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SAFETY ATTITUDES AND SAFETY AMBIVALENCE AMONG OFFICERS FROM THE PHILIPPINES AND NORWAY

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ABSTRACT:

This study is conducted with a sample of Norwegian and Philippino officers sailing on Norwegian owned vessels. A self administered questionnaire with 36 items, together with 14 questions about age, sex, education, occupation, duration of employment, involvement in accident and a summary question on safety attitude, was used to collect the data. A total of 991 questionnaires were returned from 141 vessels and 16 shipping companies, giving a calculated response rate of 67%. Of the officers 49% were from the Philippines and 51% from Norway. Nearly all respondents were male. Exploratory factor analysis resulted in 6 dimensions/scales with a Cronbach alpha higher than 0.65 that were used as input in regression analysis. Attitude ambivalence has often been found to have moderating effects on attitude-intention relations (Costarelli and Colloca, 2007). In this paper *Safety ambivalence* is measured as an index of mixed attitudes based on two safety affect variables, one with positive and one with negative connotation. The index is computed as a "Griffin-index" (see, for example, Thompson *et al*., 1995; Connor and Sparks, 2002) based on the two variables *Positive affect* (PA) and *Negative affect* (NA), respectively, where *Safety ambivalence* = (PA + NA)/2 - |PA - NA|. *Safety ambivalence* has both a direct negative effect on *Positive safety attitude* as well as a moderating effect on the links from antecedents to *Positive safety attitude*. Norwegian and Philippino officers showed no significant difference with respect to *Fatalism*.

Keywords: Safety management, safety attitudes, ambivalence, moderation effects, Norway, Philippines

1. INTRODUCTION

The present paper is based on a sample of officers from Norway and the Philippines, the two main nationalities sailing on Norwegian owned vessels. The paper examines weather attitudinal ambivalence, fatalism, concern about safety, importance of working relations and negative safety emotions have effects on positive safety attitude among the two groups of officers. According to the Theory of Reasoned Action and Theory of Planned Behaviour (Fishbein, Ajzen, 1975, Ajzen, 1988) attitudes are important factors in shaping behavior. A recent comprehensive literature review by Smith and Wadsworth (2009) showed that attitudes and organizational safety culture were consistently associated with corporate safety performance. This research also identified an association between employee perceptions and attitudes towards safety and individual safety performance:

> "These analyses suggest strong associations between overall safety perceptions and both personal accidents and less serious injuries, and cognitive failures. Considering the individual safety perception factors, each factor was strongly associated with each individual performance outcome measure."(Smith and Wadsworth, 2009 p 45)

This leads one to expect that safety attitudes and safety behaviour will be positively correlated. One might think that people who hold Positive safety attitudes should engage in behaviour that approaches, supports, or enhances safety, and people who hold negative attitudes should engage in behaviour that avoids, opposes, or is negligent of safety (Håvold 2005).

1.1 Attitudinal ambivalence

In recent years many social psychologists has moved from a definition of attitudes as a univalent construct to a construct that can have both positive and negative valence toward an object (Glick and Fiske, 1996; Larsen et al., 2001). Kaplan (1972) defines attitudinal ambivalence as a coexistence of a positive and a negative evaluation of the same attitude object and Thompson et al (1995) define attitudinal ambivalence as referring to a state where an individual possesses two or more attitudes toward a class of stimuli with different valences.

Studies have found that people hold ambivalent attitudes towards a range of different behaviours, such as eating habits (Berndsen and van der Pligt, 2004), smoking (Lipkus et al, 2005), pro-environmental behaviour (Costarelli and Colloca, 2004), capital punishment (Newby-Clark et al., 2002), abortion (Newby-Clark et al., 2002) and personal protective equipment (Cavazza and Serpe, 2009). It has also been demonstrated that ambivalence moderates the attitude-intention and attitude-behaviour relationships (Cooke and Sheeran, 2004; Sparks et al., 2004). Attitude ambivalence is an important structural dimension because of its consequences for information processing and behaviour (Ajzen, 2001). Ambivalent attitudes seem to be less resistant to persuasive communication and less predictive of behaviour than non ambivalent attitudes (Armitage and Conner, 2000). A recent study by Zhao & Cai (2008) found a positive relationship between ambivalence and information seeking. Their study found that individuals with high in ambivalence were more likely to seek additional information about anti-smoking programmes.

