


S. Oppong*

ON THE ISSUE OF CULTURAL INFLUENCE ON RISK PERCEPTION: AN EMPIRICAL COUNTERARGUMENT TO SJÖBERG'S CONCLUSION

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SUMMARY: After an extensive review of the literature and his own empirical studies investigating the effect of culture on risk perception, Sjöberg (1998) concluded that the cultural theory simply is wrong and therefore, dead. However, other researchers and studies tend to also suggest that culture theory still has a significant explanatory power. The purpose of the study, therefore, was to gather new evidence using a different analysis technique to contribute to resolving this inconclusive conclusion. Data were gathered from 226 commercial vehicle drivers and were classified based on their transport-specific worldview or culture. A general linear model fitting using one-way ANOVA was conducted to compare the respondents on their transport-specific risk perception. Results of the cluster analysis showed that there were three clusters of drivers which were labelled as "Traditional-Conformists" (Cluster III drivers), "Adventurists" (Cluster II drivers) and "Moderates" (Cluster I). The ANOVA results further showed that Traditional-Conformist (Cluster III) drivers reported more accurate perception of risk compared to the Moderates (Cluster I) and the Adventurists (Cluster II). The findings were discussed in context of the ongoing debate about the explanatory power of culture in accounting for differences in risk perception. The implications for future research were also discussed.

Key words: risk perception, cultural theory, Sjöberg, road safety, traffic psychology

INTRODUCTION

Risk perception is one of the most studied constructs in safety science (Rundmo, 1996). Evidence so far suggests that risk perception, regardless of how it is conceived, is associated with safety performance or accident (Rundmo, 1996, Kouabenan et al., 2015, Taylor, & Snyder, 2017). Attempts have been made to account for why risk perception influences safety behaviour or safety performance or accident (see Kouabenan et al., 2017, Oppong, 2015, 2021). Cultural differences in risk perceptions have been documented. For instance, Lund and Rundmo (2009) reported

differences in risk perceptions between a Ghanaian sample and a Norwegian sample. Thus, the idea of cultural differences in risk perception is not in doubt.

However, the relevance of the cultural theory as a viable explanatory factor in risk perception studies has been called into question. Sjöberg (1998) criticized the cultural theory as accounting for only a small variance in risk perception. As a result, Sjöberg (1998) has called for the replacement of the cultural theory with other constructs with more explanatory power. In fact, Sjöberg (1998, p.149) argues that:

Cultural biases explained only a minor share of risk ratings ... The World View scales therefore do not seem particularly well suited for the task of explaining technology and environment concerns

*Prof. Seth Oppong, Ph.D., (Oppongs@ub.ac.bw or oppon.seth@gmail.com), University of Botswana, Gaborone, Botswana & University of the Witwatersrand, Johannesburg, South Africa.

and perceived risks. This is an important finding because Cultural Theory has been particularly interesting to some practitioners for the reason that it can allegedly explain risk perception of technology and environment related issues. In my view the most likely explanation of the present results and those reviewed in my previous work is that Cultural Theory simply is wrong.

Nevertheless, the merits of cultural theory cannot be conclusively discounted, particularly when one examines the different approaches to culture studies. Largely, the cross-cultural studies employ statistical techniques that compare group means while the intra-country studies apply statistics based on correlation. Weber and Hsee (1998) have suggested that cultural differences in risk perception do exist, but it is due to differences in the perception of the risk rather than the attitude towards the perceived risk.

CULTURAL THEORY AND WORLDVIEW

According to Benedict (1931, p. 806), culture is that “complex whole which includes all the habits acquired by man as a member of society”. Similarly, Kluckhohn and Kelly (1945, p. 97) defined culture as “all those historically created designs for living, explicit, implicit, rational, irrational, and non-rational, which exist at any given time as potential guides for the behaviour of men”. These definitions suggest that culture creates “patterns and serve as guides and standards of behaviour for members of the group” (Leinkeit, 2001, p. 282). Indeed, culture becomes a framework through which a group of people understands and interacts with their environment while providing guidelines for behaviour. That culture influences behaviour of people implies that culture also influences the behaviour of commercial vehicle drivers.

