invulnerability feelings. That belief in invulnerability could in turn lead individuals not to protect themselves, for example to neglect rules of the Highway Code such as the respect of the red light. The red light running is a common cause of accidents at intersections. This behavior is more or less deliberate and influenced by different contexts. According to Yang and Najm (2007), young drivers aside of often red lights running, they also violate speed limits, especially in periods of sparse traffic. According to the results of Porter and Berry's (2001) investigation into red light running, being in a hurry is the primary reason for running the red light. In addition, they found the presence of a passenger in the vehicle was a brake on that transgression and the red light running is neither related to frustration due to traffic conditions nor to the behavior of other road users.

The works carried out in the field of road accidents report the over-involvement of young people in traffic accidents, which suggests that young people are taking a fairly high risk (ONISR, 2009, Scott-Parker et al., 2012). Several points of view have been developed to explain that risk-taking among young people, such as biological, contextual and psychological points of view (Assailly, 2010).

The biological point of view

It argues that the late development of the prefrontal cortex is responsible for risk-taking in young people. Indeed, the prefrontal cortex plays a fundamental role in cognitive and social learning through inhibitory processes (Casey et al., 2000). Steinberg et al. (2006) showed that the cortex is at the center of various cognitive, emotional, social and behavioral changes. For biologists, adolescence is a period of life characterized by the high level of testosterone which is responsible of an increase in risky behaviors for boys and an increase in the tendency of affiliation with deviant peers for girls (Vermeersch et al., 2008). That view leads us to ask whether the biological aspect is the only factor explaining risk-taking in young adults. What is the place of social contexts in young adult's risk behaviors?

Background

Humans live in changing social contexts that interact with each other (Brofenbrenner et al., 1998; Magnusson et al.; Stattin, 1998). In this sense, several contexts are present in the life of an individual (family, friends, school environment, etc.). Family status and education play an important role in risk-taking among adolescents and young adults. Young people from stepfamilies have more accidents than young people from single-parent families (Assailly, 2010). Parents adopt either authoritarianism, laxity or negotiated authority to get children to understand road risks (Assailly, 2007). The young child sitting in the back seat of his parents' car, observes their behaviors, driving style and values and later will be able to have the same behaviors, driving style and values as his parents (Assailly, 2010). Peer grouping is another area of learning. Young people who bond with peers who engage in

dangerous behaviors are likely to engage in these same dangerous behaviors themselves (Benthin et al., 1993; Rubbin et al., 1998; Santor et al., 2000). In our argument above, some situations imply both contextual and psychosocial approaches.

Being born, grow up and live in a given context refers to questioning the culture in the study of risk-taking among vulnerable road users. We are interested by culture in general and individuals' beliefs about risk in particular. For Rutter and Quine (1996), beliefs mediate relationship between age and risky behaviors. Young people develop beliefs such as the feeling of invulnerability (Lapsley & Flannery, 2002), which may be akin to a belief in supernatural protection because individual thinks he or she is immune to danger. That sense of invulnerability may, apart from perceived control and experiences, originate from other beliefs such as religious and control beliefs.

Beliefs

Religious beliefs can be at the origin of non-compliance or compliance with Highway Code. Some individuals who believe in God may be led to neglect road safety measures thinking that God will protect them from the risk of road accident. Others on the other hand, will consider that belief in God leads to a God' fearing and therefore avoid behaviors that can be considered deviant (Ngah Essomba et al., 2020). Goggin et al. (2007) developed a scale to measure God's perceived control on adolescent risky sexual behaviors and found a negative correlation between scores on the scale and those of intentions to engage in risky sexual behaviors. Similarly, according to Granet (2014) traditional African religious beliefs are set of religions not related to the Old Testament or the New Testament. They appeal to gods, ancestors, geniuses, protective objects, totemism, etc.; and can lead individuals to neglect or comply with road safety measures by saying there are superior beings and objects that protect them from the risk of accidents or that will

punish them if they engage in behaviors that runs counter to the protection of their lives.

Several studies have focused on the influence of beliefs on risk-taking among road users. Such as Peltzer and Renner' (2003) study which deal with the effects of superstitions on road perception and risk-taking in South Africa. Studies of Jonah (1986) and/or Matthews and Moran (1986) focus in another side on the overestimation of motorists about their ability to avoid accidents among young people. Works on beliefs suggest that it is possible to understand the behaviors of road users by taking into account their beliefs about risk-taking. When individuals find themselves in a situation of "cognitive non-control", they appeal to beliefs (Deconchy & Huteau, 1998) that allow them to reduce information processing for rapid decision-making. In this sense, the individual can adopt risky behaviors by thinking, for example that the "talisman" he wears can save him or simply think that he is able to run red light without being the victim of an accident. We propose to study beliefs of Cameroonians and French to better understand their behavior on the road and also compare them from a cultural point of view. For this, we will refer to the motivation for protection theory (Rogers, 1975, 1983) and the Schwartz' (2001) cultural values. We also propose to compare them in terms of attitudes towards risks.

Attitudes

Eagly and Chaiken, (1993) define attitude as "a psychological tendency expressed by the more or less favorable (or unfavorable) evaluation of a particular entity » (p.1). From this definition, we can say that adoption of protective or risky behaviors depends on the attitude of individuals towards road risk. In this article, attitudes of Cameroonians and French people may be influenced by contexts in which they live (Marwel et al., 1987; Schwartz, 2007), we can talk about regulation and its application, infrastructures, the social environment...