Research indicates that ambivalence can have both positive and negative effects on behaviour (Boehm, 1989; Conner and Sparks, 2002; Jonas et al., 1997; Maio et al., 1996). Negative effects include delayed action, responsiveness, and output; increased variation in behaviour and performance quality; increased inconsistency; and lower self-esteem. Positive effects include increased openness to persuasion, increased willingness to compromise and negotiate, greater consistency between attitudes and intentions, improved definition of the structure of a problem or dilemma, increased processing of new information, and engaging in exploratory behaviour (Wheeler and Jones, 2006).

1.2 Attitudinal ambivalence and safety

"Risk is ambivalence" (Beck, 2006, p 330). The holder of ambivalent attitudes is not yet committed to an alternative and is motivated to search cognitive resources to make the "best" decision. McDonald and Hrymak (2002) found, when looking at the attitudes across working sites in the construction sector in Ireland, that workers tend to agree with the positive items reflecting Positive safety attitudes towards safety. However, they showed rather ambivalent opinions when questioned about attitudes towards taking risks. They did not find any significant relationship between the attitudinal variables (safety attitudes, perception or risk and safety climate) and any of the safety outcome variables (compliance, safety behaviours). General safety attitudes were fairly high, though general attitudes towards risk were more ambivalent. The safety climate measure in their research showed a generally positive perception of management commitment to safety, and the specific risk perception measures showed, for the most part, an accurate perception of risk. These attitudes and perceptions do not appear to have an influence on safety behaviour and compliance. Thus it is possible to have fairly strong pro-safety attitudes and perceptions but poor levels of site safety compliance. This suggests that the difficulty of achieving more consistent and higher standards of safety compliance may be less to do with attitudes and perceptions of workers and managers, and more to do with systemic factors – having mechanisms for reporting hazards, following up on hazard reports and audits, and doing what it takes to ensure that hazard reports and audits are translated into effective compliance with safety requirements.

A study by Poortinga and Pidgeon (2006) examines ambivalence within the context of scientific communication, specifically looking at attitudes toward genetically modified food. Their 2 x 2 typology of attitudes toward genetically modified foods consists of perceived risks and perceived benefits (Poortinga & Pidgeon, 2006). They argue that when perceived benefits and risks are low, individuals are considered to be indifferent towards the object. If perceived benefits outweigh perceived risks, individuals will have Positive safety

attitudes toward the object. In contrast, when perceived risks outweigh perceived benefits, individuals will hold negative attitudes towards the object. However, when perceived risks and benefits are equal, people fall into a state of ambivalence. Poortinga and Pidgeon (2006) conclude that up to 40 per cent of their sample has some level of ambivalence toward genetically modified food.

Cavazza and Serpe (2009) found that three dimensions of safety climate (company safety concern, senior managers' safety concern and supervisors' attitudes towards safety) were positively associated with individual ambivalence level, whereas the fourth one in their analysis (work pressure) was negatively correlated with it. Low levels of ambivalence were associated with a lower tendency to break safety norms. Cavazza and Serpe (2009) reported that as far as they knew there were no published studies focusing on the role of attitudinal ambivalence in the work safety domain.

1.3 Fatalism and safety

Fatalism refers to the level of control people believe they have over outside events like accidents, and may be a reflection of underlying cultural values. Rundmo and Hale (2003) conclude that high management commitment, low fatalism, high safety priority and high risk awareness seem to be especially important attitudes for managers. They claim that fatalistic thinking might lead to a negligent attitude towards hazards. In his research using ecological factor analysis, Håvold (2007) found that negative safety conditions at work and fatalism seems to be the factors that discriminate best between countries. His research showed significantly lower levels of fatalism in northern European countries than southeast Asian countries.

1.4 Norwegian and Philippino attitudes and culture

Confucius is claimed to have said: "All people are the same. It is only their habits that are so different". Habits changes from one country to another and Schneider and Barsoux (2003) claim that it is important for success to recognize how much cultures matter when managing across cultures.

Douglas and Wildavsky (1982) describe, in their book *Risk and Culture*, how cultural theory explains the attention paid to dangers by people from different cultures, distinguishing between those that can use advanced statistical methods to calculate risk and others. They claim that there is not much difference between our modern times and the past; private persons do not pay much attention to remote and small probabilities even if the consequences are severe. Douglas and Wildavsky's work suggests that in individualistic societies individuals are held responsible for risks and dangers, while in collectivistic societies external sources are held responsible. The meanings given to risky phenomena and how the meanings social actors give to risk relate to organizational and institutional forms and actions are linked to culture. Different groups can be expected to hold different views of risk, and much social interaction and conversation can be expected to address making sense of and negotiating the meaning and validity of risks.

