

The Moderating/Mediating Effect of Relationships among Citizenship Behavior, Social Reflection, and Safety Behavior

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Abstract

Most extant research has focused on antecedent and consequence factors of citizenship behavior (CB) within organizations. The long-term lifetime effect of CB has rarely been researched. This study employed a questionnaire survey to collect respondents' perspectives of individual CB at different life stages. EFA was applied to explore the primary components of CB, *i.e.*, altruism, conscientiousness, sportsmanship, and civic virtue. ANOVA and SEM were performed to examine the hypotheses in this study. The results demonstrated that CBs were influenced by gender, work status, and work experience. CBs also exerted a positive effect on safety behavior, although this effect was mediated by social reflection. Research theory and implementations were discussed.

Keywords

Mediating Effect, Citizenship Behavior, Social Reflection, Safety Behavior

1. Introduction

“Citizenship behavior (CB)” refers to individuals collectively demonstrating positive efforts to improve organizational performance beyond their employment requirements [1]. Bolino *et al.* [2] pointed out that CB enhance firm functioning by contributing to the development of social capital in organizations; specifically, they contribute to the creation of structural, relational, and cognitive forms of social capital. In other words, the motives behind the willingness to cooperate stem not only from an individual's basic commitment that brings voluntary compliance with organizational goals, but also from the expectancy of collective satisfaction. An organization will benefit from employees with better organiza-

tional citizenship behavior (OCB), and it has been shown to increase productivity, efficiency and customer satisfaction, and reduce costs and rates of turnover and absenteeism [3]. Thus, CB is considered to be a critical issue in organizations.

In recent decades, researchers focused more on identification of antecedent and consequence factors of OCB [3] [4] [5] [6] [7]. However, OCB is behavior performed within a dedicated organization, which cannot be cultivated in the short-term. The extant literature also comprises investigations of behavioral influence factors from different domains, including culture [8]-[13], personality [4] [14] [15] [16] [17], leadership [18], organization climate [18] [19], and OCB [20] [21] [22] [23] [24]. Even though useful results have been obtained, large research gaps remain. For example, existing studies provided insufficient evidences or ignored long-term influences on behaviors, because all of the findings concerned behaviors presented during the short period of study.

However, it is well-known that behavior is cultivated through education and interaction with the environment from childhood onwards. When behavior has been formed and presents in daily life, it then tends to be resistant to change, as expressed in the Chinese proverb, “Change easily, nature is hard to move”. Moreover, Hofstede [9] claims that cultural differences exert a profound influence on individuals’ attitudinal tendencies. He highlights the cultural difference concept, and defines culture as dissimilarities in collective values of society [9]. Mole [12] argues that culture is a combination of various influences that encourage individuals to do things in a certain manner. Therefore, individuals’ attitudinal patterns could be influenced by culture [25].

All managers want members within their organizations to achieve excellent performance. Human resource managers are particularly responsible to recruit the most appropriate people to join their organization, in order to form good OCB and to maintain superior performance. Consequently, this study focuses on the influence of CB on performance and how it affects performance. The remainder of this paper is organized into five sections. A literature review is presented in the second section, which discusses previous research regarding the theory of OCB, behavioral influence factors, and their results. The third section describes the research methodology, including the questionnaire designed, target sampling, analysis techniques, etc. The results of data analyses are shown in the fourth section. Finally, the study’s findings are discussed in the final section.

2. Literature Review

CB was defined as an employee’s sense of intentional involvement in organizational activities without expecting any type of benefits [26]. It was derived from the “innovative and spontaneous behavior” concept [27] [28], and modified Barnard’s [1] conception by pointing out supra-role behavior in an organization’s social relationships with its employees [20] [29]. These concepts suggested

that CB requires discretionary functions in an effort to augment organizational effectiveness without taking individual benefits into account [23] [26] [30] [31]. It constitutes an expression of one's compassion, sacrifice and volunteering spirit, carried out willingly without expecting reciprocity. In this study, CB is defined as behavior of people performed in ordinary life, because the behavior cannot be cultivated in a short period of time.

Podsakoff and colleagues [29] identified over 30 different forms of CB. Recognizing the large overlap and similarity among CBs, the researchers categorized the behaviors into seven themes, including helping behaviors, sportsmanship, organizational loyalty, organizational compliance, individual initiative, civic virtue, and self-development [28]. Organ [23] identifies five categories of discretionary behavior, and explains how each assists to improve efficiency in the organization. They are called OCB [23] [32] and comprise *altruism*, *conscientiousness*, *sportsmanship*, *courtesy*, and *civic virtue*.