The concept of attitude is essential to the study of individuals' behaviors because it is a predictor

of behavioral intention (Andrew et al., 1999; Chudry et al., 2011). To study the road user's behavior, we will do so through the intention which would be the most important predictor of behavior (Ajzen, 2011; Armitage & Conner, 2001; Cestac et al., 2011; Chan et al., 2010; Sheerand & Taylor, 1999; Tavafian et al., 2011). Rogers and Prentice (1986), Armitage and Conner (2001) have shown that intent has an effect on protective behaviors. As a result, the intention of Cameroonians and French to transgress or respect traffic lights will notify about their motivation to protect themselves. Studies have been conducted to determine road users' motivations for red light running (Manstead et al. cited by Stradling & Parker, 1997; Porter & Berry, 2001). The conclusions of some studies show that being under 30 years of age, not fastening your seat belt and driving in heavy traffic conditions increase the likelihood of transgression both in an environment without and with cameras at traffic lights (Herbert et al., 2006; Konečni et al., 1976; Retting & Williams, 1996; Porter & England, 2000).

Hypothesis

Inglehart (1999) observes a decline in religious beliefs and practices in Western countries while there is a strong religiosity in Africa. Therefore, as France is in Western Europe and Cameroon in Africa, it is expected to observe a significant difference between Cameroonians and French with a higher belief score in Cameroon (H1). In our previous work, we found that French had a more favorable attitude to risk-taking than Cameroonians (Ngah Essomba et al., 2021). In addition, numerous studies have shown that attitude is a predictor of behavioral intent (for review Andrew et al., 1999; Chudry et al., 2011). We therefore expect attitude to be a predictor of red light running intention among participants from both countries (H2). We precisely expect to observe higher red light running intention among French than Cameroonians (H3). According to Schwartz (2009) France values pleasure, exciting and varied life, creativity and open-mindedness, while Cameroon values social order, respect for tradition, security, obedience and wisdom. With that in mind, higher autonomy and stimulation scores are expected in France than in Cameroon and higher tradition, safety and compliance scores in Cameroon than in France (H4). In our previous works, we found Cameroonians felt more invulnerable to danger than the French in general. If we consider that in these works the attitude of the French is higher than that of Cameroonians, then we expect Cameroonians to perceive themselves as more vulnerable than the French in terms of red light running specific-behavior (H5). We also expect beliefs to predict attitudes to risk (H6), according to Ajzen's (1985) model, beliefs are predictors of attitude.

In this article, we rely on a correlational approach. We study links between variables without being able to systematically determine the direction of that link. Therefore, each variable can be treated as an independent variable or as a dependent variable, depending on the purpose of the analysis.

Method

Participants

Our study population is made up of young vulnerable Road Users from Cameroon and France. We recruited them in several universities, colleges and car parks for motorized two-wheelers of both countries. For participants from universities and colleges recruitment was done on campuses and in libraries. We approached the students and asked them if they could help us with a research project. After explaining what research project is about, if the answer was yes, we gave them the questionnaire and explain what to do. We did the same thing in the car parks.

In both countries, we perform a convenience sample. In Cameroon our sample consisted of 156 French-speaking participants aged 18 to 24 (M = 21.8). They were divided into categories: 51 pedestrians including 24 women (47%), 53 cyclists including 14 women (26%) and 52 motorcyclists including 7 women (13%). In

France, our sample included 131 participants aged 18 to 24 (M = 21.03), distributed as follows: 51 pedestrians including 32 women (63%), 46 cyclists including 26 women (57%) and 34 motorcyclists including 12 women (35%).

Procedure and data collection

In both countries, the questionnaire was administered in paper format. A part was administered in Lecture Theater during school hours, for this we were helped by assistants in order to avoid communication between the participants. Another part was completed by the students met on the campus. For the recruitment of some motorized two-wheeler drivers, we went to car parks dedicated to them in the case of France. In the case of Cameroon, we contacted the heads of some motorcycle taxi driver's associations. They gave us off-peak hours to pass our questionnaire. Those who were on campuses or in the car parks vicinity responded under the supervision of the researcher. To complete it correctly, participants needed about 20 minutes.

Measures

We conducted an exploratory study through semi-structured interviews that allowed us to identify the risky behaviors of vulnerable users in both countries and the underlying beliefs (Ngah Essomba et al., 2021). For the response system, we used a five-point Likert scale ranging from 1 "no not at all" to 5 " absolutely yes ". We proceeded in the same way for the measures of motivation for protection, control beliefs, past behaviors and intention to red light running, Scale of Invulnerability to Danger (SID), cultural values and religion (practice and frequency of worship, use of protective objects, beings and rituals).

The measures of the questionnaire

Risk perception. It was subdivided into two parts: the first part measured the probability of having an accident by running a red light ("In your opinion, what is the probability that you will have an accident if you run a red light"), the second part measured the probability of being

sanctioned after red light running ("In your opinion, what is the probability that you will be sanctioned by law enforcement if you run a red light").

Motivation for protection. For this model, six measures were carried out: the intention of red light running in the next twelve months, the perceived vulnerability ("if I often run a red light, I have a good chance of being victim of a road accident"), the perceived severity ("if I have an accident while red light running, I will probably be very seriously injured"), the effectiveness of the recommendation ("if I always respect the red light, I will not have an accident"), self-efficacy ("I am able to always respect the red light"), the cost of motivation ("systematic compliance with the red light makes me waste time") and the benefits of risk ("running a red light saves time").