Several frameworks for analysing and understanding national cultural differences have been developed (Hofstede, 1997; Trompenaars, 1994; Hall, 1989). Hofstede's work has been very widely used in industrial settings, originally identifying four key dimensions which impact on natural cultural differences. Later a fifth dimension was added by Hofstede working with a colleague (Hofstede and Bond, 1984, 1988).

Hofstede's factors are:

- *Individualism/collectivism* which reflects the extent to which an individual's value self-determination, as opposed to their behavior, is determined by the collective will of a group or organization. *High individualism implies a high valuation on people's time and their need for freedom, an enjoyment of challenges, and an expectation of rewards for hard work, and respect for privacy. Low individualism implies emphasis on building skills and becoming masters of something, work for intrinsic rewards, and harmony being more important than honesty*
- *Power-distance* which is the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally.
  Low power distance implies greater equality and empowerment.
- *Uncertainty avoidance* which is concerned with employees' tolerance of ambiguity or uncertainty in their working environment.
  In cultures which have high uncertainty avoidance, employees will look for clearly defined, formal rules and conventions governing their behaviour.
- *Masculinity/femininity* which is the dimension related to masculine or feminine values.

In highly "masculine cultures" dominant values relate to assertiveness and material acquisition. In highly "feminine cultures" values focus on relationships among people, concern for others and quality of life.

- Long term/short term orientation which indicates a society's attitudes towards change and stability. Long term orientation favours virtues of personal steadiness and stability, protecting face, respect for traditions and reciprocation of greetings, favours and gifts. Short term orientation favours fostering virtues oriented towards persistence and perseverance, thrift, ordering relationships by status and observing that order by having sense of shame.

Merit and Helmreich (1996), who analyzed the influence of national and organizational cultures on performance among aviation pilots, used Hofstede's Value Survey Module 1984 in their work. Compared to Hofstede they found very high individualism (ranging from 114 to 158) but low masculinity (ranging from -38 to 61) in a sample from 22 countries. Hofstede's original study showed an individualism range from 17 to 91 and a masculinity range from 5 to 95. Håvold (2007) used Hofstede's questionnaire on a sample of seafarers from several countries including Norway and the Philippines (Table 1) found several differences between Hofstede's original factors and the factors calculated for the sample of seafarers using Hofstede's Value Survey Module 1994. The reasons for the differences might be the fact that the sample was predominantly male, drawn from an industry that was very different from the office information giant IBM, where Hofstede's sample was taken. Seafarers are recruited from different segments of society than IBM office workers in Norway and the Philippines.

Table 1: Comparison of Norway and Philippines for Hofstede's original factors and factors calculated on a sample of seafarers on Norwegian owned vessels (Source: Håvold, 2007)

Factors	Norway		Philippines	
	Hofstede	Håvold	Hofstede	Håvold
Power Distance	31	-32	94	-25
Individualism/Collectivism	69	40	32	42
Masculinity/femininity	8	159	64	122
Uncertainty avoidance	50	37	44	9
Long term orientation	20	48	19	81

The indexes normally have values between 0 and 100, but values below 0 and above 100 are technically possible (Hofstede, 1994).

Merit and Helmreich (1996) found that when national, organizational and occupational cultures were congruent the pilots knew how to behave. When the cultures were in conflict there was confusion about how to behave, and such conflicts and confusions are dangerous for high risk and time urgent professions.

1.5 Involvement and concern about safety

Managers and supervisors have both direct and indirect effects on workers' behaviour. The indirect effects relate to the establishment of attitudes, norms and values relating to practices.The evidence suggests that the behaviour of middle managers and first line managers is crucial for high safety performance. Studies comparing low and high accident plants have shown that on the safest sites, managers demonstrate their commitment to the organization's safety systems and are involved in safety activities. (Flin and Youle, 2004; O'Dea A, Flin R. 2003)

1.6 Research questions

The present study addresses the question of whether attitudinal ambivalence, fatalism, concern about safety, importance of working relations and negative emotions affect **positive safety attitude**. It also seeks to find out whether there are differences in these relationships among high and low ambivalence groups and between Norwegian and Philippino officers?

2. METHOD

2.1 Instrument

A self administered questionnaire with 36 items, together with 14 questions about age, sex, education, occupation, duration of employment, involvement in accident and a summary question on safety attitude, was used to collect the data. Twenty-eight questions were taken from Rundmo & Hale (1999; 2003; see Table 2) and seven questions taken from Hofstede (1994). One general question was added.