OCB is considered to comprise a special role that members of an organization are expected to perform. Organizations could not survive or prosper without their members behaving as good citizens by engaging in many types of positive behaviors [23]. Moreover, previous literature found that culture differences have impacts on OCB [10] [11]. Lin and Ho [11] reported that people with a collectivist inclination engage in OCB more positively, since group harmony and unity are primary tenets of collectivism. Previous studies [33] [34] [35] [36] [37] also found that results of interactions with the environment will direct employees' emotions to enhance behavior within the organization. Tziner and Sharoni's [37] study demonstrated that perceived organizational justice affects employees' behavior, satisfaction, esteem, loyalty, and commitment to the organization and its leaders. The results imply that OCB is a by-product of organizational justice, which contributes to organizational success and expresses employees' loyalty and commitment to the organization's goals. These findings indicate that OCB is positively affected by culture and the environment.

Numerous investigations suggested that OCB comprises two factors based on the target of the behavior, including organizationally-targeted and interpersonally-targeted [24] [38] [39]. Organizationally-targeted behaviors, such as augmenting the reputation of the organization, are referred to as *organizational*; whereas, interpersonally-targeted OCB, such as assisting to acclimate a new employee, are referred to as *interpersonal*. This study aimed to determine precisely how to identify the optimal person with better CB before he or she enters an organization. The author applies the following four interpersonal targeted behaviors as CB: altruism, conscientiousness, civic virtue, and sportsmanship. Therefore, the hypothesis postulated as:

H1: CB has a positive effect on safety behavior.

Exception considering the behavior to be predicted by CB, it may also be affected by certain social reflection factors, such as personal perspective and attitude. According to reflection theory, our knowledge reflects the real world. Previous researchers [40] [41] suggested that all ideas derive from experiences of the

external world. Our sense of what is the correct behavior to perform is generated through a lifetime of learning from experience [34] [42] [43] [44] [45] [46]. Accordingly, our ideas resemble (or reflect) the objects that give rise to them, and are transformed into exhibited behavior. The hypothesis postulated as:

H2: Social reflection factors have a positive effect on safety behavior.

However, Bolino *et al.* [47] indicated that existing research does not explain the fundamentally different reactions that people have to their experiences of engaging in OCB. This study considered CB to be moderated by the effects of some external factors on performance [44] [47] [48] [49] [50]. The hypothesis postulated as:

H3: CB has a positive effect on social reflection factors.

H4: Social reflection factors modulate the effect of CB on safety behavior.

The research model is shown in **Figure 1**.

3. Methodology

3.1. Questionnaire Design

The study aimed to determine the role that CB plays in performance and its external influence in different life stages. A questionnaire survey was administered to collect data to examine the effect of CB on traffic safety performance. The research steps employed in this study included instrument development, exploratory factor analysis, variance analysis, and structural equation modeling. The questionnaire was designed according to the literature [23] [29] [47], and the results of observation and interviews to collect data of target citizens' perceptions were based on the recommendation of Churchill and Iacobucci [51]. The measures were designed according to the dimensions of CB, *i.e.*, altruism, conscientiousness, civic virtue and sportsmanship, and safety perspective and work attitude were utilized as social reflection factors. Because the current study focuses on examination the behavior changing for long period of lifetime, the common safety behavior, traffic safety behavior, is employed as safety performance that all people are encountering in daily life. Therefore some individual common traffic safety behavioral attributes were employed to measure the

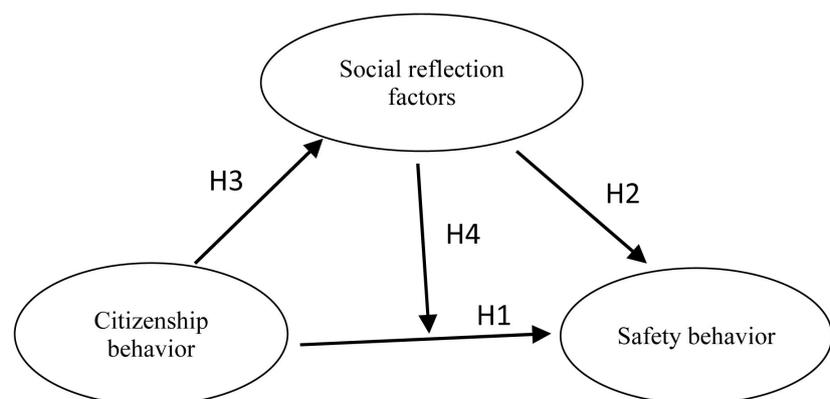


Figure 1. Research conceptual model.

change of safety performance. They presented in the form of “I reduce speed as I approach the block even without any traffic”, “I always follow traffic regulations”, “I always follow the instruction of traffic signals”, and “I am never against the traffic lane (I always keep in the right traffic lane)”. At the end of 2015, the author conducted a pilot test to verify and modify the wording and question for suitability for the present study. The questionnaire comprised three sections, including an introduction, questions, and demographic information (see **Appendix Table A1**). The questions were measured on a five-point Likert scale, ranging from (1) “strongly disagree” to (5) “strongly agree”.