Behaviors. Behavioral measures were divided into two parts: intent was measured with an item about the possibility of red light running over the next 12 months ("Over the next 12 months, during my moving, I may be running a red light") and past behavior was measured with an item about red light running in the past 12 months ("Over the past 12 months, while traveling, I have run a red light"). These behaviors were measured using a five-point Likert scale ranging from 1 "never" to 5 "very often".

Attitude. The attitude was measured using a 5-point bipolar item ("For you, taking risks on the road is bad/good, serious/not serious, exciting/not exciting"). We obtained a Cronbach alpha for Cameroon (α = .74) and for France (α = .60). For our analyses, we will use the average scores.

SID. The EID consists of 12 items with a satisfactory alpha: Cameroon (α = .76) and France (α = .77).

Cultural values. Cultural values were measured using two items per selected factor (autonomy, stimulation, tradition, safety and compliance) and which are derived from the PVQ ([Portrait Values Questionnaire], Schwartz, 2001). We chose these items because they are related to

respecting of rule ("Always behaving properly is important for him/her. He/she doesn't want to do anything that people can blame him/her").

Beliefs of control. Control beliefs were measured using an item on the ability to avoid an accident during red light running ("for me, it is very easy to avoid an accident while running a red light").

Religion. Religion was divided into two parts: one part on the religion in which the participant has been grown up and the other on the religion which he/she feels closest. We conducted a multiple choice questionnaire (MCQ). The frequency, practice, use of protective objects, beings and rituals were measured using the 5-point Likert scale as for the other scales of this study ("How often do you go to your house of worship?"). To facilitate statistical analyses, we have grouped all the items that refer to the frequency, practice, use and effectiveness of protective objects, beings and rituals into one term: religiosity.

Demographic information. Demographic information: age, gender, category of users (pedestrian, cyclist and motorcyclist), accident experience, consequences of these accidents and motorcycle or bicycle riding experience).

Results

Results from ANOVAS

To assess effect of nationality on beliefs, cultural values, motivation for protection, attitudes and behaviors we performed ANOVAS and regression analyses through SPSS software version 21. Finally, we have designed an explanatory model for the results obtained.

Beliefs

Our results show a significant difference between Cameroon and France in terms of the feeling of invulnerability. Cameroonians feel more invulnerable than the French. This is in line with results obtained by Ngah Essomba et al. (2021). Regarding control beliefs, there is no significant difference between participants from the two countries. That is, there is no effect of country on control belief. However, there is an effect of country on religiosity: religiosity is an important differentiating factor between the two countries. Indeed, nationality explains 44% of religiosity variables variance. Moreover, among the three beliefs in our study, there is a significant difference between Cameroon and France in terms of feelings of invulnerability to danger and religiosity; the scores of those two beliefs are higher in Cameroon than in France. That confirms the idea of a stronger religiosity among Cameroonians (Inglehart, 1999). In terms of the red light running specific-behavior, Cameroonians perceive themselves as being more vulnerable than the French.

Motivation for protection

The perceived severity score of the French is higher than that of Cameroonians. It leads us to conclude the French tend to believe that if they are victims of a road accident because they have run a red light, injuries will probably be more serious. About the recommendation perceived effectiveness, there is a significant difference between participants from two countries. The score of Cameroonians is higher than that of the French. That is, Cameroonians tend to think more that if they always respect the red light, they will not have accidents. Concerning attitude toward risk taking, the French have a higher score than Cameroonians. That is, the French tend to have a more favorable attitude to road light running than Cameroonians. Finally, the French intend to run red light in the next 12 months compared to Cameroonians. That difference is significant (7% variance).

Cultural values

The French tend to consider themselves more autonomous than Cameroonians. Which is in line with the literature (Schwartz, 2009). About stimulation and tradition, there is no significant difference between Cameroonians and the French. But, Cameroonians have a higher score for security and compliance factors than French people. Cameroonians are much more likely to comply with the rule compared to the French.

Analysis of the results from the regression

We performed regression analysis to identify variables that predict attitude towards risk and red light running intention in the next twelve months. We undertook that analysis by country, starting by attitudes which are, according to Ajzen (1985) the predictors of behavioral intention and ending with intention itself.

Table 1 *Comparison of averages by country*

	Cameroon (N = 156)		France (N = 131)			
	M	Σ	M	Σ	F	Eta^2
Invulnerability	2.23	0.74	1.93	0.60	13.6 ***	0.04
Control	2.40	1.57	2.41	1.26	, 0	
Perceived vulnerability	3.92	1.30	3.48	1.17	9.0 **	0.03
Perceived severity	3.56	1.26	3.98	1.00	9.8 **	0.03
Perceived effectiveness	3.28	1.49	2.78	1.39	17.1 **	0.02
Self efficacy	3.64	1.49	3.36	1.48	2.5	
Cost	2.80	1.49	2.95	1.40	, 71	
Profit	2.61	1.53	2.52	1.29	, 28	
Autonomy	3.52	1.09	3.91	0.95	10.0 **	0.03
Stimulation	3.21	1.05	3.44	1.00	3.5	
Tradition	3.90	1.24	3.61	1.23	3.8	
Security	4.06	1.03	3.42	1.03	28.1 ***	0.09
Compliance	3.73	1.00	2.96	1.04	41.3 ***	0.12
Attitude	1.83	1.01	2.12	0.79	7.3 **	0.02
Intention	2.62	1.48	3.46	1.45	23.1 ***	0.07
Past behavior	2.66	1.56	3.46	1.45	19.9 ***	0.06
Religion	3.26	0.83	1.66	0.98	224.1 ***	0.44

Note. ** $p <. 01$.

