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Understanding Cooperative Attitude, Behavior, and Perceived Learning Effectiveness of Cooperative Learning: A Value-Based Approach

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Abstract

This study explored the personal value orientations of local Chinese college students. It examined the effects of self-transcendence values on cooperative attitude, cooperative behavior, and the perceived learning effectiveness of CL among EFLs at the university level. The sample included 204 adolescents (183 females) with a mean age of 20.08 years (20.08±0.642). Utilizing structural equation modeling, our findings revealed that: (1) there is a prioritization of self-transcendence (ST) values over self-enhancement (SE) values among the participants; (2) ST values had a direct positive effect on cooperative attitudes and the perceived learning effectiveness of CL among the participants; (3) cooperative attitudes significantly mediated the relationship between ST values and cooperative behavior; (4) cooperative attitudes and cooperative behavior sequentially mediated the relationship between ST values and the perceived learning effectiveness of CL. We discuss enhancing ST values as a strategic approach to improve outcomes of Cooperative Learning (CL).

Keywords: Cooperative Learning, Self-Transcendence Values, Grouping Strategies

Introduction

As the digital world evolves, Cooperative Learning (CL) has garnered growing attention from researchers and the public for its role in developing critical skills such as communication, collaboration, and problem-solving, which are essential for navigating the 21st-century digital landscape (Jacobs & Ivone, 2020; Johnson & Johnson, 2019). Researchers also have demonstrated that CL positively impacts students' psychological well-being, social skills, academic achievement, and social relationships (e.g., Yamarik, 2007; Johnson & Johnson, 2009; Tolmie, Topping, Christie, Donaldson, Howe, Jessiman, Livingston, & Thurston, 2010; Lavasani & Khandan, 2011; Van Ryzin & Roseth, 2018). Yet, despite its overall perceived learning effectiveness in CL may not be well received by all students, with some finding it less effective or even unappealing (e.g., Bonwell & Eison, 1991). Value theory offers insights into these preferences or aversions by suggesting that specific value orientations can help understand the apprehensions about frequent interactions and collaboration with others (e.g. Schwartz, 2013).

According to value theory, there is a universal structure of ten fundamental values, which are organized into a circular structure, indicating that human motivation is organized similarly across different societies (Schwartz, 2016). Prior research has demonstrated the predictive capability of values in shaping attitudes (Boer & Fischer, 2013) and subsequent behavior (Bardi & Schwartz, 2003). Schwartz (2013) examined cooperative behavior in social dilemmas and revealed that self-enhancement values (SE values) tend to generate the least amount of cooperation; self-transcendence values (ST values) promote greater cooperation; open-to-change values (OC values and conservative values (C values) are generally less relevant in this context. Researchers have identified ST values as a vital predictive factor for the commitment to CL (Bogaert, Boone, & van Witteloostuijn, 2012; Choi & Yoon, 2018; Pletzer, Balliet, Joireman, Kuhlman, Voelpel, & Van Lange, 2018; Filippou, Buchs, Quiamzade, & Pulfrey, 2021). There is a dearth of literature on the influence of ST values on the interaction of CL.

Homer and Kahle (1988) devised a Value-Attitude-Behavior (VAB) model that suggests that an individual's behavior reflects their values and attitudes and emphasizes the mediating function of attitudes between values and behaviors. The efficacy of the model has been thoroughly tested and applied in diverse domains, including its use for elucidating career attitude (Shim, Warrington, & Goldsberry, 1999), for predicting voting intentions related to wilderness preservation (Vaske & Donnelly, 1999), in research on tourism industry (Han, Hwang, Lee, & Kim, 2019), and teachers' conservative, open-to-change and self-transcendence behaviors (Tal & Yinon, 2002). There has been limited application of the model in the context of CL. Further research is warranted given the importance of understanding how personal values influence attitudes and behavior. We examine the role that ST values may play in the cooperative attitude, behavior, and perceived learning effectiveness of CL.

Personal Value Orientations

According to Schwartz (2016), the ten universal core values are grouped into two sets of higher-order values, forming two distinct dimensions: OC values vs. C values and SE values vs. ST values. However, researchers have reported that the distribution of personal value orientation varies in different nations (e.g., Hofstede, 1980; Schwartz, 1992; Schwartz, 2003; Knutsen, 2009; Feng, 2011). For instance, in collectivist nations like China, values such as wealth, power, and authority are given greater significance (Schwartz,1992). Feng (2011) has also revealed that Chinese respondents preferred C values and SE values more than their American counterparts in the fifth wave of the World Values Survey. Given the significant improvements in security and prosperity that Chinese have experienced over the past few years, it is worth investigating whether they are increasingly prioritizing SE and OC values over ST and C values.