There are a few cultural theories (Oppong & Strader, 2022). However, the one of relevance to traffic psychology and occupational health psychology is Douglas’ Grid-Group Typology (Douglas, 1978). According to her, the “group” is defined:

...in terms of the claims it makes over its constituent members, the boundary it draws around

them, the rights it confers on them to use its name and other protections, and the levies and constraints it applies. Group is one obvious environmental setting, but we seem unable to conceive of the individual’s environment if it is not a group of some kind” (Douglas, 1978: 8).

In sum, the concept of “group” as used by Douglas can be summarized in terms of individualism versus collectivism or communalism. Thus, “group” deals with whether or not members of a particular social group place the interest of their group over and above their personal interests or the latter is placed above the former.

How about the concept of grid? Douglas (1978, p. 8) explained “grid” as:

... the cross-hatch of rules to which individuals are subject in course of their interaction. As a dimension, it shows a progressive change in the mode of control. At the strong end, there are visible rules about space and time related to social roles; at the other end, near zero, the formal classifications fade, and finally vanish. At the strong end of grid, individuals do not, as such freely transact with one another. An explicit set of institutionalized classifications keep them apart and regulate their interactions, restricting their options.

In effect, the “grid” deals with the issue of whether or not the members of the social group are allowed limited behavioural options or sufficiently enough liberty to act freely. A typical high-grid situation is where each person has very limited behavioural options whereas a low-grid situation is where individuals are free to act. Thus, the grid-group analysis provides a framework for understanding the different modes of social control (Oltedal et al., 2004).

		Grid	
		High	
Group	Low	Fatalistic	Hierarchical High
		Individualistic	Egalitarian Low

Figure 1. Mary Douglas’s (1978) Grid-Group Typology
Slika 1. Tipologija rešetkastih grupa Mary Douglas (1978.)

Based on the two axes, Douglas (1978) identified four different *worldviews* or ways of life; these are *individualistic*, *egalitarian*, *hierarchical*, and *fatalistic* worldviews (see Figure 1) (*adapted from Douglas, 1978*). Generally, worldview refers to a system or set of beliefs through which an individual or a group understands or perceives and interprets the world (Vidal, 2008). According to Olstedal et al. (2004), this typology has implications for how individuals understand and perceive risk. According to Douglas (1978), individualists are characterized by a low degree of both group and grid. This implies that such people tend to prefer not to be embedded in group activities while at the same time, preferring to have unlimited liberty to act freely. This means that individualists fear things that might obstruct their individual freedom (Olstedal et al., 2004) and that their awareness of risk does not change their behaviour (Nieh et al., 2013).

Egalitarians are characterized by a low degree of grid and a high degree of group. Such individuals prefer to be in situations where they are highly absorbed into their group activities but behavioural options available to them are not limited by the group norms. Olstedal et al. (2004) have also described egalitarians as people who fear developments that may increase the inequalities amongst people, though they have the option of doing what they may want to do. Again, egalitarians tend to generally oppose risk that inflicts irreversible dangers on many people or future generations (Nieh et al., 2013).

On the other hand, persons with *hierarchical* worldview tend to emphasize the "natural order" of the society and the perseverance of this order. They are characterized by a high degree of both grid and group. Like egalitarians, they belong to highly bonded or communal groups. However, unlike egalitarians, hierarchists tend to have limited range of behavioural options (defined by their groups) from which to choose. They are also reported to accept risk as long as decisions about these are justified by government or experts (Olstedal et al., 2004) and their behavioural patterns are at any level that experts or authorities have determined as the best (Nieh et al., 2013).

Fatalists are characterized by a low degree of group and a high degree of grid. The implication

is that fatalists tend to have low sense of psychological community. However, they also tend to have limited behavioural options from which to choose. Thus, they feel restricted by social groups to which they do not feel any sense of belongingness and have little or no bother about things over which they think they have no control (Olstedal et al., 2004). The worldviews described in the above matrix have implications for how a given person perceives the world around and relationship between human action and the natural environment.

The cultural theory has been critiqued by Sjöberg (1998) as accounting for very small variance in risk perception. Sjöberg (1998) called for the replacement of the cultural theory with other constructs which have more explanatory power. However, it is possible to adequately respond to Sjöberg's criticism if one examines the major approaches to the culture studies.