Attitude

Tables 2 and 3 show four stages regressions in relation to attitude towards the red light running among Cameroonians and among the French.

We proceeded by introducing our variables in four steps: in the first step, we introduced beliefs (control belief, feeling of invulnerability to danger and religion); in the second step, we have introduced cultural values (autonomy, stimulation, tradition, security and conformity); in the third step, we introduced factors of motivation for protection (perceived vulnerability,

perceived severity, perceived effectiveness, self-efficacy, cost and benefit) and in the fourth step we introduced past behavior. We also notice that when we progress step by step, the variance part of certain variables decreases or disappears, which means when we introduce news variables, variance part of previous variables are absorbed or shared by those news one.

We find out the two countries do not have the same attitude predictors. Indeed, if the control beliefs do not predict the attitude in the two countries, the feeling of invulnerability to danger predicts the attitude in France in the 4 stages. In other words, despite the introduction of variables relating to cultural values, motivation for protection and past behavior, the feeling of invulnerability remains an attitude predictor. In Cameroon on the other hand, the feeling of invulnerability predicts the attitude only in the first stage. As soon as we introduce cultural values variables, feeling of invulnerability to danger disappears. Religion predicts attitude in the 4 stages in Cameroon, but not in France.

Concerning cultural values, only stimulation is predictive factor of attitude in Cameroon. As soon as we introduce motivation for protection variables, the variance part of the stimulation decreases and even disappears with the introduction of past behavior. In France, autonomy is rather the predictor of attitude. When we introduce motivation for protection variables, the variance part of autonomy increases slightly and decreases when we introduce past behavior. The tradition is not a predictive factor in Cameroon while it is in France with an effect that disappears as soon as motivation for protection variables are introduced.

In Cameroon, no motivation for protection factor predicts attitude while self-efficacy and benefit factors predict attitude in France. Past behavior does not predict attitude in France while it is predictive in Cameroon. We observe our variables predict attitude towards a red light running in Cameroon at 24% while in France they predict the attitude at 39%. Our model is therefore more adjusted for French context than Cameroonian context.

Table 2 *Regression on the attitude of Cameroonians*

	ΔR²	β step 1	β step 2	β step 3	β step 4
1	0.09				
Control		ns	ns	Ns	ns
Invulnerability		0.216 **	ns	Ns	ns
Religion		-0.209 **	-0.205 **	-0.182 *	-0.150 **
2	0.04				
Autonomy			ns	Ns	ns
Stimulation			0.193 *	0.180 *	ns
Tradition			ns	Ns	ns
Security			ns	Ns	ns
Compliance			ns	Ns	ns
3	0.05				
Perceived vulnerability				Ns	ns
Perceived severity				Ns	ns
Perceived effectiveness				Ns	ns
Self efficiency				Ns	ns
Cost				Ns	ns
Profit				Ns	ns
4	0.06				
Past behavior					0.285 **

Note. Total R² = 0 .24.

Table 1 *Regression on the attitude of the French*

	ΔR²	β step 1	β step 2	β step 3	β step 4
1	0.11				
Control		ns	ns	Ns	ns
Invulnerability		0.307 **	0.325 **	0.226 **	0.228 **
Religion		ns	ns	Ns	ns
2	0.03				
Autonomy			0.234 *	0.236 **	0.222 *
Stimulation			ns	Ns	ns
Tradition			-0.184 *	Ns	ns
Security			ns	Ns	ns
Compliance			ns	Ns	ns
3	0.25				
Perceived vulnerability				Ns	ns
Perceived severity				Ns	ns
Perceived effectiveness				Ns	ns
Self efficiency				-0.370 ***	-0.337 ***
Cost				Ns	ns
Profit				0.224 **	0.197 *
4	0.00				
Past behavior					ns

Note. $R^2_{total} = 0.39$.

Intention

Tables 4 and 5 show the regressions analysis results on the intention to run red light in the next 12 months. We introduced the variables in five steps: in the first step, we introduced the beliefs (control beliefs, feeling of invulnerability to danger and religion); in the second step, we have introduced cultural values (autonomy, stimulation, tradition, security and conformity); in the third step, we introduced motivation for protection factors (perceived vulnerability, perceived severity, effectiveness of the recommendation, self-efficacy, cost and benefit), in the fourth step, we introduced attitude and in the fifth step, we introduced the past behavior.

In Cameroon, no belief predicts the red-light running intention, while in France control beliefs predict that intention until the introduction of motivation for protection factors. As soon as we introduce those factors the effect of control

beliefs disappears. In both countries, no cultural value predicts the intention to run red light.

About motivation for protection factors, cost is a predictor of red-light running intention with a slight decrease when we introduce attitude and past behavior in Cameroon. In France, that effect disappears as soon as the attitude is introduced. Benefit is a predictor of intention but its effect disappears as soon as we introduce attitude in the two countries. Self-efficacy predicts intention but its effect disappears as soon as we introduce past behavior in France, whereas in Cameroon, it is not at all a predictive factor.

Past behavior predicts the intention to run red light in both countries. It is a very important predictor which absorbs all variance (52% in Cameroon and 68% in France).

Our variables predict the red-light running intention in Cameroon at 43% and in France at

71%, those proportions are very high. As for attitude, the model is more adjusted in France.