Besides, differences in age, education level, and gender should be considered when researchers investigate personal value orientations (Schwartz,2006). Studies have indicated a strong correlation between advanced age and a preference for traditional over modern value orientations (e.g., Webber, Coombs, & Hollingsworth, 1974), and across cultures, older individuals tend to endorse communal personal values more than agentic ones (Fung et al., 2016). In contrast, Heim et al. (2017), found that compared to their Russian and German counterparts, Chinese students scored highest on the two higher-order dimensions of values, underscoring the daily value conflicts encountered by young Chinese individuals as they balance Confucian traditions and rapid economic development. In addition, Liu et al. (2021)

found that individualism is on the rise in developed cities like Shanghai, while traditional collectivism is diminishing. Conversely, young individuals strongly adhere to ST and C values in cities such as Qingdao, which are more influenced by Confucian culture. Therefore, we hypothesize that young students influenced by Confucian culture are more likely to prioritize ST values over SE values and conservation C values over OC values.

Personal Value Orientations and Cooperative Attitude

Katz (1960), identified four functions of attitudes: utilitarian, ego-defensive, value-expressive, and knowledge functions. The value-expressive function, in particular, articulates central values. Researchers suggest that people use values to justify their attitudes, especially when value-expressive attitudes are concerned (Kristiansen & Zanna, 1988; Maio & Olson, 1994). Researchers across different populations have found a connection between values and corresponding attitudes (e.g., Boer & Fischer, 2013; Filippou et al., 2021). For instance, Boer and Fischer (2013), showed a positive relationship between ST values and attitudes towards fairness, environmental protection, care, and prosocial behaviors. In the context of educational settings, Filippou et al. (2021), found that pre-service teachers had a strong preference for ST values over SE values, and their commitment to ST values was positively linked to their beliefs and attitudes regarding CL methods. Consequently, we hypothesize that ST values will positively affect the cooperative attitude.

Personal Values and Cooperative Behavior

Values enable individuals to display a particular behavior in a particular situation (Kahle, Beatty, & Homer, 1986; Verplanken & Holland, 2002; Bardi & Schwartz, 2003; Schwartz, 2017). According to Schwartz (1977), and his norm-activation theory, when an individual's values are triggered, they are motivated to take actions consistent with those values. Bardi and Schwartz (2003), discovered that behaviors related to stimulation and tradition values exhibited a strong correlation with the respective values. In contrast, behaviors connected to hedonism, power, universalism, and self-direction values demonstrated a moderate association. Finally, security, conformity, achievement, and benevolence values showed only a slight connection with their respective behaviors. Schwartz (1992) discovered that individuals with SE values tend to exhibit the lowest levels of cooperation. Conversely, those with ST values tend to be more cooperative. OC and C values do not significantly impact cooperation. Consequently, we hypothesize that ST values will affect cooperative behavior.

Value-Attitude-Behavior Hierarchy

Homer & Kahle (1988), devised a Value-Attitude-Behavior (VAB) model, which suggests that an individual's behavior reflects their values and attitudes and emphasizes the mediating function of attitudes between values and behaviors. The model' s efficacy has been thoroughly tested and applied in diverse domains (e.g., Shim et al., 1999; Vaske & Donnelly, 1999; Han et al., 2019). Tal & Yinon (2002), found that values and attitudes could explain teachers' conservative behavior and openness to change and self-transcendence behaviors in school settings. Therefore, we hypothesize that students' adherence to ST values will be associated with a cooperative attitude and behavior, and a cooperative attitude will mediate the effects of ST values and cooperative behavior.

Effectiveness of CL

The effectiveness of CL is a widely discussed subject worldwide. However, the arguments on the factors that influence the effectiveness of CL varies (Battistich, Solomon, & Delucchi, 1993; Slavin, 1996; Johnson & Johnson, 2014; Dzemidzic, Burner, Johnsen, & Yates, 2019). For instance, Johnson and Johnson (2014) identified five fundamental elements that every CL framework should contain, which are: positive interdependence, individual accountability, promotive interaction, appropriate use of social skills, and group processing. Dzemidzic et al. (2019) pointed out that successful CL is attributed to students' interpersonal behavior, active participation, communication and support between group members, and the teacher's guidance. Many other factors are deemed significant in determining the effectiveness of CL, which include, but are not restricted to, the training, experience, and instructional approach of teachers; the interpersonal behavior, interdependence, and involvement of students; the personality, attitude, and expectations of individuals; and the management, size, identity, inter-group competition, inner-group trust, and incentives of groups. Given the complexity of CL and its influencing factors, the academic community has not yet reached a consensus on its conclusions. Therefore, we hypothesize that ST values, cooperative attitude, and cooperative behavior will be associated with perceived learning effectiveness of CL. In summary, the following three hypotheses were examined in the present study:

Hypothesis 1: Students influenced by Confucian culture prioritize ST values over SE values.
Hypothesis 2: Students influenced by Confucian culture prioritize conservation C values over OC values.
Hypothesis 3: Students' adherence to ST values will be associated with a cooperative attitude.
Hypothesis 4: Students' adherence to ST values will be associated with cooperative behavior.
Hypothesis 5: Cooperative attitude will mediate the effects of ST values on cooperative behavior.
Hypothesis 6: ST values, Cooperative attitude, and cooperative behavior will be associated with the perceived learning effectiveness of CL.
Hypothesis 7: Cooperative attitude and behavior will mediate ST values' effects on the perceived learning effectiveness of CL.

Method

Participants

A total of 255 college students from a university in Qufu, Shandong province, participated in this study. Ethical approval was granted by the university's Human Research Ethics Committee. The survey was conducted online, and informed consent was obtained from all participants. Before taking the survey, participants received information about the study's purpose, the implications of their participation, and the measures in place to protect their data, highlighting the voluntary and anonymous nature of their involvement. After excluding missing or incomplete responses, 204 valid surveys were collected (mean age = 20.08, SD = 0.642, 183 females). The sample comprised 103 (50.5%) students enrolled in four-year university programs and 101 (49.5%) students in three-year university programs.

Measures

Personal Value Orientation

A Chinese version of the Portrait Values Questionnaire (PVQ40) (Schwartz, 2021) was adopted to assess students' personal values orientations. PVQ40 consists of 40 items that capture ten basic human values across two higher-order dimensions. Respondents rate the importance of each value in guiding their lives using a six-point Likert scale, from high to low according to their agreement level. The scale consisted of four sub-scales, namely, ST values (10 items), SE values (7 items), OC values (10 items), and C values (13 items), each measuring a different set of personal values. The internal consistency of the sub-scales was found to be acceptable, with alpha coefficients ranging from .744 to .826, which is acceptable.

Cooperative Attitude, Cooperative Behavior, and Perceived Learning Effectiveness of CL

Cooperative attitude, cooperative behavior, and perceived learning effectiveness of CL were assessed using a self-designed scale. A sample item was "I believe that personal development and progress cannot be separated from the cooperation between people." A five-point Likert scale was used to estimate the cooperative attitude (consisting of 5 items), cooperative behavior (consisting of 6 items), and perceived learning effectiveness of CL (consisting of 5 items), ranging from 1 (indicating "not at all agree") to 5 (indicating "completely agree") to express their level of agreement to various statements, with higher levels of cooperative attitude, cooperative behavior and self-assessed effects of CL was represented by higher scores. The reliability of the sub-scales was found to be satisfactory based on internal consistency measures, with alpha coefficients ranging from .888 to .938, which is good.

Analytical Strategy

Data analysis was performed using SPSS 25.0 and Amos 26.0. Because of the differences in scoring methods among the scales, all scales were converted to reverse order in SPSS to ensure consistency during analysis. Any missing values were substituted with their mean values. To test our hypotheses and research question, we initially developed a model to investigate the relationships between ST values, cooperative attitude, cooperative behavior, and the perceived learning effectiveness of CL (refer to Fig. 1). A confirmatory factor analysis was then conducted with Amos 26.0 to evaluate the fit of the measurement model.

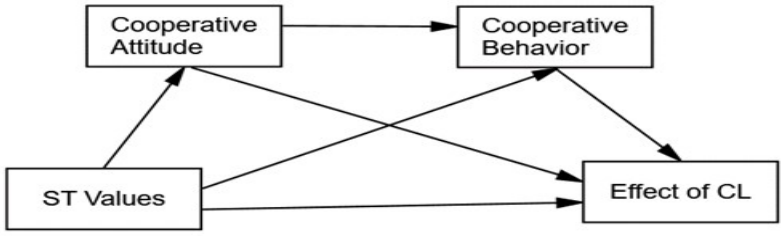

Figure 1. Research model

Results

Descriptive Statistics

Table 1 shows an overview of the relevant variables describing the 204 samples.