3.2. Sampling

The study focused on exploring the effects of CB on safety performance among different life stages in Taiwan. The respondents are focusing in different life stage from the secondary school to college and after graduating with a job. The questionnaire was conveniently distributed to the student of junior and senior high school who visited the campus of NKMU in 2016, the students of the maritime college, and the seafarers who were attending refresher training at the seafarers’ training center of NTOU and NKMU in Taiwan. The survey was conducted from May 2016 to April 2017. In total, 850 questionnaires were distributed to the target respondents, and 668 were returned. After discarding 102 incomplete questionnaires, 566 were considered valid, constituting a completion rate of 66.6%.

3.3. Data Analysis Methodology

According to previous research [18] [19], an exploratory factor analysis can reduce a large set of variables to a smaller set of underlying dimensions, which assists to detect the presence of meaningful patterns among the original variables. Therefore, to ensure that the data of CB are suitable for performing a factor analysis, the Bartlett Test of Sphericity must be significant and the Kaiser-Meyer-Olkin value must be above 0.8 [52]. In addition, a minimum of five subjects per variable or a sample of 100 is requisite for a factor analysis [53]. The criteria include eigenvalues over 1 and a minimum of 5% variance per factor. Moreover, the scree plot is commonly utilized to extract factors. Factors with loadings of 0.40 or more are retained [54] [55].

Reliability is determined as the ratio of true score variance to observed score variance [52] [56], which could be assessed in three forms: test-retest, alternate-form, and internal consistency [57]. Generally, Cronbach’s alpha is used to measure internal consistency reliability among a group of items combined to form a single scale; levels of 0.7 or more are considered reliable in basic research [55] [57] [58]. Since a moderating/mediating effect occurs when some variables are combined, structure equation modeling (SEM) was finally performed to examine the effects of relationships among CB, social reflection, and safety behavior in this study.

4. Results of Data Analysis

4.1. Respondents' Profiles

Respondents' characteristics in terms of gender, age, education level, work status, specialized skills, and sea age (work experience after graduating) were elicited to ascertain whether respondents' perceptions were influenced by these characteristics. Among the respondents, 457 were male and 109 were female (see **Table 1**). Regarding age, there were 64 respondents younger than 15, 344 were aged between 16 and 20, 37 respondents were aged between 21 and 25, 58 were aged between 26 and 30, 29 were aged between 31 and 35, and 34 were older than 35. Concerning education level, 70 respondents indicated that they were in secondary school, 276 were in high school, 125 respondents were in college/university, and 95 respondents had completed university education. Regarding work status, 44 respondents stated that they were not working, 414 were students, and 108 respondents were working on shore or serving onboard. Concerning specialized skills, 123 responded that they had none, 220 were specialized in navigation, 215 were specialized in engine, and eight responded "others". Regarding sea age (work experience after graduating), most respondents (438, 77.4%) had work experience of less than one year, 63 between one and three years, 36 between four and six years, and 29 respondents had six or more years.

Table 1. Respondents' profile.

Characteristics		Frequency	Percentage %
Gender	Male	457	80.7
	Female	109	19.3
Age	<15	64	11.3
	16 - 20	344	60.8
	21 - 25	37	6.5
	26 - 30	58	10.2
	31 - 35	29	5.1
	>35	34	6.0
Life stage	Secondary school	70	12.4
	High school	276	48.8
	College/university	125	22.1
	Graduated	95	16.8
Work status	None	44	7.8
	Study in school	414	73.1
	Serve onboard or onshore	108	19.1
Specialized skills	None	123	21.7
	Navigation	220	38.9
	Engine	215	38.0
	Others	8	1.4
Sea age	<1	438	77.4
	1 - 3	63	11.1
	4 - 6	36	6.4
	>6	29	5.1