We obtain very high proportions of explained variance with our variables. To illustrate our results, we have proposed a model for explaining the intention to run the red light in the two countries. It is an ad hoc model to be tested.

Table 2 *Regression on the intention of Cameroonians*

	ΔR²	β step 1	β step 2	β step 3	β step 4	β step 5
1	0.01					
Control		ns	ns	ns	ns	ns
Invulnerability		ns	ns	ns	ns	ns
Religion		ns	ns	ns	ns	ns
2	0.00					
Autonomy			ns	ns	ns	ns
Stimulation			ns	ns	ns	ns
Tradition			ns	ns	ns	ns
Security			ns	ns	ns	ns
Compliance			ns	ns	ns	ns
3	0.12					
Perceived vulnerability				ns	ns	ns
Perceived severity				ns	ns	ns
Perceived effectiveness				ns	ns	ns
Self efficiency				ns	ns	ns
Cost				0.264 **	0.250 **	0.169 *
Profit				0.202 *	ns	ns
4	0.1					
Attitude					0.344 ***	0.196 **
5	0.20					
Past behavior						0.521 ***

Note. Total R² = 0.43.

Table 3 *Regression on the intention of the French*

	ΔR²	β step 1	β step 2	β step 3	β step 4	β step 5
1	0.14					
Control		0.366 ***	0.360 ***	ns	ns	ns
Invulnerability		ns	ns	ns	ns	ns
Religion		ns	ns	ns	ns	ns
2	-0.01					
Autonomy			ns	ns	ns	ns
Stimulation			ns	ns	ns	ns
Tradition			ns	ns	ns	ns
Security			ns	ns	ns	ns
Compliance		ns		ns	ns	ns
3	0.25					
Perceived vulnerability				ns	ns	ns
Perceived severity				ns	ns	ns
Perceived effectiveness				ns	ns	ns
Self efficiency				-0.349 ***	-0.261 **	ns
Cost				0.161 *	ns	ns
Profit				0.206 *	ns	ns
4	0.03					
Attitude					0.238 *	0.144 *
5	0.30					
Past behavior						0.683 ***

Note. Total R² = 0.71.

Discussion

The objective of this study was to compare vulnerable road users in Cameroon and France in terms of cultural values, motivation for protection, religiosity, control beliefs and red light running intention.

According to our expectations, there is a significant difference between Cameroon and France in terms of beliefs. However, among the three beliefs measured in our study, that difference is noticed in two beliefs. Indeed, scores of the feeling of invulnerability to danger and religiosity are higher in Cameroon than in France, consequently our hypothesis (H1) is confirmed. Regarding the control belief, there is no difference between the Cameroonian participants and the French participants. The difference on the feeling of invulnerability and religiosity is in line with Inglehart' (1999) positions which support that beliefs are more present in Africa than in Europe. That difference is more evident on religion factor (Mc = 3.26 and Mf = 1.66; F (1, 285) = 224.11, p <.001, η² = .44). Nationality therefore constitutes a major differentiating factor in religiosity. Concerning feeling of invulnerability to danger there is a significant difference between Cameroon and France in accordance with previous works, the strong religiosity of Cameroon could explain this result. Indeed, in previous work (Ngah Essomba et al., 2021), which aimed to identify underlying beliefs and behaviors, some Cameroonian participants stated that religious belief made them invulnerable.

We expected the attitude to predict an intention to run the red light in the next twelve months. Indeed, attitude predicts intention in both countries, therefore our second hypothesis (H2) is confirmed. That result is in line with the work which attests the importance of attitude as a determinant of behavioral intention (for a review, see Armitage & Conner, 2001; Andrew et al., 1999; Chudry et al., 2011; Ajzen, 1985) and particularly in the area of risk-taking while driving (Åberg & Warner, 2008; Conner et al., 2007; Elliot et al., 2003; Forward, 2009; Letirand & Delhomme, 2005; Parker et al., 1992).

For our third hypothesis (H3), we expected the score of red light running intention would be higher among the French participants than among the Cameroonian participants. Our results go in this direction. Indeed, the score of intention is higher among the French than among Cameroonians, therefore our third hypothesis is confirmed. There is an effect of country on intention to run red light. The Cameroonian road context can partly explain this result. There are no traffic lights at all intersections in Cameroon, we could say that Cameroonians in this sense are more afraid to run red light than the French. We can also explain this result by the fact that, according to the setting proposed by Inglehart (1999), Cameroon values respect of the rule, so it is normal Cameroonians had intention to violate the rule weaker rule than the French who are more looking for pleasure and new experiences. Moreover, in previous works, Ngah Essomba et al. (2021) noticed that the attitude score of the French towards risk was higher than that of Cameroonians. It might seem normal the intention score of the French is higher than that of Cameroonians, since according to several authors such as Ajzen (1985), attitude is a predictor of behavioral intent.

For our fourth hypothesis, we expected a significant difference between Cameroonians and French on cultural values. That is, scores of autonomy and stimulation being higher in France and scores of tradition, safety and compliance being higher in Cameroon. We noticed differences in three out of five values. Indeed, there is an effect of country on autonomy. The French have a higher score than Cameroonians. Cameroonians have a higher security, compliance scores than the French. Our fourth hypothesis is therefore confirmed. That result is consistent with Schwartz' (2009) work and can be explained by the fact that cultural values are not static. They can change and move towards a globalization generated by

international mobility, the standardization of artistic productions, and the use of new ways of communication such as phones, tablets, the Internet, etc.