2.2 Procedures

The questionnaires were produced originally as an English version, which were translated into a Norwegian equivalent. Copies were distributed to a contact person in each shipping company who sent a package to the vessel containing the agreed number of questionnaires in English and/or Norwegian. A covering letter to the person responsible for handing out and collecting the questionnaires on the vessel and a couple of posters explaining the project were sent with the questionnaires. The completed questionnaires were sent from the vessel to the ship owner's contact person, who forwarded them directly to the authors.

2.3 Sampling / Respondents

A total of 991 questionnaires were returned from officers on 141 vessels and 16 shipping companies, giving a calculated response rate of 67%. Nearly all respondents were male (99.1%). Most of the respondents were aged from mid twenties to late fifties, with a mean age of 41.8 years (SD10.1). Mean years of education in the population were 13.1 (SD 2.9) and mean years of job tenure were 18.3 (SD 11.3). Ship owners representing three categories were drawn randomly from lists produced by the Ship-info-com database. To ensure anonymity, the names of the companies are confidential. The data used in this paper are part of a larger study of safety and risk attitudes at sea. However, the data used in this paper has not been reported before. The collection of data took place between June and the end of September 2002. Of the 991 officers 49% were from the Philippines and 51% from Norway, 16% were masters, 37% deck officers, 40% engine officers and 7% galley officers.

2.4 Measuring ambivalence

In this paper attitude ambivalence is measured as objective ambivalence by computing an index of mixed emotions based on the two affect variables (positive and negative attitude/affect). There are many methods for computing such an index (Breckler, 1994; Jonas *et al*., 2000), but perhaps the most widely used method is the Griffin calculation of attitude ambivalence:

$$\text{Ambivalence} = (PA + NA)/2 - |PA - NA|$$

where PA (positive affects) and NA (negative affects) are measured on unipolar scales in two different set of questions (Thompson *et al*., 1995; Connor and Sparks, 2002). This is the approach adopted in our study.

2.5 Construction of variables

Since the items and scales were adopted from previous papers (Rundmo and Hale, 1999; Hofstede, 1994 & 1997), no factor analysis or PCA analysis were performed. Cronbach's Alpha was calculated for each scale (Table 2) and judged satisfactory, since all values exceed the recommended level of 0.7 (Hair et al., 2006). Cronbach's Alpha also exceeded the reported results in the original papers. The Cronbach's Alpha coefficient can take values between 0 and 1, and measures how closely related a set of items are as a group. A high Cronbach's Alpha value indicates that the items reflect the same underlying construct (Hair et al., 2006).

Table 2: Factors and items, internal consistency and source

Factor and items	Cronbach's alpha	Basis/ source of scale
Positive safety attitude/Management safety commitment I personally talks to the employees about working safety. I am heavily involved in goal setting. I help employees to work more safely. I think a lot about how to prevent accidents. I am heavily committed to safety. I always encourage employees to let me know of any worries they have about safety. Safety improvement proposals are welcomed on my vessel.	.90 (R&H .89)	Rundmo and Hale (R&H) (1999)
Negative safety attitude/Management attitude towards rule violations Sometimes it is necessary for the management to turn a blind eye when safety rules are broken. Sometimes production has to come before personal safety. Sometime it is necessary to ignore breaches of regulations to keep production going. I have to be more interested in production than safety I cannot always follow safety rules myself.	.80 (R&H .62)	Rundmo and Hale (1999)
Importance How important are good working conditions? How important is a good working relationship with your superior? How important is it to work with people that cooperate well with each other? How important is it to be consulted by superiors in their decisions? How important is it to have an opportunity for advancement?	.81	Hofstede
Concern I am concerned about safety. I am always on the look-out for safety rule violations when I walk around.	.78	Rundmo and Hale (1999)
Negative emotions/Management risk communication Talking to employees about safety can be difficult. Talking to employees to teach them new habits is difficult. I find it embarrassing to talk to employees who take chances while at work. I often feel helpless about dealing with safety problems at work.	.74 (R&H .62)	Rundmo and Hale (1999)
Fatalism Accidents just happen. There is little one can do to avoid them. What happens at work is largely a matter of chance. Accidents are unavoidable. The odds are against you. It is impossible to avoid accidents. The use of machines and technical equipment makes accidents unavoidable. Accidents seem unavoidable despite the efforts of the company to avoid them.	.86 (R&H .76)	Rundmo and Hale (1999)