The cultural theory has been tested through (1) cross-cultural studies and (2) worldview studies within the same cultural group. Most of the cross-cultural studies tend to report better outcomes (significant cultural difference) than the intra-country worldview studies (*see Weber & Hsee, 1998*). This difference is because intra-country worldview studies have a restriction of range (variables are restricted to narrow range) and lower statistical conclusion validity given that they are based on a homogeneous population. Shadish, Cook and Campbell (2002, p. 50) suggest that restriction of range lowers "power and attenuates bivariate relations". In other words, reduced range on one of the variables is found to weaken the relationship between that particular variable and another (Shadish et al., 2002).

Weber and Hsee (1998) have suggested that cultural differences in risk perception do exist but they are due to differences in risk perception rather than one's attitude towards perceived risk. More recently, Nieh et al. (2013) have reported that being a *hierarchist* is negatively associated with probability of benefit and positively with the expected benefit and harm. They also reported that those characterized by individualism are also associated positively with the expected harm while those characterized as egalitarians are associated positively with both the probability of

harm and the expected harm. These latest findings provide new insights into understanding the complex pattern of relationships between risk and worldview. The assessment of risk by *hierarchists* is influenced by the likelihood of benefit as well as the estimated benefit and harm. On the other hand, individualists are influenced by only the estimated benefit. *Egalitarians* are influenced by both the likelihood of danger and the estimated danger. As a result, one can argue that egalitarians are likely to overestimate the risk in a particular activity while *individualists* are more likely to underestimate the inherent risk. *Hierarchists* are more likely to be risk aware.

Unlike the other variants of worldviews identified by Douglas, fatalists have not been extensively studied. For instance, this group did not feature prominently in Nieh et al.'s (2013) study. However, inferences can be made about the perspective of fatalists based on their lack of worry about things over which they feel they do not have control. Given that there is a chance element in accidents and other disasters, fatalists are more likely to unknowingly take unreasonably high risk than will the individualists, hierarchists and egalitarians. Thus, it is possible to intimate that risk perception ratings may be generally lower for fatalists followed by individualists, hierarchists and egalitarians in that order. It is expected in the current study that commercial vehicle drivers who score high on fatalism are more likely to perceive the lowest level of risk inherent in accident-prone behaviours while commercial vehicle drivers who score high on egalitarianism will report that highest level of risk.

The propositions about the pattern of relationship between risk perception and worldview are supported by Marris et al. (1998). They examined the relationship between risk perception (measured as likelihood of harm to future generations) and worldview for 13 different hazardous conditions. Marris et al. (1998) reported a negative relationship between individualism and perceived risk associated with food colouring and no relationship among the latter, hierarchy, egalitarianism, and fatalism. However, they reported a positive relationship among perceived risk associated with car driving and egalitarianism on one hand, and negative relationship between dri-

ving and individualism on the other. This implies that those high on individualism tend to perceive lower risk associated with both car driving and food colouring whereas those high on egalitarianism also tend to perceive higher risk associated with car driving.

The perspective taken in this study is that culture is a collective property and that assessing and treating it as if it is an individual attribute is not helpful. The perspective adopted in this study is consistent with LeCompte and Schensul's (1999) argument. LeCompte and Schensul (1999, p. 21) argued that:

Culture is not an individual trait. If what we observe is unique to an individual and is not repeated by others in similar settings, it is not culture... Culture consists of group patterns of behaviour and beliefs which persist over time.

They further argued that culture can be treated in two ways: (1) as a mental or cognitive phenomenon and (2) behaviourally in terms of actual or observed as opposed to what people say they do (as reported) or expect to do (norm) (LeCompte & Schensul, 1999). In this study, culture was treated as a cognitive phenomenon and a group pattern. As a result, the participants were categorized into clusters based on their scores on the worldview dimensions. The purpose was to create clusters of drivers with similar or shared worldviews in respect of what they "know, believe, think, understand, feel or mean about what they do" (LeCompte & Schensul, 1999, p. 22). In this study, I used transport-specific culture scale that has been developed based on the grid-group theory of culture by Oltegal et al. (2004). This facilitates the assessment of transport-relevant worldview among the drivers and represents the key link of the grip-group theory of culture to this study.