We expected perceived vulnerability scores to be higher among Cameroonian participants than among the French participants. There is an effect of the country on perceived vulnerability. In fact, the perceived vulnerability score is higher in the Cameroonian sample than in the French sample in accordance with our expectations. Therefore, our fifth hypothesis (H5) is confirmed too. In previous works, we observed a higher risk attitude score among the French. The road context may explain that high score of perceived vulnerability in the Cameroonian sample. That score can be explained by the Cameroonian road context which is not modern. Not all roads in Cameroon have traffic lights, sidewalks, etc. In addition to that lack of lights and sidewalks, we can also talk about roads that are not paved and do not promote risk-taking. As mentioned above, the willingness to respect the rule can lead Cameroonian participants to have an attitude less favorable to risk-taking.

We expected that beliefs predict attitude (H6) towards red light running as in Ajzen's (1985) model. Between the three beliefs in our research, two predict attitudes. In Cameroon, invulnerability to danger predicts attitude in the first stage and religiosity predicts attitude in all four stages. In France, of the three beliefs, only one predicts the attitude towards red light running: the feeling of invulnerability to danger which predicts the attitude in the four stages. Our sixth hypothesis is therefore confirmed. In Cameroon the share of variance explained is 9% while in France it is 11%.

Conclusion

This study aimed to compare Cameroonians to French people on beliefs, cultural values, motivation for protection and the intention to transgress the red light. We found that there is a difference between Cameroonians and French people in terms of beliefs. As Inglehart (1999) had shown, beliefs are more evident in

Cameroon than in France. Indeed, as in previous work, Cameroonians have a higher sense of invulnerability to danger than the French. It is the same for religiosity which is very developed in Cameroon compared to France. That result is in line with what has been noticed by some researchers, some developed countries have adopted secular values with social norms having no relation to religiosity while some less developed countries attach great importance to religiosity with traditional values defined by the family (Inglehart, 1999; Cestac & Assailly, 2015). Regarding cultural values, we also found there are differences between Cameroonians and the French people as already predicted in the literature (Schwartz, 2006). There are differences and similarities between the Cameroonian and French models in terms of transgressions and risk-taking. Indeed, in terms of control beliefs, there is no difference between the Cameroonian and the French samples. We can say vulnerable young road users in both countries overestimate their ability to control road risks (Rumar, 1988) and they develop a subjective belief (Delhomme & Meyer, 1995). Concerning similarities, cultural beliefs and values are linked to the red light running in both countries but it is not about the same values and beliefs. In Cameroon, we have religiosity which is linked to the attitude to the transgression of the red light while in France, it is the invulnerability to danger which is linked to attitude fo red light running. In relation to cultural values, in Cameroon there is a positive link between stimulation, conformity and attitude while in France there is no link between conformity and attitude, on the other hand, there is a very slight positive link between attitude and stimulation.

References

[1]. Ajzen, I. (1985). From intention to actions: A theory of planned behavior. In J. Khul, & J. Beckman, (Eds). Action Control: *From Cognition to Behavior* (Pp.11-39). Heidelberg: Springer.

[2]. Ajzen, I. (2011). The theory of planned behavior: reactions and reflections. *Psychology Health* 26 (9), 1113–1127.

[3]. Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behavior: A meta-analytic

review. *British Journal of Social Psychology*, 40, 471–499.

[4]. Andrew Smith, R., & Biddle, S.J.H. (1999). Attitudes and exercise adherence: Test of the Theories of Reasoned Action and Planned Behavior. *Journal of Sports Sciences, 17*(4), 269-281. doi: 10.1080/026404199365993

[5]. Assailly, J.P. (2010). *La psychologie du risque.* Lavoisier, Collection Sciences du Risque et de la Décision.

[6]. Åberg, L., & Warner, H. (2008). Speeding-deliberate violation or involuntary mistake? [Excès de vitesse-violation délibérée ou erreur involontaire ?]. *European Review Of Applied Psychology*, 58(1), 23-30, doi: 10, 1016/j,erap,2005,09,014.

[7]. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215

[8]. Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: Freeman.

[9]. Becker, M.H., & Rosenstock, I.M. (1987). Comparing social learning theory and the health belief model. In W.B. Ward, (Ed.). *Advances in Health Education and Promotion* (Pp.245-249). Greenwich, CT: JAI Press.

[10]. Bronfenbrenner, K., Friedman, S., Hurd, R.W., Oswald, R.A., & Seeber, R.L. (1998). Introduction [Electronic version]. In K. Bronfenbrenner, S. Friedman, R.W. Hurd, R.A. Oswald, & R.L. Seeber (Eds.), *Organizing to win*: *New research on union strategies* (Pp. 1-15). Ithaca, NY: ILR Press.

[11]. Benthin A, Slovic P., & Severson, H. (1993). A psychometric study of adolescent risk perception. *Journal of Adolescence*, 16, 153–168.

[12]. Cestac, J., & Assailly, J.-P. (2015). Culture and risk behaviors. In A. Columbus (Ed.). *Advances* in *Psychology Research*, vol. 111. (Pp.81-103). New York: Nova Science.

[13]. Chan, C.N.D., Wu, A.M.S. & Hung, E.P.W. (2010). Invulnerability and the intention to drink and drive: An application of the theory of planned behavior. *Accident analysis and prevention. Elsevier*, 42, 1549-1555.

[14]. Chudry, F., Foxall, G., & Pallister, J. (2011). Exploring Attitudes and Predicting Intentions: Profiling Student Debtors Using an Extended Theory of Planned Behavior. *Journal of Applied Social Psychology*, 41(1), 119-149.