Table 1

Demographic Characteristics

Demographic variables	Category	No./M±SD	Ratio (%)
Sex	Male	21	10.3
	Female	183	89.7
Length of schooling	Four-year	103	50.5
	Three-year	101	49.5
Age		20.08±0.642	

Instrument Construction and Validation

To assess the convergent validity of the constructs being studied, we utilized Amos 26. We carried out three primary analyses: (a) evaluating the reliability of indicators, (b) calculating the composite reliability of each construct, and (c) determining the average variance extracted by the construct, according to the suggestion of Fornell and Larcker (1981). The outcomes of these analyses are presented in Table 2. As per the recommended composite reliability (CR) cut-off point of 0.7 (Fornell & Larcker, 1981; Gefen & Straub, 2005), we observed that the CR of all constructs was highly reliable, as depicted in the table. Additionally, the average variance extracted (AVE) was more significant than 0.5 (Fornell & Larcker, 1981), indicating that the latent variables were reliable. The item reliability and internal consistency reliability, evaluated through CR and AVE, provided substantial evidence of convergent validity for the measures on CL used in this study.

Ensuring discriminant validity stands as a pivotal aspect within the realm of research investigations. It serves as a gauge to determine whether the chosen indicators for assessing distinct constructs remain distinctly separate from indicators associated with other constructs. Within our study, particular emphasis was placed on evaluating the discriminant validity among the constructs of Attitude, Behavior, and Effect, employing Amos 26 for this purpose.

Table 2
Convergent Validity

		unStd.	S.E.	T-value	P	std.	SMC	CR	AVE
Att	ATT1	1.000				.871	.759	.943	.624
	ATT2	1.193	.090	13.201	***	.781	.610		
	ATT3	.908	.074	12.223	***	.742	.551		
	ATT4	.815	.066	12.370	***	.748	.560		
	ATT5	1.095	.079	13.873	***	.808	.653		
Beh	ACT1	1.000				.755	.570	.938	.606
	ACT2	.972	.085	11.385	***	.790	.624		
	ACT3	1.026	.090	11.391	***	.791	.626		
	ACT4	1.057	.089	11.937	***	.825	.681		
	ACT5	.881	.082	10.753	***	.750	.563		
	ACT6	1.082	.100	10.872	***	.758	.575		
Eff	EFF1	1.000				.900	.810	.954	.679
	EFF2	1.147	.058	19.905	***	.903	.815		
	EFF3	.909	.047	19.554	***	.896	.803		
	EFF4	.920	.050	18.456	***	.874	.764		
	EFF5	.767	.053	14.559	***	.778	.605		

Table 3 outlines the correlation matrix for these constructs. An essential criterion for assessing discriminant validity is to examine the diagonal elements in the corresponding rows and columns, which should be greater than the off-diagonal elements (Fornell & Larcker, 1981). The results of this evaluation confirmed that discriminant validity was satisfactory at the construct level for all constructs. This indicates that each construct has a higher degree of shared variance with its own items than with items from other constructs.

Gefen and Straub (2005), state that a correlation equal to or exceeding 0.85 signifies inadequate discriminant validity in structural equation modeling. Notably, none of the correlations documented in Table 3 surpass this threshold. Consequently, the measures of the constructs in the proposed model fulfilled the reliability criteria and demonstrated sound discriminant validity.

Overall, the attained measurement quality met acceptable standards. Hence, the subsequent analyses treated Attitude, Behavior, and Effect as individual variables, affirming their independence and distinctiveness within the study framework.

Table 3
Discriminant Validity Statistics

	AVE	Att	Eff	Beh
Att	.624	.790		
Eff	.679	.676	.824	
Beh	.606	.766	.722	.778

Statistical Analysis of Personal Values Orientations

The Portrait Values Questionnaire (PVQ40) is a reverse scale in which lower values represent higher similarity while higher values represent lower similarity. Therefore, the lower the score, the more the respondent is inclined toward the value orientation represented by the item. Table 4 shows the participants weighted SE values the least (M=2.90, SD=.80). The participants weighted ST the most (M=2.30, SD=.70). OC and C values were moderately endorsed. The weights of C values (M=2.49, SD=.64) and OC values (M=2.42, SD=.73) generated a slight difference, which indicates the participants' orientations to open to change and conservation are almost the same.