4.2. Exploratory Factor Analysis

4.2.1. Citizenship Behavior

Exploratory factor analysis (EFA) is commonly employed in exploratory studies, and was conducted to develop and evaluate measurement dimensions in this study. In order to detect the presence of meaningful patterns among original variables and extract the main factors, principal component analysis with Varimax rotation was applied to reduce the 15 perceptive attributes of CB into a smaller and more manageable set of underlying dimensions. A Kaiser-Meyer-Olkin value of 0.865 indicated that the data were suitable for performing a factor analysis, and the Bartlett Test of Sphericity [$\chi^2 = 2607.17$, $P < 0.001$] indicated that correlations existed among some of the response categories. Eigenvalues greater than one were used to determine the number of factors in each data set [51] [59] [60]. Results presented in **Table 1** indicate that four factors accounted for approximately 70.41% of the total variance, and thus represented the primary component of this study. Moreover, an examination of loading factors in **Table 2** shows that all items on each of the factors were 0.5 or higher, indicating acceptable

Table 2. Exploratory factor analysis with Varimax rotation results of CB (N = 566).

	Measures	F1	F2	F3	F4
V8	I actively express opinions that are not required, but that help the organization function.	0.835	0.094	0.172	0.146
V7	I actively attend activities that are not required, but that help enhance the image of the organization.	0.751	0.111	0.235	0.221
V9	I consider that all members are responsible for the development and reputation of the organization.	0.731	0.250	0.181	0.100
V10	I keep abreast of changes/developments in the organization.	0.730	0.251	0.151	-0.001
V12	I focus on the positive aspects of my responsibility.	0.296	0.796	0.173	0.060
V11	I make the necessary improvements if the critique is justified.	0.190	0.774	0.216	0.082
V15	I conform to all obligations with great care.	0.117	0.743	0.156	0.252
V2	I take time out of my day to help train newcomers.	0.218	0.054	0.851	0.107
V3	I share my knowledge and expertise with other coworkers.	0.167	0.316	0.744	0.082
V1	I support coworkers/classmates who have problems at work.	0.245	0.234	0.733	0.090
V13	I do not complain about trivial matters.	0.160	0.069	0.066	0.864
V14	I usually tolerate minor imperfections.	0.121	0.233	0.144	0.808
	Eigenvalues	4.95	1.26	1.20	1.04
	% of Variance	22.00	17.91	17.34	13.16
	Cumulative	22.00	39.91	57.25	70.41
	Reliability	0.83	0.78	0.78	0.69

Note: F1 = Conscientiousness; F2 = Civic Virtue; F3 = Altruism; F4 = Sportsmanship.

interpretability [52] [61]. Four factors were subsequently found to underlie CB in this study based on the participants' responses.

Factor 1, a conscientiousness dimension, contains four items referring to the respondents' perceptions of CB concerning helping others; therefore, it was labeled *conscientiousness*. Its eigenvalue was 4.95 and accounted for 22.00% of the total variance. The value of Cronbach's alpha was 0.83, and values greater than 0.7 were acceptable.

Factor 2, a civic virtue dimension, comprises three items relating to civic virtue perception; therefore, it was labeled *civic virtue*. The eigenvalue was 1.26 and accounted for 17.91% of the total variance. The value of Cronbach's alpha was 0.78, and values greater than 0.7 were acceptable.

Factor 3, an altruism dimension, consists of three items related to altruism perceptions of the respondents; therefore, it was labeled *altruism*. It accounted for 17.34% of the total variance, and the eigenvalue was 1.20. The Cronbach's alpha was 0.78, and values greater than 0.7 were acceptable.

Factor 4, a sportsmanship dimension, contains two items related to sportsmanship perception; therefore, it was labeled *sportsmanship*. It accounted for 13.16% of the total variance, and the eigenvalue was 1.04. The Cronbach's alpha was 0.69, which was reasonable since it has only two subset questions [62].

4.2.2. Social Reflection Attributes

Factor analysis with Varimax rotation was conducted to identify the underlying dimensions of social reflection perceptible attributes. A Kaiser-Meyer-Olkin value of 0.814 indicated that the data were suitable for conducting factor analysis, and the Bartlett Test of Sphericity [$\chi^2 = 1739.82$, $P < 0.001$] suggested that correlations existed among some of the response categories. Results, as shown in **Table 3**, revealed that two factors, namely, safety perspective and work attitude, accounted for approximately 63.69% of the total variance, and thus represented all of the social reflection attributes in this study.

Table 3. EFA with Varimax rotation results of social reflection attributes (N = 566).

