The Influence of National Identity on Prosocial Behavior: The Mediating and Moderating Role of Subjective Perceptions of COVID-19 Pandemic

Li Zhao
Computational Social Science Laboratory
Zhou Enlai School of Government
Nankai University
Tianjin, China
zhaoli@nankai.edu.cn

Di Chen
Zhou Enlai School of Government
Nankai University
Tianjin, China
1120140618@mail.nankai.edu.cn

Xintao Li
Computational Social Science Laboratory
Zhou Enlai School of Government
Nankai University
Tianjin, China
xintao_li@nankai.edu.cn

Jian Guan*
Computational Social Science Laboratory
Zhou Enlai School of Government
Nankai University
Tianjin, China
nkguanjian@nankai.edu.cn

Abstract—The prosocial behavior plays an important role in the containing of COVID-19 pandemic. The factors that could impact prosocial behavior and its facilitation mechanisms need further investigation. In this study, the effects of individuals' national identity and subjective perceptions of the COVID-19 pandemic on prosocial behavior were explored. From February to March 2020, 256 questionnaires were obtained. The national identity, prosocial behavior, and perceptions of the degrees of severity, scarcity of resources, controllability, and familiarity of the pandemic were measured. It is found that the prosocial behavior increases with national identity. The perception of the degree of severity of the pandemic plays a moderating role in the relationship between the national identity and prosocial behavior. To the ingroup prosocial behavior, there is no significant interaction between the national identity and the degree of perceived severity. Nevertheless, the outgroup prosocial behavior was more impacted by national identity when the perception of the degree of severity was relatively low. Additionally, the perception of the degree of controllability plays a mediating role in the relationship between the national identity and prosocial behavior (especially to the outgroup). In conclusion, the national identity and subjective perceptions of the COVID-19 epidemic affect the prosocial behavior, but with different impact mechanisms on ingroup and outgroup members. To accomplish the great success in combating the COVID-19 pandemic by promoting prosocial behavior, the society, government, and individuals should facilitate the national identity and advance the understanding of the epidemic.

Index Terms—prosocial behavior, national identity, COVID-19, ingroup, outgroup

I. INTRODUCTION

The global COVID-19 epidemic outbreak is a serious health crisis for the entire world. To contain the epidemic effectively, it is necessary to attend to the important role of prosocial behavior, which is significant for individuals to survive by adapting to complex and changeable environment [1]. In addition, the prosocial behavior aims to benefit others in nature [2]. Studies have shown that prosocial behavior is effective in reducing the exclusion among groups and improving interpersonal and intergroup relationships [3]. Furthermore, the prosocial behavior could improve the level of public service of society and organizations [4], which is important to support the work of epidemic prevention and control. Therefore, it is important to explore the factors that could impact it and the promotion mechanism.

Previous studies showed that prosocial behavior can be impacted by situational and individual factors [1]. However, the settings of most experiments in the past were small situations relative to the whole society. The COVID-19 has spread across the world, which has closely integrated the destiny of mankind. Few studies on prosocial behavior were under such a special situation. Additionally, the studies in terms of individual factors, are more about personality, empathy, belief, etc. Fewer studies investigated the effect of national identity, which is a citizen's acknowledge and acceptance of the status as a member of a state or a nation [5], in the context of building a community with a shared future of human beings.

"Identity" is usually accompanied by the distinction be-

tween ingroup and outgroup members, which might result in ingroup favoritism and outgroup discrimination. Thus, there might be differences between ingroup and outgroup prosocial behaviors. Some studies suggested that there were no significant differences in prosocial behavior when dealing with in- and out-groups resulting from social categorization [6]. Others suggested that individuals showed significant ingroup favoritism when performing prosocial behavior [7], such as uneven distribution of resources [8]. Nevertheless, only a few of them focused on the factor of national identity and pointed out that national identity could facilitate ingroup and outgroup prosocial behavior [9]. More studies and evidence are needed to reveal if there are differences of the promotion mechanisms of prosocial behavior between ingroup and outgroup based on national identity and then to draw a robust conclusion.