[15]. Conner, M., Lawton, R., Parker, D., Chorlton, K., Manstead, A.S.R., & Stradling, S. (2007). Application of the Theory of Planned Behaviour to the prediction of objectively assessed breaking of posted speed limits. *British Journal of Psychology*, 98, 429–453.

[16]. Cohen, J. (1988). Statistical power analysis for the behavioral sciences, Hillsdale, Erlbaum. *Condition de Travail*, 5, 7-27.

[17]. Casey, B. J., Giedd, J.N., & Thomas, K.M. (2000). Structural and functional brain development and its relation to cognitive development. *Biological Psychology*, 54(1-3), 241-257.

[18]. Deconchy, J.-P., & Hurteau, C. (1998). Non-contrôle cognitif (learned helplessness), épuisement cognitif et recours à des explications "irrationnelles". In J.L. Beauvois, R.V. Joule et J.M. Monteil (Eds.). *Perspectives cognitives et conduites sociales* (Pp. 103-126). Lausanne, France : Delachaux et Niestlé.

[19]. Dejoy, D.M. (1996). Theoritical model of health behaviour and work-place self protective behaviour. *Journal of Safety Research*, 54, 343-355.

[20]. Delhomme, P., & Meyer, T. (1995*). Évaluation de ses propres comportements de conduite : effet sur le contrôle subjectif et la régulation de l'activité* (Rapport no 200). Arcueil : Institut national de recherche sur les transports et leur sécurité.

[21]. Duggan, P.M., Lapsley, D.K., & Norman, K. (2000). *Adolescent invulnerability and personal uniqueness: Scale development and initial construct validation*. Paper presented at the 8th Biennial Meeting of the Society for Research on Adolescence, Chicago, Illinois.

[22]. Elliot, M., Armitage, C., & Baughan, C. (2003). Drivers' compliance with speed limits: An application of the theory of planned behavior. *Journal of applied psychology*, 88(5), 964 – 972.

[23]. Eagly, A.H., & Chaiken, S. (1993). The Psychology of Attitudes. New-York, NY: Harcourt Brace, Jovanovich.

[24]. Forward, S. (2009). Theory of planned behavior: the role of descriptive norms and past behavior in the predicting of drivers' intention to violate. *Traffic psychology and behavior,* 12(3), 198 – 207.

[25]. Goggin, K, Malcarne, V.L., Murray, T.S., Metcalf, K.A., & Wallston, K.A. (2007). Do religious and control cognitions predict risky behavior? II. Development and validation of the Sexual Risk Behavior-related God Locus of Control Scale for adolescents (SexGLOC-A). *Cognitive Therapy and Research, 31*, 123-139.

[26]. Granet, P. (2014). *Religions traditionnelles africaines*. Serpent Libertaire.

[27]. Hebert Martinez, K.L., & Porter, B.E. (2006). Characterizing red light runners following implementation of a photo enforcement program. *Accident Analysis and Prevention*, 38(5), 862-870.

[28]. Inglehart, R. (1999). *Choc des civilisations ou modernisation culturelle du monde*? Le Débat, n°105, mai-août.

[29]. Jonah, B. A. (1986). Accident risk and risk-taking behaviour among young drivers. *Accident Analysis and Prevention*, 18, 255-271.

[30]. Konecni, V.J., Ebbesen, E.B., & Konecni, D.K. (1976). Decision processes and risk-taking in traffic: Driver response to the onset of yellow light. *Journal of Applied Psychology*, 61, 59–67.

[31]. Kouabenan, D.R. (1999). *Explication naïve de l'accident et prévention*. Paris: Presses Universitaires de France.

[32]. Kouabenan, D.R. (2007). Incertitude, croyances et management de la sécurité. *Le Travail Humain*, 70(3), 271- 287.DOI 10.3917/th.703.0271.

[33]. Letirand, F., & Delhomme, P. (2005). Speed behaviour as a choice between observing and exceeding the speed limit. *Psychology and Behavior,* 8(6), 481–492.

[34]. Marwell, G., Aiken, M.T., & Demerath, N.J. (1987). The persistence of political attitudes among 1960s civil rights activists. *Public Opinion Quartertly*, 51, 359-375.

[35]. Matthews, M., & Moran, A. (1986). Age differences in male drivers' perception of accident risk: The role of perceived driving ability. *Accident Analysis and Prevention*, 18(4), 229- 313.

[36]. Magnusson, D., & Stattin, H. (1998). Person-context interaction theories. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (Pp. 685-759). New York, NY: John Wiley & Sons.

[37]. Manstead, A.S.R., Parker, D., Stradling, S.G., & Lawton, R. (1996). *Adding affect to the theory of planned behavior'*. Paper based on the research report for the United Kingdom Department of Transport, London.

[38]. Ngah Essomba, H. C., Mvessomba, A. E., Cestac, J. Mbédé, R. & Delhomme, P. (2020). *Perception et prise de risque routier chez les usagers vulnérables du Cameroun et de la France : une étude qualitative*. Revue Camerounaise de Psychologie, 01(4), 16-40.

[39]. Ngah Essomba, H. C., Cestac, J., Mvessomba, A. E., Mbédé, R. & Delhomme, P. (2021). *Comparaison cameroun-france sur le plan de l'invulnerabilite au danger et de l'attitude envers le risque routier.* Revue Camerounaise de Psychologie, 02, 68-101*.*

[40]. ONISR. (2009). Observatoire Nationale Interministériel de la sécurité routière. La sécurité routière en France, Bilan de l'année 2008. Documentation française.