Ambivalence

Ambivalence = (PA + NA)/2 - |PA - NA|

where PA (positive affects) and NA (negative affects)

2.6 The main model

The main theoretical model shown in Figure 1 is estimated on three different samples: one with officers from both the Philippines and Norway (n=806), one with officers from the Philippines only (n=365), and one with officers from Norway only (n=441). In all three estimated models "Positive safety attitude" (towards safety) is hypothesized to be directly influenced by the four explanatory variables "Importance", "Concern", "Negative emotions", and "Fatalism", whereas "Attitudinal ambivalence" is hypothesized to have both a direct negative effect on "Positive safety attitude" and moderation effects on the links from the original four independent variables to the dependent variable. In the full sample model it is also hypothesized that there is direct effect, as well as moderation effects, of "Nationality" on "Positive safety attitude".

The ultimate dependent variable "Positive safety attitude" scale is adopted from Rundmo and Hale (1999). The scale shows a high Cronbach's alpha, around .9, both in the present analysis and in the analysis conducted by Rundmo and Hale (1999). Even if assuming that all items are skewed in the same direction because of the wording, the variation in the answers is sufficient to make it a valid and reliable construct.

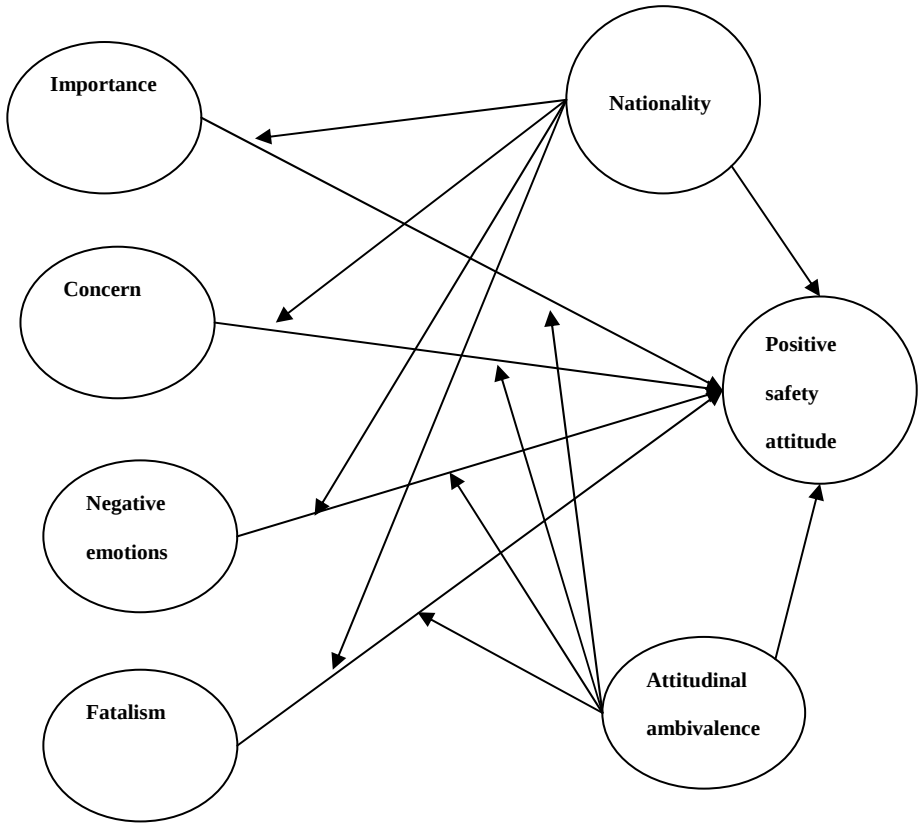

Figure 1: The theoretical model

There are two different approaches to analyzing moderation effects in multiple regression analyses: 1) including interaction effects of the original variables (moderating regression), and 2) estimating and comparing coefficients from different samples split on the expected moderator variable (often based on median value). If the expected moderator variable is both a moderator and a direct predictor, the median split approach is not the appropriate method to use. It is well recognized that such a split may cause a reduction in predictor variance that will be present in the dependent measure as well (Peters & Champoux, 1979; Olsen *et al*., 2005). In this case the appropriate method would be a moderating regression approach. In the model depicted in Figure 1, "Attitudinal ambivalence" and "Nationality" are hypothesized to have both direct and moderating effects implying that the first approach is the appropriate one.

3. RESULTS

3.1 Descriptive statistics

Table 3 shows the mean values, standard deviation, skewness, and kurtosis of the constructed variables.