Furthermore, in the special context of COVID-19 pandemic outbreak, subjective perceptions of the pandemic might also affect prosocial behavior, and play an important role in the relationship between national identity and prosocial behavior. To further explore the possible mechanism, this study constructed a model with moderation and mediation effects of the subjective perceptions of the epidemic. Hypotheses were as follows: 1) National identity could positively predict prosocial behavior. 2) There would be a significant difference between ingroup and outgroup, regarding prosocial behavior. 3) The subjective perceptions of the epidemic play mediating and moderating roles in the influence of national identity on prosocial behavior.

II. METHOD

A. Participants

The sample size was determined by a power analysis with G*Power 3.1. "F tests: Linear multiple regression: Fixed model, R^2 increase" was adopted and the smallest estimated effect size of variables and their interactions was set to 0.045. To achieve the power of 0.9 at $\alpha = 0.05$ (two-tailed), at least 225 participants were needed. Consider missing values or other uncontrolled factors, this study was conducted from February to March 2020 with 280 participants using convenience sampling method. Upon obtaining consent, participants were directed to an online questionnaire. There were totally 256 valid questionnaires.

B. The Measurement of Variables of Main Interests

National identity was measured by the National Identity Scale (NIS; 5-point Likert scale) created by Guan and Guo [10] with 5 dimensions including the national commitment, sense of belonging, cosmopolitanism, nationalism, and behavioral involvement. The average score could be used as an indicator of the level of national identity. The Cronbach's α was 0.828. The fit indices showed that $\chi^2 = 930.895$, $df = 271$, $\chi^2/df = 3.435$, NFI = 0.922, RFI = 0.906, TLI = 0.932, CFI = 0.943, RMSEA = 0.049 when it was constructed [10]. In this study, the Cronbach's α was 0.839 and the fit indices were $\chi^2 = 12.402$, $df = 5$, $\chi^2/df = 2.480$, NFI = 0.959, RFI = 0.918, TLI = 0.949, CFI = 0.975, RMSEA = 0.076.

TABLE I
DEMOGRAPHIC CHARACTERISTICS ($N = 256$)

Variable	Group	n	%
Gender	Male	65	25.40
	Female	191	74.60
Age	15-30	63	24.60
(Years)	31-45	123	48.0
	46-60	70	27.30
Education Level	Middle School and Below	7	2.70
	High School	18	7.00
	Undergraduate	196	76.60
	Graduate and Above	35	13.70
Marital Status	Single	49	19.10
	Married	200	78.10
	Remarry	2	0.80
	Divorced	2	0.80
	Widowed	3	1.20
Income	2000 and Below	25	9.80
(RMB)	2000-4000	71	27.70
	4000-6000	98	38.30
	6000-10000	38	14.80
	10000 and Above	24	9.40

	M	SD	Min	Max
National Identity	3.88	0.48	1.52	4.73
Degree of Severity	55.74	21.19	2.67	100
Degree of Scarcity of Resources	64.86	21.55	7.67	100
Degree of Familiarity	59.99	17.73	14.14	100
Degree of Controllability	58.86	19.81	9.57	100
Prosocial Behavior	4.30	0.73	1.00	5.00
Ingroup Prosocial Behavior	4.71	0.60	1.00	5.00
Outgroup Prosocial Behaior	4.13	0.86	1.00	5.00

Individuals' subjective perceptions of COVID-19 pandemic could be measured (1 to 100 scale) with the perceptions of the degrees of severity, scarcity of resources, controllability, and familiarity of the COVID-19 pandemic. A higher score indicates a deeper level of the perception.

The prosocial behavior, including ingroup (e.g., family, relatives, friends, and schoolmates) and outgroup (e.g., charity organizations, hospitals, strangers, and individuals or organizations abroad that need medical supplies) was measured in terms of individuals' willingness to donate medical supplies to help others during the epidemic from "not at all" to "very much so" on a 1 to 5 scale.

III. RESULTS

A. Common Method Bias Testing

There was no common method bias in this study. Harman's single factor test showed that the principal component factor analysis generated 14 factors whose Eigen value was over 1. The highest variance explained by one factor was accounted for 16.29%, which is less than 40%. The most conservative result of two factors confirmatory factor analysis was $\chi^2 = 5395.66$, $df = 1483$, $\chi^2/df = 3.638$, TLI = 0.406, CFI = 0.428, RMSEA = 0.102.

B. The Moderating and Mediating Effects of Subjective Perceptions of COVID-19 Pandemic

The demographic characteristics of variables could be found in Table I. The main results were reported in Table II.