It can be deduced from the literature that there is an ongoing debate about the role of culture in explaining risk perception. To that extent, it can be said that the controversy continues to rage on (see Oltegal et al., 2004). This study, therefore, attempts to contribute to the resolution of this controversy. It does so by categorizing the participants through cluster analysis based on the worldview scores and then employing an appropriate group-based statistical technique to compare the

clusters in terms of their risk perception scores. The purpose of this study, therefore, was to investigate the influence of the culture/worldview on risk perception among commercial vehicle drivers in the Accra Metropolis in the Greater Accra Region of the Republic of Ghana.

THE PRESENT STUDY

This study was carried out among participants in the informal sector, namely, commercial vehicle drivers who were drawn from four bus terminals at (i) Tudu, which is located at the Central Business District of the city of Accra (ii) Kaneshie, (iii) Circle and (iv) Madina. The participants operated on inter-regional routes to and from the Capital City of Accra.

A cross-sectional survey was conducted in which a sample of 226 (94.17%) out of the targeted sample size of 240 commercial vehicle drivers took part. The drivers were all males and their years of driving experience ranged between 1 and 45 years ($M = 14.76$, $SD = 8.97$). Most of the respondents was at least 33 years (68.3%), achieved only Junior High/Middle School education (61.6%), reported being Christians (92%) and drove a minibus (62.7%). Consult Oppong (2018) for a detailed description of the design, sampling method, ethics approval process, and the data collection procedure used. Data were analysed using SPSS v.17.

Measures

Risk Perception: A 20-item scale required the respondents to indicate the probability of the certain road situations or actions or hazards resulting in a road accident. High scores implied high or more accurate risk perception given that all the road situations were hazardous. This scale constructed by the researcher through adaptation of Akaateba and Amoh-Gyimah's (2013) 10-item Traffic Law Violation Questionnaire (TLVQ), Nordfjærn's (2006) 10-item Traffic Risk Perception Scale, and observation of in-traffic behaviour of drivers. The TLVQ was developed based on the Ghana Highway Code. The Traffic Risk Perception Scale comprised two sub-scales, namely (1) a 6- item Traffic Accident Risk sub-scale

(Cronbach's alpha of 0.806) and (2) a 4-item General Accident Risks (Cronbach's alpha of 0.882). However, I used the Traffic Accident Risk sub-scale given that its focus was about perception of risk. In contrast, the General Accident Risk sub-scale dealt more with the risk of being involved in a road traffic accident as a function of the type of road user such as a rider of a bicycle, a passenger of a motor vehicle, a driver of a motor vehicle, and a pedestrian. Akaateba and Amoh-Gyimah (2013) reported a Cronbach's alpha of 0.757 for their scale. In this study, a Cronbach's alpha of 0.95 was reported. Respondents were required to employ the following rating scale to indicate their assessment of the probability of certain risky behaviours resulting in road accident: 0 = Will never occur, 1 = Unlikely to occur, 2 = May occur, and 3 = Highly probable. Sample items include the following: "Overtaking when prohibited", "Driving without regard for the other road users", and "Failing to stop when signalled by the Police/Traffic warden".

Transport-specific Worldview scale: A 38-item scale assessed the respondents' worldview or cultural orientation based on Douglas' (1978) group/grip cultural theory. The measurement of cultural worldviews has been criticized (Oltedal et al., 2004). One key criticism is the claim of the "mobility view of culture makes it possible to adhere to different cultures in different situations or parts of life" (p. 28). Oltedal et al. (2004, p. 28) have recommended that "one possible improvement of the questions may be to specify which group a person belongs to when he or she answers the question (i.e. when you as a driver/athlete/police-officer assess the following)". In this study, the respondents were required to answer the questions from the perspective of commercial vehicle drivers. Cronbach's alpha of 0.68, 0.55, and 0.54 for the hierarchy, individualism, and egalitarianism worldview scales respectively were reported in Nieh et al.'s (2013) study. Similarly, Brenot et al. (1998) reported Cronbach's alpha of 0.44 for egalitarianism, 0.56 for fatalism, 0.57 for individualism, and 0.60 for hierarchy. More recently, the Cronbach's alpha for the unabridged questionnaire for Cultural Theory (CT) is reported to exceed 0.70 and that the shortened CT questionnaire has a Cronbach's alpha of 0.76 for the individualism-communitarianism items and 0.84

for the hierarchy-egalitarianism items (*Ripberger et al., 2015*). In this study, a reliability coefficient of 0.81, 0.88, 0.65, and 0.67 were documented for hierarchy (12 items), individualism (11 items), egalitarianism (6 items), and fatalism (9 items) sub-scales respectively. Scores were computed for each of the sub-scales for data analysis.