Table 3: Statistical metrics for Norwegian and Philippino officers for the 6 factors

Country of origin		N	Mean	Std. Deviation	Skewness	Kurtosis
Norway	Positive safety attitude	481	4.66	.60	-.527	.801
	Negative safety attitude	484	2.83	1.00	.393	-.208
	Importance	494	3.80	.54	.089	-.031
	Concern	486	3.35	1.00	.098	-.438
	Negative emotions	483	2.55	.81	.465	.176
	Fatalism	474	2.86	1.08	.384	-.536
	Ambivalence	477	1.78	1.45	.111	-.867
Philippines	Positive safety attitude	414	5.27	.53	-1.269	9.246
	Negative safety attitude	415	2.73	1.09	1.039	1.785
	Importance	483	4.31	.43	-.138	-.097
	Concern	424	5.36	.60	-1.623	7.013
	Negative emotions	418	2.26	.85	1.093	1.826
	Fatalism	444	2.91	.98	.169	-.430
	Ambivalence	405	1.40	1.61	.387	-.308

All factors except ambivalence are measured on a Likert scale from 1 to 7, where a high value corresponds to a high degree of positive safety attitude, a high degree of negative safety attitude etc. Ambivalence can be both positive and negative (semantic differential) were high positive values indicates a high degree of ambivalence and a high negative values a low degree of ambivalence.

3.2 Regression results

Table 4 shows the regression results for the full sample model. This full model contains all the original variables as well as two-way and three-way interaction terms among "Attitudinal ambivalence" and "Nationality", and the other original variables. As originally suggested by Lance (1988), the interaction terms are all represented by residual centring. These are, in essence, partial Gram-Schmidt orthogonalizations (Anton, 1984), based on a simple two-stage ordinary least squares (OLS) procedure in which the product term is regressed onto its respective first-order effects. The residuals of these regressions are used to represent the product (interaction) terms. As pointed out by Little, et al. (2006: p 7) residual centring has many advantages for regression analyses: "[*First],…the regression coefficients and standard errors of the first-order effect terms remain unchanged when the higher–order term is entered. Second, the significance of the product or powered term is unbiased by the orthogonalizing process. Third, unlike mean centering, orthogonalizing via residual centering ensures full independence between the product or powered term and its constituent main-effects.*"

Table 4: OLS regression results for the full model with Positive safety attitude as the dependent variable (N=806)

	Coeff. (std. errors)	VIF
Constant term	3.577 (0.164)***	
Independent original variables:		
Importance	0.186 (0.032)***	1.610
Concern	0.226 (0.018)***	2.687
Negative emotions	-0.097 (0.021)***	1.543
Fatalism	-0.010 (0.014)	1.036
Ambivalence	-0.134 (0.013)***	1.559
Nationality (dummy)	0.010 (0.047)	2.764
Two-way orthogonalized interactions:		
Importance*Ambivalence	0.016 (0.022)	1.412
Concern*Ambivalence	0.012 (0.013)	2.988
Negative emotions*Ambivalence	0.027 (0.011)**	1.122
Fatalism*Ambivalence	-0.001 (0.011)	1.036
Nationality dummy*Ambivalence	-0.096 (0.037)***	3.326
Importance*Nationality	-0.004 (0.069)	1.246
Concern*Nationality	-0.331 (0.043)***	1.183
Negative emotions*Nationality	-0.098 (0.043)**	1.520
Fatalism*Nationality	-0.022 (0.028)	1.034
Three-way orthogonalized interactions:		
Importance*Ambivalence*Nationality	0.028 (0.046)	1.159
Concern*Ambivalence*Nationality	0.030 (0.031)	1.121
Negative emotions*Ambivalence*Nationality	-0.020 (0.022)	1.094
Fatalism*Ambivalence*Nationality	0.022) (0.021)	1.025
$R^2_{adj.}$= 0.605 F (df=19) = 68.056		

Notes: *** p < 0.001; ** p<0.05; * p < 0.10

In this full model regression over 60 per cent of the variance in "Positive safety attitude" is explained. All the original variables, with the exception of the dummy for "Nationality" and "Fatalism" have significant direct effects on "Positive safety attitude". All the signs of these significant coefficients are in line with expectations based on theory. The fact that "Ambivalence" has a significant negative direct effect on "Positive safety attitude" indicates that the moderating regression approach was the appropriate method to find moderation effects. This is, however, not the case for "Nationality", which has no significant direct effect on the dependent variable. This means that the split sample approach could be a valid alternative approach to identify possible moderation effects of this variable. In order to validate the results shown in Table 4, the model is also estimated on two sub-samples

based on “Nationality”. Differences in coefficient estimates between these two sub-models will also indicate moderation effects of “Nationality”, and this is shown in Table 5 below.