Table 4
Descriptive Statistics of Personal Value Orientations

	Case	M	SD	SEM
ST	204	2.29886	.700535	.049047
C	204	2.4872	.64066	.04486
OC	204	2.4196	.72819	.05098
SE	204	2.89997	.803169	.056233

Statistical Analysis of the Research Model

Confirmatory Factor Analysis

To assess the goodness of fit of the research model, AMOS provided fit statistics such as the Chi-square (X^2) and DF. The goodness of fit indices for the statistical model demonstrated a high level of agreement between the observed data and the model, with X^2 = 248.666, df = 114, X^2 /df = 2.181, p = .000, GFI = .882, AGFI = .842, CFI = .947, and RMSEA = .076 (see Figure 2**)**. These values were then compared to the benchmarks suggested by Kline (1998) and Gefen & Straub (2005), and the analysis indicates that the measurement model's fit was satisfactory, as evidenced by the results presented in Table 5.

Based on Kline's (1998) suggested criteria, a relative chi-square value of 3 or lower indicates a model fit that can be considered good. In this study, a relative chi-square index was calculated to be 2.181, indicating a good fit for the models. Furthermore, Comprehensive Fit Indexes (CFI) is .947, which is above 0.90 and demonstrates a good fit for the data as well.

The RMSEA fit statistics showed favorable statistics, with a value of .076, which is below the desired cut-off of .08. Additionally, other fit indices, including AGFI, were found to be within acceptable limits, with a value of .842. Therefore, the outcomes of this study demonstrate that the models employed in the research fit the data well, as attested by different fit indices.

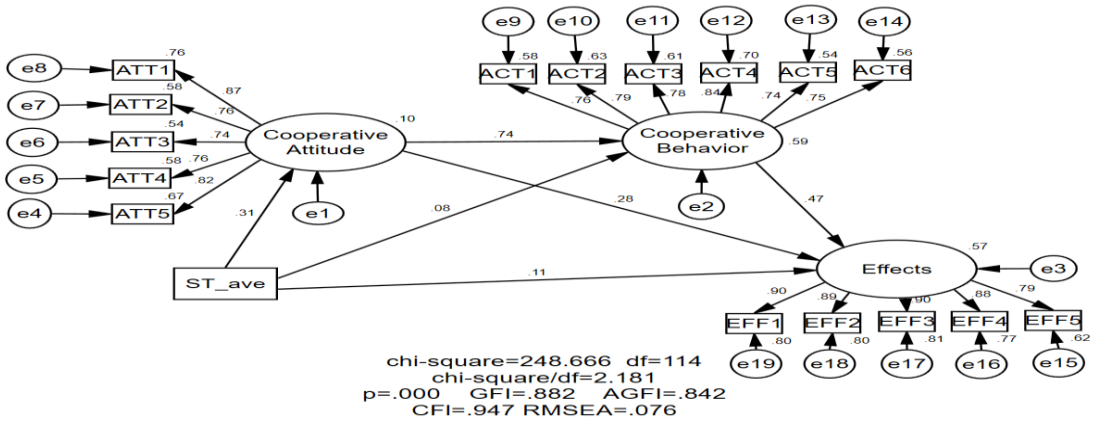

Figure 2. Parameter estimates of the general structural model

Table 5
Global fit indices for the CFA model

Fit index	Benchmark	ST Model
Chi-square/degree of freedom	＜3	2.181
GFI (Goodness of fit index)	＞0.90	.882
AGFI (Adjusted goodness of fit index)	＞0.80	.842
CFI (Comparative fit index)	＞0.90	.947
RMSEA (Root mean error of approximation)	＜0.08	.076

Path Analysis

The ongoing research aims to examine the correlation between various constructs, namely ST values, attitude, behavior, and effect of CL. The findings were analyzed using path analysis, and the scalar estimations were demonstrated in Table 6. The table exhibited the non-standardized and standardized estimated values. Standard Error (SE) and Critical Ratio (CR) were presented in different columns, where CR was calculated by dividing the Estimate by SE, also recognized as the t-value, followed by the p-value associated with the hypotheses (McIver & Carmines, 1981).