Pearson's correlation coefficients were reported in Table III. We found that the perceptions of the degree of severity played a moderating role and the degree of controllability played a mediating role in the relationship (Fig. 1).

TABLE II
Significance Test of Difference ($N = 256$)

Variables	Group		M	SD	F	df	p	η_p^2	Group	t	p	Cohen's d	95% CI
National Identity	Age	1. 15-30	3.60	0.41	22.34	2, 253	<0.001	0.150	1 vs. 2	−4.25	<0.001	−0.628	[−0.45, −0.13]
		2. 31-45	3.89	0.48					1 vs. 3	−6.67	<0.001	−1.288	[−0.69, −0.33]
		3. 46-60	4.11	0.38					2 vs. 3	−3.34	0.003	−0.492	[−0.38, −0.06]
	Education Level	1. middle school or below	4.26	0.25	9.42	3, 252	<0.001	0.131	1 vs. 2	2.89	0.025	1.219	[0.04, 1.08]
		2. master and above	3.70	0.49									
	Marital Status	1. single	3.52	0.51	9.42	4, 251	<0.001	0.131	1 vs. 2	−6.08	<0.001	−0.962	[−0.57, −0.29]
		2. married	3.95	0.43									
Degree of Scarcity of Resources	Age	1. 15-30	58.88	20.42	4.10	2, 253	0.018	0.031	1 vs. 2	−2.84	0.015	−0.495	[−19.43, −1.60]
		2. 46-60	69.39	21.93									
Prosocial Behavior	Age	1. 15-30	4.07	0.78	4.61	2, 253	0.011	0.035	1 vs. 2	−3.01	0.009	−0.474	[−0.60, −0.07]
		2. 31-45	4.40	0.67									
	Education Level	1. middle school or below	4.88	0.17	3.84	3, 252	0.010	0.044	1 vs. 2	2.89	0.025	1.313	[0.07, 1.65]
		2. master and above	4.02	0.70									
Outgroup Prosocial Behavior	Age	1. 15-30	3.82	0.92	6.09	2, 253	0.003	0.046	1 vs. 2	−3.45	0.002	−0.548	[−0.77, −0.14]
		2. 31-45	4.27	0.77					1 vs. 3	−2.48	0.042	−0.399	[−0.72, −0.01]
		3. 46-60	4.18	0.90									
	Education Level	1. middle school or below	4.89	0.27	5.26	3, 252	0.002	0.059	1 vs. 4	3.35	0.005	1.412	[0.24, 2.10]
		2. high school	4.37	0.85					2 vs. 4	2.67	0.049	0.741	[0.02, 1.30]
		3. undergraduate	4.16	0.85					3 vs. 4	2.87	0.026	0.522	[0.03, 0.86]
		4. master and above	3.71	0.89									
	Marital Status	1. single	3.80	0.90	2.49	4, 251	0.044	0.038	1 vs. 2	−2.93	0.037	−0.466	[−0.67, −0.13]
		2. married	4.20	0.85									

Note. The homogeneity of variance assumption was hold in the ANOVA analyses.
The Holm-Bonferroni procedure was applied to control the familywise type I error in post-hoc analyses.

The model 5 in SPSS Process v3.3 was adopted with national identity as the independent variable, the perceptions of the degree of severity as the moderator, the degree of controllability as the mediator, and prosocial behavior as the dependent variable (bootstrap = 5,000) (Table IV). The interaction between national identity and prosocial behavior in presence of the perception of the degree of controllability is shown in Fig. 2 (A). As the level of national identity increases, the prosocial behavior increases. The prosocial behavior was more impacted by national identity when the perceived severity of the epidemic was relatively low. Moreover, when the national identity was low, compared with the low severity perception, there would be more prosocial behavior under the high severity perception condition. When the national identity was high, compared with the high severity perception, under the low severity perception condition, there would be more prosocial behavior. In addition, the direct effect of national identity on prosocial behavior was 0.251.

The paired samples t test indicated that participants showed more ingroup prosocial behavior ($M = 4.71$, $SD = 0.60$) than outgroup prosocial behavior ($M = 4.13$, $SD = 0.86$), $t(255) = 13.02$, $p < 0.001$, Cohen's $d = 0.813$, 95% CI: [0.49, 0.67]. Furthermore, the perceptions of the severity degree did not play a moderating role and the controllability degree did not play a mediating role in the relationship between national identity and ingroup prosocial behavior. However, it was the opposite situation for the outgroup prosocial behavior. The results were shown in Table V and Fig. 2 (B). The direct effect of national identity on prosocial behavior was 0.254.