The most important variable in relation to effects on “Positive safety attitude” is “Concern”, followed by “Importance”. It is interesting to note that both “Nationality” and “Ambivalence” have moderating effects. “Ambivalence” moderates the link from “Negative emotions” to “Positive safety attitude”, whereas “Nationality” moderates the links between the three variables “Ambivalence”, Concern, and “Negative emotions”, and “Positive safety attitude”. None of the three-ways interactions are significant.

Table 4 also shows the Variance Inflation Factors (VIF) of the variables. These are well below the critical value, ruling out multicollinearity as a problem in this regression.

Table 5: OLS regression results for the National sub-sample models with Positive safety attitude as the dependent variable

Models

	Philippine sample (n=365)	Norwegian sample (n=441)
Constant term	1.997 (0.270)***	4.049 (0.176)***
Independent original variables:		
Importance	0.190 (0.051)***	0.185 (0.041)***
Concern	0.482 (0.033)***	0.147 (0.022)***
Negative emotions	-0.049 (0.028)*	-0.146 (0.031)***
Fatalism	0.001 (0.017)	-0.023 (0.022)
Ambivalence	-0.063 (0.026)**	-0.171 (0.028)***
Two-way orthogonalized interactions:		
Importance*Ambivalence	0.001 (0.032)	0.028 (0.030)
Concern*Ambivalence	-0.009 (0.023)	0.020 (0.017)
Negative emotions*Ambivalence	0.034 (0.012)***	0.014 (0.019)
Fatalism*Ambivalence	-0.011 (0.012)	0.011 (0.017)
$R^2_{adj.}$	0.576	0.444
F(df=9)	56.093	40.059

Notes: *** $p < 0.001$; ** $p<0.05$; * $p < 0.10$. Standard errors in parentheses

Table 5 shows the regression results for the Philippino and the Norwegian sample respectively. Since “Ambivalence” has significant direct negative effects on “Positive safety attitude” in both sub-models, the moderation effects of this particular variable are analysed using the same approach as in the full-sample model reported in Table 4. The most striking results are the differences regarding the effects of “Concern” and “Ambivalence” between the two sub-models. Officers from the Philippines have safety attitudes that seem to be much more positively influenced by their level of “Concern” than those of the Norwegian officers. On the other hand, the Norwegian officers’ safety attitudes seem to be more negatively affected by their ambivalence level than their counterparts from the Philippines. As indicated in Table 4, the link between “Negative emotions” and “Positive safety attitude” is moderated by “Ambivalence”, but only for the sample of officers from the Philippines.

4. DISCUSSION

The factors “Importance” and “Concern” had the expected significant direct effects on “Positive safety attitude” (Tables 4 and 5), confirming the findings of many scholars who have conducted safety research (e.g. Mearns et al. 2000, Rundmo & Hale, 2003; Flin and Yiule, 2004; O’Dea & Flin, 2003, Håvold, 2005).

As mentioned in the introduction, the research that sets out to explain and predict human behaviour has found attitudes to be one of the most powerful variables for its prediction (Fishbein, & Ajzen, 2001; and Ajzen, 1991).

As long as the attitudes are homogenous, prediction of behaviour seems straightforward. However, if the attitudes are ambivalent they are worse predictors of behaviour (Armitage, 2003). Before deciding on an action, there are often quite a few choices we have to make, and such choices might require us to process a lot of information. It is inevitable that this information will be, at least in some instances, evaluated incongruently. In such cases, we can experience ambivalence. Ambivalence always slows down the decision-making process. A person who thinks in a way that does not involve conflict can make quick decisions more easily, but not necessarily better decisions. If one has to stop to consider options and feelings of uncertainty, one needs more time. National cultures might be a factor that shape expectations and assumptions about specific situations and events and influence decisions. Therefore national cultures might be of interest when it comes to ambivalence, risk perception, risk judgement and how to behave before and after an accident.

Plambeck and Weber (2010) showed that the culture and characteristics of organizations can affect the likelihood that managers will experience ambivalent attitudes towards workplace issues like risk and safety. In particular, if the strategy of an organization is moderate or complex rather than confined to one approach, ambivalence is more prevalent. Furthermore, if managers assume the organization can impose some, limited control over issues in the environment, ambivalence is also more common.