Table 6
Scalar Estimates of the Research Model

	Estimate	S.E	C.R	P	Std Estimate
Attitude<--- ST_ave	.265	.061	4.35	***	.314
Behavior<--- Attitude	.625	.069	9.105	***	.74
Behavior<--- ST_ave	.058	.04	1.435	.151	.081
Effect<--- Behavior	.629	.135	4.654	***	.473
Effect<--- ST_ave	.101	.052	1.967	.049	.107
Effect<--- Attitude	.315	.109	2.9	.004	.28

The results indicated that the regression weight in ST values -> Effect in the model was positively significant, which supported our initial expectation. Moreover, the paths ST -> Attitude, Attitude-> Behavior, ST -> Effect, Attitude-> Effect, and Behavior-> Effect were found to be significant, except for the path ST -> behavior. The ST values and cooperative behavior was not significant in path analysis, as illustrated in Table 6. The computed standardized value for the correlation between ST and cooperative behavior was .081, with a corresponding p-value of .151. As the p-value was greater than the standard threshold of .05, the results indicate that there is no statistically significant relationship between ST and cooperative behavior.

Model Modification

Based on the findings of ST -> behavior, we made necessary modifications to the model presented in Figure 3. Subsequently, we reanalyzed the path analysis and scalar estimations, as shown in Table 7. The results revealed that all variables exhibited significant correlations post-modification.

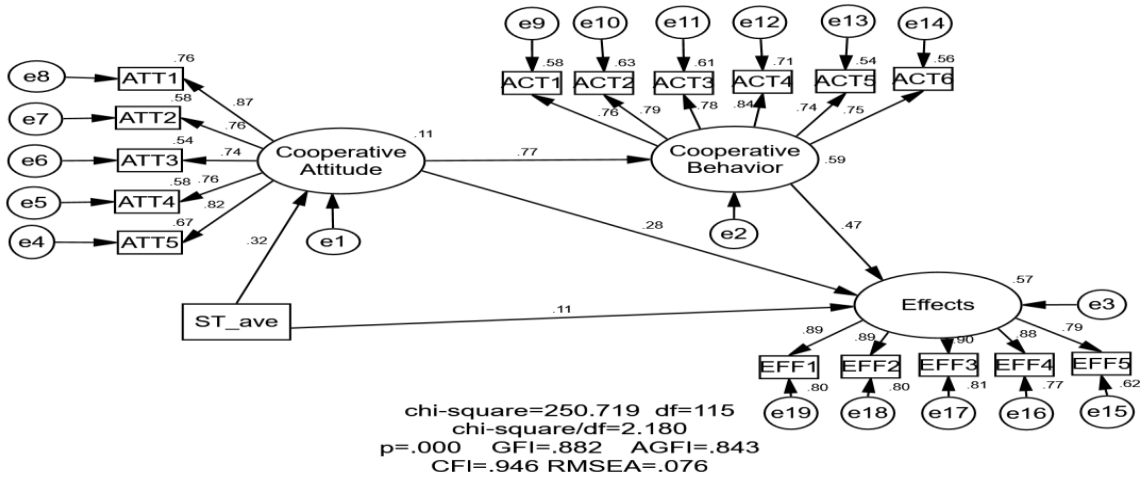

Figure 3. Parameter estimates of the modified structural model

The modified research model showed satisfactory goodness of fit indices, with X^2 = 250.719, df = 115, X^2 /df = 2.180, p = .000, GFI = .882, AGFI = .843, CFI = .946, and RMSEA = .076. The study compared the obtained values with the benchmarks suggested by Kline (1998) and Gefen & Straub (2005) and found that the measurement model fit was acceptable, as shown in Table 7. Path coefficients and R^2 values for all dependent constructs were presented in Figure 3, which indicated the fraction of variance in these constructs predicted by the models. The study's findings revealed that ST values and Attitude accounted for 59% of the variance in Behavior (R^2 =.59), thereby indicating a significant relationship between the two constructs. Furthermore, ST values, Attitude and Behavior in the regression analysis resulted in a prediction of 57% of the variance in Effect (R^2=.57), which is considered an acceptable level of explanation. Finally, the results in Table 8 showed that the modified model's regression weight in ST -> Attitude, Attitude-> Behavior, ST -> Effect, Attitude-> Effect, and Behavior-> Effect was found to be significant.

Mediating Effects Analysis

The results presented in Table 9 reveal significant relationships between several latent variables under investigation. Specifically, the table indicates a direct correlation (.324) between ST and Attitude, a direct impact (.472) between Behavior and Effect, as well as direct impact (.769) between Attitude and Behavior. In addition, the analysis suggests the presence of a indirect effect between ST and behavior, with corresponding values of .250. ST and Effect have both direct and indirect effects on each other. The values of the direct and indirect effects are .111 and .209, respectively. Lastly, the table highlights a direct impact (.282) and an indirect impact (.209) between Attitude and Effect.