IV. Discussion and Conclusion

This study found that national identity, the perceptions of the degree of resource scarcity and controllability were positively correlated with prosocial behavior. The relationship between
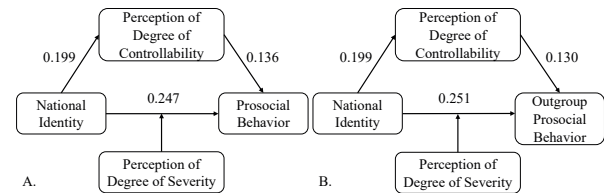

Fig. 1. The mediation and moderation model of the impact of national identity on prosocial behavior.
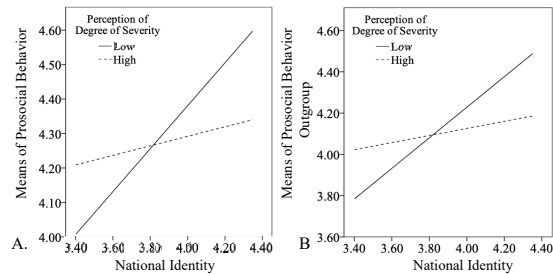

Fig. 2. The interaction between national identity and the perception of the degree of severity in the presence of perception of the degree of severity, regarding prosocial behavior and outgroup prosocial behavior.

national identity and prosocial behavior was mediated by the perception of the degree of controllability and moderated by the perception of the degree of severity. Therefore, the prosocial behavior is not only affected by individual factors, but also situational factors. Specifically, in addition to the scenarios that were investigated in previous studies, the special situation of the COVID-19 pandemic also has an impact on prosocial behavior. This study also found that there was a significant difference between ingroup prosocial behavior and outgroup prosocial behavior. Nevertheless, no matter the ingroup or outgroup prosocial behavior, national identity could promote

TABLE III
THE CORRELATION COEFFICIENTS MATRIX ($N= 256$)

Variable	National Identity	Degree of Severity	Degree of Scarcity of Resources	Degree of Familiarity	Degree of Controllability	Prosocial Behavior	Ingroup Prosocial Behavior	Outgroup Prosocial Behavior
National Identity	—	[-.21, .03]	[.01, .25]	[-.01, .23]	[.08, .31]	[.13, .36]	[.03, .27]	[.14, .37]
Degree of Severity	-0.09	—	[-.04, .20]	[-.003, .24]	[-.18, .07]	[-.18, .06]	[-.16, .08]	[-.18, .07]
Degree of Scarcity of Resources	0.14*	0.08	—	[.18, .40]	[.19, .41]	[.03, .27]	[-.13, .12]	[.06, .30]
Degree of Familiarity	0.11	0.12	0.29**	—	[.42, .60]	[-.01, .23]	[-.01, .24]	[-.02, .22]
Degree of Controllability	0.20**	-0.06	0.31**	0.52**	—	[.06, .30]	[.01, .25]	[.05, .29]
Prosocial Behavior	0.25**	-0.06	0.15*	0.11	0.18**	—	[.66, .78]	[.98, .99]
Ingroup Prosocial Behavior	0.15*	-0.04	-0.01	0.12	0.14*	0.72**	—	[.49, .65]
Outgroup Prosocial Behavior	0.25**	-0.06	0.18**	0.1	0.17**	0.98**	0.57**	—

Note. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. The values above the diagonal represent the 95% confidence intervals, whereas the values below the diagonal represent the Pearson's correlation coefficients.