RESULTS

Table 1 presents the descriptive statistics such as the skewness, kurtosis, reliability coefficients and Pearson Product-Moment correlations among the study variables. The results presented in Table 1 reveal significant positive correlations between risk perception and the four dimensions of the transport-specific worldview assessed.

A two-step cluster analysis was performed to construct clusters of the commercial vehicle drivers. The analysis was performed on the scores

for the four subscales. This was done to facilitate labelling the clusters. Finally, a univariate general linear model fitting using one-way ANOVA was performed to test how the clusters differed on risk perception. Results of the cluster analysis are presented in Tables 2 and 3.

A three-cluster solution was observed (see Table 2) in which 222 cases out of 226 (representing 98.20%) were classified based on the proximity or distances to the centroids (see Table 2). Most of the participants were classified under Cluster I (60.8%). This suggests that Cluster I participants had high scores on hierarchy and fatalism, and moderate scores on individualism and egalitarian while Cluster II participants had lower scores on all the four dimensions. Cluster III participants also recorded high scores on all the four dimensions of worldview. Based on Douglas's (1978) Grid-Group typology, the drivers within the clusters can be described in the following manner.

Table 1. Skewness, Kurtosis, Reliability Coefficients, and Inter-correlations among Study Variables

Tablica 1. Asimetrija, kurtoza, koeficijenti pouzdanosti i međukorelacije među varijablama studije

N/S	Variables	S	K	1	2	3	4	5
1	RP	-1.56	4.81	(.95)				
2	WH	-0.27	-0.36	.45**	(.81)			
3	WIn	-0.68	0.45	.46**	.79**	(0.88)		
4	WEg	-0.54	0.05	.39**	.61**	.67**	(.65)	
5	WF	0.24	0.04	.16**	.24**	.21**	.27**	(.67)

** p< 0.01; n = 226

^aNumbers in parentheses along the diagonal represents the respective reliability coefficients for each of the variables.

S = Skewness; K = Kurtosis; RP = Risk perception; WH = Hierarchy dimension of worldview; WIn = Individualism dimension of worldview; WEg = Egalitarian dimension of worldview; WF = Fatalism dimension of worldview.

Table 2. Cluster Profiles Presenting their Respective Centroids

Tablica 2. Profili klastera koji predstavljaju svoje centroide

Cluster	WH		WIn		WEg		WF	
	M	SD	M	SD	M	SD	M	SD
	1	43.85	4.20	38.58	3.62	22.68	3.15	25.78
2	31.99	4.89	19.44	4.40	13.73	2.80	20.73	2.43
2	55.55	3.06	49.09	5.60	26.30	3.88	26.61	8.56

WH = Hierarchy dimension of worldview; WIn = Individualism dimension of worldview; WEg = Egalitarian dimension of worldview; WF = Fatalism dimension of worldview.

Cluster III drivers tend to prefer to be in situations where they are highly absorbed into their group activities but behavioural options available to them are not limited by the group norms and are generally oppose risk that inflicts irreversible dangers on many people or future generations. They are risk-aware though their awareness of risk does not change their behaviour. These drivers also emphasize the “natural order” of the society and the perseverance of this order and accept limits defined by authorities. We may call these drivers “*Traditional-Conformists*”. Cluster II drivers are opposed to rules defined by authorities and value having things that do not limit liberty to act freely and options. Let us call these drivers “*Adventurists*”. Cluster I drivers are moderates in their views regarding role of authority, embeddedness in groups, and liberty to act freely. We shall call them simply “*Moderates*”.

Most of the participants were classified as moderates or with Cluster I (60.8%). Given that risk perception was positively related to all the four dimensions of worldview (see Table 1) and the participants were mostly moderates, it was expected that, on the average, the participants would have more accurate perception of risk. Indeed, a one-sample t-test conducted to compare the sample against a test value of 30 (being the midpoint on the scale) revealed that risk perception of the participant was significantly higher ($M = 49.46$, $SD = 9.93$), $t(225) = 29.45$, $p < 0.01$. Midpoint-as-test-value analysis in one-sample t-test has been used in a similar manner by other researchers (see Beckwitt, Van Camp, & Carter, n.d; Elashi et al., 2010; Gray, 2012; Huckstadt & Shutts, 2014; Rand & Epstein, 2014; Sheard et al., 2003).