Table 7
Global Fit Indices for the Modified Model

Fit index	Benchmark	ST Model
Chi-square/degree of freedom	＜3	2.180
GFI (Goodness of fit index)	＞0.90	.882
AGFI (Adjusted goodness of fit index)	＞0.80	.843
CFI (Comparative fit index)	＞0.90	.946
RMSEA (Root mean error of approximation)	＜0.08	.076

Table 8
Scalar Estimates of the Modified Research Model

	Estimate	S.E	C.R	P	Std Estimate
Attitude<--- ST_ave	.274	.061	4.530	***	.324
Behavior<--- Attitude	.649	.068	9.543	***	.769
Effect<--- Behavior	.626	.135	4.619	***	.472
Effect<--- ST_ave	.105	.052	2.041	.041	.111
Effect<--- Attitude	.316	.112	2.830	.005	.282

The study utilized a bootstrap sampling technique to assess the mediating effects of the latent variables and ensure the accuracy and reliability of the results. The percentile method with 5000 resamples was used to achieve a 95% confidence interval, as Taylor, MacKinnon, and Tein (2008), recommended. Table 10 presents a summary of the outcomes of the mediating effect analysis, which lends additional credibility to the connections identified in Table 9.

In order to assess the relevance of the indirect effects, we adopted the approach suggested by Preacher and Hayes (2008), which involved computing the confidence interval of the lower and upper bounds. Our bootstrapping analysis validated the presence of significant positive mediating effects of attitude in the relationship between ST values and the Effect of CL. The standardized indirect effect was 0.087, $p < 0.05$ in the Bias-corrected test and Percentile 95% CI test. Further analysis revealed significant chain mediating effects for Attitude and Behavior between ST values and the Effect of CL. The standardized indirect effect was 0.111, and $p < 0.01$. The significance of the mediation effects in both ST-Attitude-Effect and the chain mediating effect observed in ST-Attitude-Behavior-Effect are noteworthy. Hence, a valid inference can be drawn that the conceptual model incorporates a consequential chain mediating effect, acting as a partial intermediary.

Table 9
Unstandardized and Standardized Coefficients of Mediating Effects

	Total Effects			Direct Effects			Indirect Effects		
	ST_ave	Attitude	Behavior	ST_ave	Attitude	Behavior	ST_ave	Attitude	Behavior
Attitude	.274 (.324)			.274 (.324)					
Behavior	.178 (.250)	.649 (.769)			.649 (.769)		.178 (.250)		
Effect	.303 (.320)	.722 (.645)	.626 (.472)	.105 （.111）	.316 (.282)	.626 (.472)	.198 (.209)	.406 (.363)	

In the examination, the mediating impact of Attitude was found to contrast unfavorably with the mediation effect generated by the sequential linkage of Attitude and Behavior, indicating that the mediation effect of Attitude was weaker than the mediation effect of Attitude and Behavior combined. However, the mediation effect of Attitude and Behavior is not significantly more substantial than that of Attitude alone. The mediation effect of Attitude in the ST-to-Effect relationship constitutes 28.6% of the overall effect. In contrast, the chain mediation effect involving Attitude and behavior in the ST-to-Effect relationship accounts for 36.8% of the total effect.

Table 10
Standardized Direct, Indirect, and Total Effects of the Research Model

Mediation Effects			Estimate	Lower	Upper	P
ind1	ST-Attitude-Effect	a1*b1	.087	.005	.181	.043
Ind2	ST-Attitude-Behavior-Effect	a1*b2*b3	.111	.038	.221	.003
total		ind1+ind2+c	.303	.168	.439	.000
r1		ind1/total	.286	.017	.623	.043
r2		ind2/total	.368	.145	.712	.003
diff		Ind1-ind2	-.025	-.197	.116	.767

Summary of Hypothesis Test

Building upon prior empirical inquiry, the hypothesis test results can be extrapolated. A concise summary of these findings is presented in Table 11. The present study aimed to investigate the personal value orientations of local Chinese college students and its impact on CL. The findings indicate a prioritization of ST values over SE values among these students. However, the prioritization of C values over OC values was not supported. Moreover, it was found that ST values have a positive influence on the perceived learning effectiveness of CL and foster cooperative attitudes. Although cooperative attitudes and behaviors significantly enhance the perceived learning effectiveness of CL, the study did not find support for the notion that ST values have a significant and positive impact on cooperative behavior in CL. Overall, the findings underscore the significance of ST values and cooperative attitudes in shaping the efficacy of CL among the local Chinese college students.