	Measures	F1	F2
V16	I consider it as a chance for self-enhancement when I encounter a problem during work.	0.815	0.148
V17	I consider it as a challenge when I encounter a problem during work.	0.814	0.143
V18	I always do my best to complete my assignment.	0.786	0.157
V19	I always complete my work efficiently.	0.777	0.099
V20	I always complete my work by the due time.	0.695	0.236
V26	It is important to secure my seat belt when I sit in a car.	0.138	0.794
V25	It is important to wear a helmet when I ride a bicycle/motorcycle.	0.145	0.794
V21	It is important to wear proper personal protective equipment when I work/exercise (biking or skating).	0.180	0.772
	Eigenvalues	3.66	1.43
	% of Variance	38.81	24.88
	Cumulative	38.81	63.69
	Reliability	0.85	0.72

Note: F1 = Work attitude; F2 = Safety perspective.

Factor 1 comprised five items, and was labeled work attitude. Its eigenvalue was 3.66 and accounted for 38.81% of total variance. The value of Cronbach's alpha was 0.85, and values greater than 0.7 were acceptable.

Factor 2 consisted of three items which were related to perceptions of safety, and this factor was labeled as safety perceptions. The eigenvalue was 1.43, and it accounted for 24.88% of total variance. The Cronbach's alpha was 0.72, and values greater than 0.7 were acceptable.

4.3. ANOVA Test

One-way ANOVA was utilized to identify whether perceived differences in dimensions of CB existed between various groups based on demographic variables, such as age, education level, work status and experience, and specialized skills. The results are presented in Tables 4-6. The results in Table 4 revealed that gender perceptions did not significantly differ regarding the dimensions of conscientiousness and civic virtue. However, significant differences were identified between gender perceptions towards the two remaining dimensions, *i.e.*, altruism and sportsmanship, at the 5% significance level. Concerning male respondents, Table 4 shows that they have a lower mean score (3.89) on altruism, but have a higher mean score (3.54) on sportsmanship, compared to the mean scores of female respondents on these two dimensions, which were 4.03 and 3.34, respectively. These results indicated that the different genders perform different CBs.

Table 4. Comparisons of differences in respondents' perceptions of the four CB dimensions by gender.

Dimensions	Male (N = 457)		Female (N = 109)		F-value
	Mean	S.D.	Mean	S.D.	
Altruism	3.89	0.59	4.03	0.56	4.93*
Conscientious	3.55	0.71	3.63	0.66	1.16
Sportsmanship	3.54	0.78	3.34	0.71	6.19*
Civic Virtue	4.12	0.63	4.11	0.56	0.04

Note: *p < 0.05.

Table 5. Comparisons of differences in respondents' perceptions of the four CB dimensions by work status.

Dimensions	1) No (N = 44)		2) In School (N = 414)		3) Working (N = 108)		F-value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Altruism	3.91	0.61	3.89	0.60	4.06	0.53	3.86*	(2, 3)
Conscientious	3.64	0.69	3.52	0.71	3.67	0.64	2.15	
Sportsmanship	3.42	0.75	3.48	0.79	3.59	0.70	1.11	
Civic Virtue	4.14	0.75	4.08	0.62	4.27	0.48	4.50*	(2, 3)

Note: *p < 0.05.

Table 6. Comparison of differences in respondents' perceptions of the four CB dimensions by work experience (sea age).

Dimensions	1) <1 (N = 438)		2) 1 - 3 (N = 63)		3) 4 - 6 (N = 36)		4) >6 (N = 29)		F value	Scheffe
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Altruism	3.88	0.60	3.94	0.50	4.22	0.41	4.08	0.70	4.44 ^b	(1, 3)
Conscientious	3.54	0.72	3.55	0.55	3.81	0.66	3.65	0.75	1.92	
Sportsmanship	3.48	0.79	3.42	0.60	3.64	0.81	3.81	0.60	2.31	
Civic Virtue	4.08	0.64	4.16	0.40	4.40	0.48	4.23	0.62	3.43 ^a	(1, 3)

Note: ^ap < 0.05; ^bp < 0.01.

Table 5 presents the results obtained from comparing respondents' perceptions of CB dimensions by work status, namely, no work, in school, and working. Respondents who were working had the highest mean score on the altruism dimension (mean = 4.06, S.D. = 0.53) and civic virtue dimension (mean = 4.27, S.D. = 0.48); whereas, respondents in school had the lowest mean scores on these two dimensions of 3.89 and 4.08, respectively. In general, the respondents in school tended to experience a peaceful and stable environment, while people who had left school and been working in different workplaces tended to experience fluctuating environments. The results indicated that CB is significantly affected by the environment.