[41]. Parker, D., Manstead, A.S.R., Stradling, S.G., Reason, J.T & Baxter, J.S. (1992). Intention to commit driving violations: an application of the theory of planned behaviour. *Journal of Applied Psychology*, 77(1), 94-101.

[42]. Peltzer, K., & Renner, W. (2003). Superstition, risk-taking and risk perception of accidents among South African taxi drivers. *Accident Analysis and Prevention*, 35, 619-623.

[43]. Pelz, D.C. (1971). "Driving 'immunization' in alienated young men." *Human Factors*, 18, 465-476.

[44]. Porter, B.E., & Berry, T.D. (2001). A nationwide survey of self-reported red light running: measures, prevalence, predictors and perceived consequences. *Accident analysis and prevention*, 33(6), 735-741.

[45]. Porter, B.E., & england, J.K. (2000). Predicting red-light Running behavior: A traffic safety study in free Urbain settings. *Journal of safety research*, 31(1), 1-8.

[46]. Retting, R,A., & Williams, A.F. (1996). Characteristics of Red Light Violations: Result of a Field Ivestigation. *Journal of Safety Research*, 27(1), 9-15.

[47]. Rubin, K.H., Bukowski, W., & Parker, J.G. (1998). Interactions, relationships, and groups. In W. Damon (Ed. In chief) & N. Eisenberg, (Vol. Ed.). *Handbook of Child Psychology*: Vol 3. Social, Emotional and Personality Development (5th ed., Pp. 619-700). New York: John Wiley and Sons.

[48]. Rutter, D. R., & Quine, L. (1996). Age and experience in motorcycling safety. *Accident Analysis and Prevention*, 28(1), 15-21.

[49]. Rogers, R.W. (1983). Cognitive and psychological processes in fear appeals and attitude change. A revisited theory of protection motivation. In J; Cacioppo & R. E. Petty (Eds), *Social Psychophysiology* (Pp. 153-176). New York, NY: Guilford Press.

[50]. Rogers, R.W. (1975). A protection motivation theory of fear appeals and attitudes change. *Journal of psychology*, 91, 93 – 114.

[51]. Rogers, R.W., & Prentice-Dunn, S. (1986). Protection motivation theory and preventive health: Beyond the health belief model. *Health Education Research* , 1(3), 153-161.

[52]. Rumar, K. (1988). Collective risk but individual safety. *Ergonomics*, 31, 507-518.

[53]. Santor, D.A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity, and conformity in adolescent boys and girls: Predicting school performance, sexual attitudes and substance abuse. *Journal of Youth and Adolescence.* 29:163–182.

[54]. Schwartz, S.H. (2001). *Antecedents and consequences of national variation on three cultural dimensions*. Keynote address at the

International Conference Comparing Cultures: Dimensions of Culture in Comparative Perspective, Tilburg, Pays-Bas.

[55]. Schwartz, S.H. (2006). Les valeurs de base de la personne: Théorie, mesures et applications [Basic human values: Theory, measurement, and applications]. *Revue Française de Sociologie*, 47, 249-288.

[56]. Schwartz, S.H. (2007). Cultural and individual value correlates of capitalism: A comparative analysis. *Psychological Inquiry*, 18, 52-57.

[57]. Schwartz, S.H. (2009). Causes of culture: National differences in cultural embeddedness. In A. Gari & K. Mylonas (Eds.). *Quod Erat Demonstrandum. From Herodotus' ethnographic journeys to cross-cultural research* (Pp.1-11). Athens: Pedio Books Publishing.

[58]. Sheeran, P., & Taylor, S. (1999). Predicting intentions to use condoms: A meta-analysis and comparison of the theories of reasoned action and planned behavior. *Journal of Applied Social Psychology*, 29, 1624–1675.

[59]. Slovic, P., Fischhoff, B., & Lichtenstein, S. (1981). Perceived risk: psychological factors and social implications. *Proceedings of the Royal Society of London*, A376, 17-34.

[60]. Steinberg, L., Dahl, R., Keating, D., Kupfer, D., Masten, A., & Pine, D. (2006). Psychopathology in adolescence: Integrating affective neuroscience with the study of context. In D. Cicchetti & D. Cohen (Eds.). *Developmental psychopathology Developmental neuroscience*, Vol. 2, 710−741.

[61]. Scott-Parker, B., Watson, B., King, M.J., & Hyde, M.K. (2012). Young, inexperienced and on the road – Do novice drivers comply with road rules? Transportation Research Record: *Journal of the Transportation Research Board*, No. 2318 (Pp. 98–106). Washington, DC: Transportation Research Board of the National Academies.

[62]. Triandis, H.C. (1980). Values, attitudes and interpersonal behaviour. In H. E. Howe, & M. Page (Eds), *Nebraska Sypomsium on Motivation*, (Pp. 195-2259). Lincoln, NE: University of Nebraska.

[63]. Tavafian, S.S., Aghamolaei, T., & Madani, A. (2011). Predictors of speeding behavior among a sample of iranian commercial automobile drivers: An application of the theory of planned behavior. *Traffic Injury Prevention*, 12(3), 274-278.

[64]. Vermeersch, H., T'Sjoen, G., Kaufman, J.M., & Vincke, J. (2008). The role of testosterone in aggressive and non-aggressive risk-taking in adolescent boys. *Hormones and Behavior*, 53(3):463–471.