TABLE IV
THE TEST OF MEDIATING AND MODERATING EFFECTS ON PROSOCIAL BEHAVIOR ($N= 256$)

	R	R^2	ΔR^2	F	df	p	b	$SE-b$	β	t	p	LLCI	ULCI
Model 1													
Summary	0.199	0.04		10.44	1, 254	0.001							
National Identity → Degree of Controllability							8.28	2.56	0.199	3.23	0.001	3.23	13.33
Model 2													
Summary	0.324	0.1		7.35	4, 251	< 0.001							
National Identity → Prosocial Behavior							1.01	0.28	0.247	3.63	< 0.001	0.46	1.56
Degree of Controllability → Prosocial Behavior							0.005	0.002	0.136	2.23	0.027	0.0006	0.01
Degree of Severity → Prosocial Behavior							0.04	0.02	-0.019	2.48	0.013	0.01	0.08
National Identity × Degree of Severity							-0.01	0.004	-0.157	-2.56	0.01	-0.02	-0.003
Test of Interaction													
National Identity × Degree of Severity			0.023	6.54	1, 251	0.011							

TABLE V
THE TEST OF MEDIATING AND MODERATING EFFECTS ON OUTGROUP PROSOCIAL BEHAVIOR ($N= 256$)

	R	R^2	ΔR^2	F	df	p	b	$SE-b$	β	t	p	LLCI	ULCI
Model 1													
Summary	0.199	0.04		10.44	1, 254	0.001							
National Identity → Degree of Controllability							8.28	2.56	0.199	3.23	0.001	3.23	13.33
Model 2													
Summary	0.324	0.1		7.33	4, 251	< 0.001							
National Identity → Outgroup Prosocial Behavior							1.2	0.33	0.251	3.64	< 0.001	0.55	1.86
Degree of Controllability → Outgroup Prosocial Behavior							0.006	0.003	0.13	2.14	0.034	0.0004	0.01
Degree of Severity → Outgroup Prosocial Behavior							0.05	0.02	-0.018	2.47	0.014	0.01	0.09
National Identity × Degree of Severity							-0.01	0.005	-0.156	-2.54	0.01	-0.02	-0.003
Test of Interaction													
National Identity × Degree of Severity			0.023	6.48	1, 251	0.012							

it. It is worth noting that the mediating effect of the perception of the degree of controllability and the moderating effect of the perception of the degree of severity of the pandemic only work in the relationship between national identity and outgroup prosocial behavior. Therefore, the mechanisms of influence of national identity on ingroup prosocial behavior and outgroup prosocial behavior are different. The difference might be affected by other factors and the influence mechanism should be further explored in the future.

REFERENCES

[1] J. F. Dovidio, J. A. Piliavin, D. A. Schroeder, and L. A. Penner, *The social psychology of prosocial behavior*. Psychology Press, 2017.
[2] C. D. Batson and A. A. Powell, "Altruism and prosocial behavior," *Handbook of psychology*, pp. 463–484, 2003.
[3] D. B. Barros, "Group size, heterogeneity, and prosocial behavior: Designing legal structures to facilitate cooperation in a diverse society," *Cornell Journal of Law and Public Policy*, vol. 18, no. 1, pp. 203–221, 2008.
[4] M. Esteve, D. Urbig, A. Van Witteloostuijn, and G. Boyne, "Prosocial behavior and public service motivation," *Public Administration Review*, vol. 76, no. 1, pp. 177–187, 2016.
[5] R. D. Ashmore, L. Jussim, and D. Wilder, *Social identity, intergroup conflict, and conflict reduction*. Oxford University Press, 2001.
[6] J. B. L. Batara, P. S. Franco, M. A. M. Quiachon, and D. R. M. Sembrero, "Effects of religious priming concepts on prosocial behavior towards ingroup and outgroup," *Europe's journal of psychology*, vol. 12, no. 4, pp. 635–644, 2016.
[7] M. Vos and K. van der Zee, "Prosocial behavior in diverse workgroups: How relational identity orientation shapes cooperation and helping," *Group Processes & Intergroup Relations*, vol. 14, no. 3, pp. 363–379, 2011.
[8] S. Fiedler, D. M. Hellmann, A. R. Dorrough, and A. Glöckner, "Cross-national in-group favoritism in prosocial behavior: Evidence from latin and north america." *Judgment & Decision Making*, vol. 13, no. 1, pp. 42–60, 2018.
[9] V. Charnysh, C. Lucas, and P. Singh, "The ties that bind: National identity salience and pro-social behavior toward the ethnic other," *Comparative Political Studies*, vol. 48, no. 3, pp. 267–300, 2015.
[10] J. Guan and Q. Guo, "The structure and verification of chinese youth national identity." *Nankai Journal (Philosophy, Literature and Social Science Edition)*, no. 06, pp. 82–92, 2019.