Table 6 shows the results obtained from comparing respondents' perceptions of the four CB dimensions by work experience onboard. The results indicated that respondents' perceptions differed significantly in the dimensions of altruism and civic virtue. Regarding the altruism dimension, respondents with experience between four and six years had the highest mean score (mean = 4.22, S.D. = 0.41), followed by experience longer than six years (mean = 4.08, S.D. = 0.70), experience between one and three years (mean = 3.94, S.D. = 0.50), and less than one year (mean = 3.88, S.D. = 0.60). Concerning the civic virtue dimension, respondents with experience between four and six years had the highest mean score (mean = 4.40, S.D. = 0.48), as well. This was followed by experience longer than six years (mean = 4.23, S.D. = 0.62), experience between one and three years (mean = 4.16, S.D. = 0.40), and less than one year (mean = 4.088, S.D. = 0.64). The results show that the respondents with less work experience had a lower mean score, while the respondents who had more work experience had a higher mean score on the two dimensions of altruism and civic virtue. These results provided evidence that work experience has a significant influence on CB.

4.4. Path Analysis

4.4.1. Test of the Proposed Structural Equation Modeling

After ANOVA testing, structure equation modelling (SEM) was applied to examine the path effects among different models with various independent and dependent variables, including CB, safety perspective, work attitude, and safety

behavior. The results of fitness of the measurement models are displayed in **Table 7**. Because the chi-square (χ^2) value is sensitive to sample size [63] [64], model examinations were based on other fitness indices, including chi-square ratio (χ^2/df), root mean square residual (RMR), root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), and the Tucker Lewis Index (TLI) [65] [66] [67] [68]. The results showed that the chi-square ratios (χ^2/df) were all less than four, and the value of RMR and RMSEA were less than 0.03 and 0.07, which were all smaller than the threshold value of 0.05 and 0.08, respectively, and were acceptable. The other fitness indices values, *i.e.*, GFI, AGFI, CFI and TLI, were all greater than the recommended level of 0.90 (see **Table 7**). In addition to these fitness indices, the items of each dimension were examined based on certain criteria, including standardized residuals in absolute terms greater than 2.58 [52] and completely standardized expected changes greater than 0.3 [66]. All of these models had an acceptable model-to-data fit. These fit measures indicated that the hypothesized model fit the data well in each model [69].

4.4.2. Results of the Hypothesized Relationships

This study aimed to discern the effects of CB on safety behavior and the roles that additional factors may play in the full influence model. Therefore, the author first examined the simplest model, which contains the two dimensions of CB and the explanation of safety behavior. This model has a good model fitness value: a chi-square ratio (χ^2/df) = 3.11; RMR = 0.021; RMSEA = 0.061; GFI = 0.98; AGFI = 0.95; CFI = 0.98; and TLI = 0.97 (see Model 1 in **Table 7**). The coefficient ($\beta = 0.48$, $P < 0.01$) displayed in Model 1 of **Table 8** presents the relationship between CB and safety behavior, which was found to exert a positive effect.

Secondly, an additional factor (*i.e.*, safety perspective) was added into the examining model, which also has a good model fitness value: chi-square ratio (χ^2/df) = 2.80; RMR = 0.028; RMSEA = 0.056; GFI = 0.97; AGFI = 0.95; CFI = 0.97; and TLI = 0.96 (see Model 2 in **Table 7**). The coefficient values between CB and safety behavior, between CB and safety perspective, and between safety perspective and safety behavior were 0.22, 0.60, and 0.44, respectively, and all coefficients were significant at the 0.01 level (see Model 2 in **Table 8**). However, the coefficient of the relationship between CB and safety behavior decreased from 0.48 to 0.22 in this model.

Table 7. The results of the SEM model test.

Model	χ^2	DF	Ratio	RMR	RMSEA	GFI	AGFI	CFI	TLI
1) CB-SB	58.99	19	3.11	0.021	0.061	0.975	0.952	0.979	0.969
2) CB-SP-SB	114.62	41	2.80	0.028	0.056	0.966	0.945	0.970	0.960
3) CB-WA-SB	165.54	51	3.25	0.024	0.063	0.954	0.930	0.962	0.950
4) CB-SR-SB	238.87	85	2.81	0.027	0.057	0.948	0.926	0.957	0.947

Note: CB = Citizenship Behavior; SB = Safety Behavior; SP = Safety Perspective; SR = Social Reflection; WA = Work Attitude.

Table 8. Path examination of the SEM model.