Table 3. Cluster Distribution

Tablica 3. Distribucija klastera

		n	% of Combined	% of Total
Cluster	1	135	60.8%	59.7%
	2	30	13.5%	13.3%
	3	57	25.7%	25.2%
	Total	222	100.0%	98.2%
Excluded Cases		4		1.8%
Total		226		100.0%

Further analysis was performed using the 222 cases which were classified in order to test the influence of worldview on risk perception. As a result, a univariate general linear model fitting using one-way ANOVA was performed. Results of the ANOVA are presented in Table 4. Results showed that there was a significant difference between at least two of the clusters, $F(2, 219) = 47.04$, $p = 0.000$. In order to identify the clusters which differed significantly, a multiple comparison analysis using Bonferroni test was performed (see Table 5). Again, results showed that cultural worldview had a large effect size, giving it a significantly large explanatory power ($\eta^2 = 0.30$; Cohen's $f = 0.66$; $\omega^2 = 0.29$).

Table 4. Results of One-Way ANOVA Comparing the Clusters on Risk Perceptions

Tablica 4. Rezultati jednosmjerne ANOVA usporedbe klastera na percepciji rizika

Source	SS	Df	MS	F	p
Between Clusters	6665.89	2	3332.95	47.04	.000
Within Clusters	15515.68	219	70.85		
Total	22181.57	221			

Eta-squared (η^2) = 0.30 [Large effect size]; Cohen's $f = 0.66$ [Large effect size]; Omega-squared (ω^2) = 0.29 [Large effect size]

Results of the multiple comparison suggested that there was significant difference between Cluster I ($M = 48.09$, $SD = 9.33$) and Cluster II ($M = 40.02$, $SD = 3.68$) while there was also a significant difference between Cluster III ($M = 57.56$, $SD = 7.87$) and Cluster II. Again, a significant difference was found between Clusters I and III. In other words, Cluster III drivers reported more accurate risk perception compared to both Clusters I and II drivers while Cluster I drivers reported high risk perceptions compared to the Cluster II drivers. The implication is that Traditional-Conformist drivers tend to spot risk compared to the Moderates and the Adventurists.

Table 5. Summary of Multiple Comparisons based on Bonferroni Test**Tablica 5. Sažetak višestrukih usporedbi na temelju Bonferronijevog testa**

	n	M	SD	Cluster I	Cluster II
Cluster I	135	48.09	9.33		
Cluster II	30	40.02	3.68	-8.07*	
Cluster III	57	57.56	7.87	9.47*	17.54*

*p < 0.05

DISCUSSION

After an extensive review of the literature and his empirical studies, Sjöberg (1998) challenged the relevance of cultural theory in the context of risk perception studies. In particular, he has argued that “the most likely explanation of the present results and those reviewed” in his “previous work is that Cultural Theory simply is wrong” (Sjöberg, 1998, p. 149). However, it has been found that most of the cross-cultural studies tended to report better outcomes (significant cultural difference) than the intra-country worldview studies (see Weber & Hsee, 1998).

This study attempted to contribute to the resolution of this controversy by categorizing the participants through cluster analysis based on the worldview scores and then employed One-way ANOVA to compare the clusters in terms of their risk perception scores. Results of the cluster analysis produced three clusters of drivers and these clusters were labelled as “Traditional-Conformists” (Cluster III drivers), “Adventurists” (Cluster II drivers) and “Moderates” (Cluster I). The Cluster III drivers also had high scores on all the four dimensions of worldview compared to Clusters I and II. The Cluster I drivers had high scores on hierarchy and fatalism, and moderate scores on individualism and egalitarian while Cluster II participants had lower scores on all the four dimensions of cultural worldview.