As expected, ambivalence was found to be a strong and significant negative influence on a Positive safety attitude to safety (Table 4). However, the findings show a moderating effect through negative emotions and nationality. The main model showed no significant difference between Norwegian and Philippino officers, but the Norwegian and Philippino subsamples showed that Norwegian seafarers are more ambivalent than Philippino seafarers (Table 5). Since ambivalence seems to be negative in a safety or risk context, management might want to control ambivalence.

There are ways of dealing with ambivalence, called coping strategies. De Carlo (2005) distinguishes two kinds of coping strategies: dissonance reduction and distancing devices. These concepts come from cognitive psycho-sociology. The underlying concept is cognitive dissonance, which is a state of tension arising from holding two beliefs that are psychologically incompatible or from holding beliefs that contradict the environment (De Carlo, 2005; Tavris and Wade, p.291, 1999). Luce (1998), for example, suggests that another way of coping with a difficult decision is to avoid making a decision altogether. Van Harreveld et al. (2009) describe coping strategies, splitting them into emotion-focused and problem-focused coping strategies and discussing when each strategy is most likely to be employed. Another factor is, according to McDonald and Hrymak (2002), the formal structures and routines which play an important role in decision-making by limiting both risk and uncertainty.

Kouabenan (2002) indicated that fatalistic beliefs influence the perception of accidents and consequently encouraged a person to take more risks and neglect safety measures. However, in relation to fatalism, there were no significant difference between Norwegian (M=2.86, SD= 1.08) and Philippino (M=2.91, SD= 0.98) officers. This is an interesting finding. Håvold (2007) reported a significant difference in fatalism between crew from Norway (M= 2.68, SD= 1.02) and the Philippines (M= 3.71, SD=1.11) and found that fatalism was an important factor in explaining difference between nationalities. It is difficult to say why the scores on Norwegian and Philippino officers are so similar. Is it a result of socialisation of Philippino officers through education and organisational culture into a more "Norwegian" culture, or is it a result of the recruitment process among ship owners filtering out persons with a more fatalistic view of life? This might be an interesting topic for further research.

The PhD thesis of Gunnar Lamvik (2001), "The Filipino Seafarer – A life between Sacrifice and Shopping", sheds some light to the Pilippino culture. He describe the Philippino as one who first and foremost see himself as a family member gaining respect and position from participation in his family and effort made for his family, while Northern European culture stresses individual or private identity. This is confirmed by Hofstede's findings, but was not found to be significant in Håvold's research (Table 1), which indicates that both Norwegian and Philippino seafarers have low power distance, medium individualism and extremely high masculinity (which may possibly constitute a "seafarers' culture") (Håvold 2007).

5. CONCLUSIONS AND FUTURE RESEARCH

Ambivalence appears to be a phenomenon of the human constitution that needs to be considered when studying decisions about risk and safety. As a general conclusion, the study of ambivalence can open new and useful lines of research in the study of safety.

There is also the question of whether individuals from cultures that prefer a balance between positivity and negativity (e.g. South East Asia/ China) may experience subjective feelings of ambivalence in different conditions from individuals from cultures that prefer one-sided reactions (e.g. Europe/the United States). The results from this research (Tables 4 and 5) show that officers from the Philippines and Norway are more similar than would be expected from previous research, and that the same factors influence positive safety attitudes for both groups. Another interesting observation is that Philippino ratings are significantly more fatalistic than Philippino officers. This raises the question of whether Philippino officers are less fatalistic because of a strong professional culture or organisational culture. A person can be a member of many cultures and have many roles. An officer's loyalty can be to his country, to the shipping company, to his peers in the profession or to his colleagues.

In terms of future research, it might be fruitful to examine the consequences of ambivalence in greater depth. Some studies have shown that ambivalence is not related to stability of attitudes over time (e.g., Armitage & Conner, 2000). A longitudinal study linked to risk and safety should be conducted. Future research should also look at coping strategies, and the circumstances in which individuals rely on coping strategies of dissonance reduction or distancing devices.

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Apendix A

Correlations

	Positive safety attitude	Negative safety attitude	Importance	Concern	Negative emotions	Fatalism
Negative attitude	-.360**					
Importance	.487**	-.203**				
Concern	.588**	-.057	.492**			
Negative emotions	-.400**	.549**	-.171**	-.127**		
Fatalism	-.036	.053	.001	-.031	.005	
AMBIV	-.473**	.959**	-.303**	-.155**	.546**	046 .

** Correlation is significant at the 0.01 level (2-tailed).