Table 11
Summary of Hypothesis Test

	Hypothesis	Relationship	Results
1	Hypothesis	Students influenced by Confucian culture prioritize ST values over SE values.	Supported
2	Hypothesis	Students influenced by Confucian culture prioritize C values over OC values.	Not Supported
3	Hypothesis	Students' adherence to ST values will be associated with a cooperative attitude.	Supported
4	Hypothesis	Students' adherence to ST values will be associated with cooperative behavior.	Not Supported
5	Hypothesis	Cooperative attitude will mediate the effects of ST values on cooperative behavior.	Supported
6	Hypothesis	ST values, Cooperative attitude, and cooperative behavior will be associated with the perceived learning effectiveness of CL.	Supported
7	Hypothesis	Cooperative attitude and behavior will mediate ST values' effects on the perceived learning effectiveness of CL.	Supported

Discussion

The article delineates the outcomes of a study scrutinizing the personal values of college students in Qufu, China, and their interplay with CL. The study sought to furnish a holistic comprehension of college students' values, particularly their adherence to ST, SE, OC, and C values, and the consequential influence of these values on cooperative attitude and behavior and the perceived learning effectiveness of the CL framework.

The study results revealed that the participants gave the highest weight to ST values, while SE values received the least. This finding was expected and indicated the far-reaching impact of Confucian values on contemporary young people. Although Confucianism still influences local college students, C values no longer hold absolute superiority over OC value orientation. This is my due to the increasing openness in China and age-specific characteristics of young people seeking self-expression, individuality, and challenges, gradually leading them to tend toward an open-to-change value orientation. The study also found a significant correlation between ST, SE, OC, and C values, consistent with Schwartz's value theory.

In the proposed model, the authors found that ST -> Attitude, Attitude-> Behavior, ST -> Effect, Attitude-> Effect, and Behavior-> Effect were significant, but the path ST -> behavior was not significant. This is inconsistent with the findings of Schwartz in 2013, which revealed that ST values promote greater cooperative behavior in social dilemmas. This suggests that, given the complexity of CL, Schwartz's conclusions about cooperation cannot be directly applied to CL. It is presumptuous to assume that ST values directly lead to cooperative behavior in CL.

Moreover, ST values significantly affected the cooperative attitude and perceived learning effectiveness of CL. The bootstrapping test outcomes for the adjusted model substantiated the presence of a noteworthy mediating effect of cooperative attitude between ST values and the cooperative behavior of CL, which proved that, in most cases, ST values directly influence cooperative attitudes rather than cooperative behavior, which is consistent

with the findings of Homer and Kahle, whose model underscores the pivotal role of attitudes in mediating the relationship between values and behaviors. Besides, the study also provides evidence of a chain mediating effect of cooperative attitude and cooperative behavior in CL between ST values and the perceived learning effectiveness of CL

Conclusion

The study findings highlight the predominant emphasis of local students on ST values over SE values, indicating a nuanced distribution of personal values. Moreover, the study underscores the mediating role of cooperative attitude and the sequential relationship between cooperative attitude and behavior in linking ST values to the perceived learning effectiveness of CL.

These results carry substantial theoretical and pedagogical implications in the realm of second and foreign language teaching. This study not only extends the V-A-B model and Schwartz's value theory into the domain of CL but also offers practical insights for educators and curriculum designers. Understanding the interplay between personal values and CL facilitates optimizing grouping strategies based on students' value orientations, fostering more effective implementation of CL activities and tailored CL environments that resonate with diverse learner preferences.

A strategic approach involves incorporating students with an ST value orientation into each group, potentially enhancing cooperative dynamics. Conversely, minimizing the proportion of students with an SE value orientation can mitigate competitive behaviors, nurturing a more cooperative classroom environment conducive to improved academic outcomes.

However, it's essential to acknowledge limitations. One of the limitations of this study is the use of self-developed questionnaires to measure cooperative attitude, cooperative behavior, and perceived learning effectiveness of CL. While these instruments provided initial validity evidence within the specific context of this research, their reliability and validity may not match those of well-established questionnaires. Future studies are encouraged to utilize more mature and validated instruments to examine the relationships between these variables. Besides, the study's scope is confined to local college students and relies on a convenience sample, thus limiting the generalizability of findings. Future research would benefit from larger, more diverse samples across various geographical regions to enrich our understanding of the role of personal values in CL and refine grouping strategies accordingly.

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