Results of the study also revealed that most of the commercial vehicle drivers who participated in the study were within Cluster I and, therefo-

re, were moderates. Results further showed that Traditional-Conformist (Cluster III) drivers tend to have more accurate perception of risk compared to the Moderates (Cluster I) and the Adventurists (Cluster II). In addition, the results of determining the effect sizes also revealed that culture had large effect size. This finding provides empirical evidence in support of the cultural theory (Douglas, 1978; Oltedal et al., 2004); to wit, the cultural theory is not ‘dead’. It contradicts Sjöberg’s (1998) argument about cultural theory that the cultural theory is simply wrong. Thus, this finding is in consonance with the findings of Marris et al. (1998) and Nieh et al. (2013) that culture or worldview orientation can and still influence risk perception. The more accurate perception of risk by Cluster III drivers can be explained in terms of the hierarchical dimension of Douglas’ (1978) grid-group matrix. The traditional-conformist (Cluster III) drivers had very high scores on hierarchical dimension compared to the other two clusters. According to Oltedal et al. (2004), persons high on hierarchical dimension tend to conform to and/or sometimes comply with behavioural patterns determined by authorities or experts as the best options. As a result, they tend to perceive more risks than others as their sphere of perception tend to be defined by authorities.

That there may be more moderates in worldview orientation may help explain the performance of Ghana in road safety compared to other African countries. Ghana ranked 25th among 44 Sub-Saharan countries in terms of road deaths, though she performs better against the regional average of 24 per 100,000 and poorly against the world average of 18 per 100,000 (WHO, 2013). Can differences in worldview or cultural orientation account for the differences in safety performance among African countries? Indeed, further studies will be required to explore this question. However, it is plausible to expect that countries with more moderates (Cluster I drivers) will more likely be ranked in the middle. This was also the case for Ghana (see WHO, 2013).

DIRECTIONS FOR FUTURE RESEARCH

Findings from this study suggest cultural theory is less likely to be dead as far as its ability to explain risk perception is concerned. However,

this study was carried in the road transport setting. It may be interesting for future research to examine the same relationship between culture and risk perception using the same technique for data analysis but using scales specific to new settings. This may help the field to assess the ecological validity of the evidence in support of cultural theory. Perhaps, after a while, meta-analyses can be conducted to study investigate the culture-risk perception association with emphasis on determining the effect sizes so that a sound conclusion can be drawn on this debate.

Again, it might be interesting for future research to employ different measures of culture but use the same data analysis strategy to compare with this study and other studies using different scales in the same and different settings. This will further improve the quality of evidence in this research domain. Lastly, a longitudinal study with two waves of data collection is needed so that not only can we model the causal relationships but also the temporal order of the variables concerned. Shaddish et al. (2002) argued that such approach improves the quality of evidence for generalised causal inferences.

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Competing Interests

The author has declared that no competing interests exist.

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**O PITANJU UČINKA KULTURE NA PERCEPCIJU RIZIKA:
EMPIRIJSKA PROTUARGUMENTACIJA
SJÖBERGOVOM ZAKLJUČKU**

SAŽETAK: Nakon opsežnog pregleda literature i vlastitih empirijskih studija koje istražuju učinak kulture na percepciju rizika, Sjöberg je zaključio da je kulturološka teorija jednostavno pogrešna i stoga mrtva. Međutim, drugi istraživači i studije također sugeriraju da teorija kulture još uvijek ima značajnu moć objašnjenja. Svrha studije bila je, dakle, prikupiti nove dokaze koristeći različite tehnike analize kako bi se pridonijelo rješavanju ovog neuvjerljivog zaključka. Podaci su prikupljeni od 226 vozača gospodarskih vozila i klasificirani su na temelju njihovog svjetonazora ili kulture specifičnog za prijevoz. Opći linearni model koji odgovara jednosmjernoj ANOVA izveden je za usporedbu ispitanika o njihovoj percepciji rizika specifičnog za transport. Rezultati klaster analize pokazali su da su postojala tri klastera pokretača koji su označeni kao „Tradicionalni konformisti“ (pokretači klastera III), „avanturisti“ (pokretači klastera II) i „Umjereni“ (klaster I). Rezultati ANOVA-e nadalje su pokazali da su tradicionalno-konformistički (klaster III) vozači izvijestili o točnijoj percepciji rizika u usporedbi s umjerenim (klaster I) i avanturistima (klaster II). O nalazima se raspravljalo u kontekstu tekuće rasprave o objašnjavajućoj moći kulture u računovodstvu razlika u percepciji rizika. Također se razgovaralo o implikacijama na buduća istraživanja.

Ključne riječi: percepcija rizika, teorija kulture, Sjöberg, sigurnost na cestama, psihologija prometa

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