Model	Hypothesis	Paths	Direct effect	Indirect effect	Total effect
Model 1		CB → SB	0.48**		0.48
Model 2		CB → SB	0.22**	0.26	0.48
		CB → SP	0.60**		0.60
		SP → SB	0.44**		0.44
Model 3		CB → SB	0.30**	0.19	0.49
		CB → WA	0.79**		0.79
		WA → SB	0.24*		0.24
Model 4	H1 & H4	CB → SR → SB	0.05	0.44	0.49
	H2	SP → SB	0.43**		0.43
		WA → SB	0.23**		0.23
	H3	CB → SP	0.60**		0.60
		CB → WA	0.79**		0.79

Note: * $p < 0.05$; ** $p < 0.01$; CB = Citizenship behavior; SB = Safety behavior; SP = Safety perspective; SR = Social reflection; WA = Work attitude.

The author then examined the model with three dimensions, including CB, work attitude, and safety behavior. The results are presented in Model 3 of **Table 7** and **Table 8**. This model has a good model fitness value: chi-square ratio (χ^2/df) = 3.25; RMR = 0.024; RMSEA = 0.063; GFI = 0.95; AGFI = 0.93; CFI = 0.96; and TLI = 0.95. The standardized coefficient values between CB and safety behavior, between CB and work attitude, and between work attitude and safety behavior were 0.30, 0.79, ($p < 0.01$), and 0.24 ($p < 0.05$), respectively (see Model 3 in **Table 8**). However, the standardized coefficient of the relationship between CB and safety behavior decreased from 0.48 to 0.30 in this model, as well. Accordingly, these results constituted evidence that social reflections regarding safety perspective and work attitude play a moderating role when they individually combine with CB to affect safety behavior.

Finally, to provide more evidence to support the proposed model, both the direct and indirect effects of the full model, which contains all variables, including CB, social reflection which comprises two dimensions of safety perspective and work attitude, and safety behavior, were examined using AMOS21.

Model 4 in **Table 8** indicates that the coefficient value of the direct effect of CB on safety behavior was not significant at the 0.05 level. The H1 postulated that CB has a positive effect on safety behavior is not supported. However, CB had the indirect effect coefficient value of 0.44, it was the effect of social reflection derives from the dimensions of safety perspective and work attitude. The result provided evidence that CB exerts only an indirect effect on safety behavior via the social reflection factors of safety perspective and work attitude. Consequently, this study demonstrated that CB had a positive effect on safety behavior, and was further mediated by the combination of safety perspective and work attitude. The H4 was supported.

Regarding with the standardized coefficients of each path of social reflection factors to safety behavior, SP to SB and WA to SB, were 0.43 and 0.23, respectively. They were at 0.01 significant level and supported H2 that social reflection factors have a positive effect on safety behavior. With respecting to H3, the standardized coefficients of paths of CB to social reflection factors, CB to SP and CB to WA, were respective 0.60 and 0.79. They were significant at 0.01 level and supported H3 that postulated that CB has a positive effect on social reflection factors as well.

5. Conclusions and Recommendations

5.1. Conclusions

OCB has been recognized as an important determinant to explain performance within organizations [3] [4] [5] [6] [7]. OCB seems to constitute an effective criterion to screen applicants prior to entering an organization. Extant literature [3] [4] [5] [6] [7] [14] relating to OCB focused on collecting data from members within the organization, which were considered as spot data, and employees had joined their organizations for a period of time. According to previous studies [4] [8]-[14] [17] [18], behavior is cultivated by culture, education, personality, and leadership from childhood onwards. Accordingly, all employees before entering an organization have already formed solid CB through long-term interactions with the environment. Organizations would like to recruit the best and most appropriate people to join their organization, to create a good organization climate and to achieve consistently excellent performance. Therefore, this study aimed to elucidate the role of CB to affect safety behavior and determine effective criteria to assist human resource managers to recruit optimal employees to create a complete and effective environment for their organization.

Theoretically, this study highlighted the role of CB in explaining the occurrence of safety behaviors. Moreover, an important question has been answered with regard to the effect of CB on safety behavior, *i.e.*, “Does CB directly from safety behavior?” Further, the research illustrated how CB influences safety behaviors within the organization. In particular, this study provided evidence for the moderating/mediating effect of social reflection, *i.e.*, safety perspective and work attitude, on the relationship between CB and safety behavior. To the best of our knowledge, this is the first study to provide empirical evidence for the role of CB in explaining safety behavior in general life.

5.2. Theoretical and Managerial Implications

A number of important findings have emerged from the study that offers both theoretical and managerial implications. First, a significant contribution of this study is the empirical testing of theoretical assumptions in the extant literature pertaining to the influence of CB on safety behavior. CB is demonstrated to have an insignificant direct impact on safety behavior. This finding indicates the role that CB plays in cultivating safety behavior. Indeed, it still interacts with the en-

vironment in general life. An organization should therefore recruit employees with good CB to form a basis of OCB, as well as support management to cultivate good OCB. Safety behavior is usually assured when people exhibit good CB. The study also indicated that safety behavior was separately modulated by safety perspective and work attitude, and safety behavior was mediated by these two external factors when they were combined. The significant impact of safety perspective and work attitude on safety behavior implies that the environment plays a key role in augmenting CB. The study also revealed that safety perspective and work attitude, as social reflection factors, were significantly influenced by CB. This finding strongly suggests that CB can generate a safety perspective and work attitude in general life.

5.3. Study Limitations and Future Research

This study provided empirical evidence for the influence of CB on safety behavior in life. However, a number of limitations of the study should be noted, which then suggest directions for future research. First, this study specifically focused on collecting the perception of respondents at different life stage of maritime domain, it provided an easy way to complete the study and might cause bias in the research as well. Future studies might evaluate the effects of CB in other domains, such as logistics, high technology, or services, to verify the theory discovered in this study. Second, this study was based on a survey similar to a longitudinal study to assess CB and the promotion of performance at different stages of life. However, it could not conclusively determine individual change. In order to address this gap, future research could conduct a longitudinal study [70] [71]. Third, this study focused on the effect of CB based on respondents' self-reported behavior, but it did not verify the time point of greatest influence. Since organizations aim to improve their performance, future research should consider relationships between CB, OCB, organization culture, management systems, and their impacts on performance. A more comprehensive understanding of factors influencing performance could help to recruit the most appropriate people and implement optimal management practices within the organization. Finally, the collected data obtained from self-reported safety behaviors and perceptions of CB may have been subject to bias due to respondents' reluctance to report actual behavior. A potential social desirability bias or response set effect should therefore be considered. To address this, further research might measure respondents' behaviors by actual observation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

Table A1. Research questionnaire.

	Statements of measures ("1" = Strongly Disagree; "5" = Strongly Agree)	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	I support coworkers/classmates who have problems at work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	I take time out of my day to help train newcomers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	I share my knowledge and expertise with other coworkers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	I talk to other coworkers before taking actions that might affect them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	I engage in self-improvement to enhance the quality of work knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	I propose my own ideas and suggestions to enhance the work efficient.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	I actively attend activities that are not required, but that help enhance the image of the organization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	I actively express opinions that are not required, but that help the organization functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	I consider that all members are responsible for the development and reputation of the organization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	I keep abreast of changes/developments in the organization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	I make the necessary improvements if the critique is justified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	I focus on the positive aspects of my responsibility.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	I do not complain about trivial matters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	I usually tolerate minor imperfections.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	I conform to all obligations with great care.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	I consider it as a chance of self-enhance when I encounter a problem during work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	I consider it as challenge when I encounter a problem during work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	I always do my best to complete my assignment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	I always complete my work efficiently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Continued

20	I always complete my work by due time.	<input type="checkbox"/>				
21	It is important to wear properly personal protective equipment when I work/ exercise (biking or skating).	<input type="checkbox"/>				
22	It is important to ensure workplace safety while I working	<input type="checkbox"/>				
23	It is important to report any risks or hazards that I experience or witness.	<input type="checkbox"/>				
24	It is important to look closely the safety of coworkers while working together.	<input type="checkbox"/>				
25	It is important to wear helmet when I ride a bicycle/motorcycle.	<input type="checkbox"/>				
26	It is important to secure seat belt when I sit in a car.	<input type="checkbox"/>				
27	I reduce speed as I approaching to the block even without any traffic.	<input type="checkbox"/>				
28	I always follow the traffic regulation.	<input type="checkbox"/>				
29	I always follow the instruction of traffic signal.	<input type="checkbox"/>				
30	I always keep in the right traffic lane.	<input type="checkbox"/>				

General Information

1) Gender:

Male Female

2) Age:

 <15 16 - 20 21 - 25 26 - 30 31 - 35 >35

3) Education:

 Secondary school High School Collage/University Graduated

4) Work condition now:

 No Study in school Work on shore Serve onboard.

5) Specialized:

 No Navigation Engine Others, Please specified

6) Sea age:

 <1 1 - 3 4 - 6 6 - 9 10 - 12 >13

7) Where are you from?

 Northern Taiwan Central Taiwan Southern Taiwan Eastern Taiwan Others
Please specified.

The End of the questionnaire. Thank you very much for your kindness.