Prosocial Behaviour and its Relevant Factors among Undergraduates

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ABSTRACT

To explore the present status of prosociality among undergraduates and explore its major relevant factors. A stratified random sampling was used to select 1109 undergrauates from 10 full-time colleges in Guangdong province. They were investigated with Prosocial Tendencies Measure (PTM), Interpersonal Reactivity Index (IRI) , Moral Disengagement Questionnaire (MDQ), Social Support Rating Scale (SSRS). The total scores of PTM, IRI, MDQ and SSRS were (53.8±29.1), (65.5±14.4), (39.4±10.2) and (31.0±13.6), respectively. The result of multiple stepwise linear regression showed that 10 factors, such as the total score of IRI, the total score of SSRS, nationality, religion, part time job, grade, origin, love experience, major category and gender, were postively related with the total score of PTM (β =0.115 to 0.708, all P <.05), family monthly income and the total score of MDQ were nagatively related with the total score of PTM (β = -0.352, -0.577; both P<.05). Conclusion Most of the undergraduates showed the intermedius level of prosocial behavior, which was closely related to such factors as family rearing, community cultural atmosphere, school education and the personality characteristics of the undergraduates.

Keywords: *Undergraduates, Prosocial behavior, Status, Relevant factors, Questionnaire investigaion, Multiple stepwise linear Regression.*

Highlights of this paper
- Large sample and multi center survey mode was adopted.
- The quantitative research model of multiple linear regression was used.
- There is a comprehensive consideration of family, school, social and personal characteristics and other factors in our study.

1. INTRODUCTION

Prosocial behavior refers to a kind of behavior that actors voluntarily bring benefits to the recipients (others or society), including helping others, cooperation, sharing, politeness and so on (Eisenbe & Miller, 1987). This kind of behavior usually needs to pay a certain cost or take certain risks, but it is of great significance to individual development and social harmony. Previous studies have shown that prosocial behavior helps individuals maintain positive emotions (Li & Luo, 2013; Sun, Lin, & Dai, 2017) improve academic (Wang & Chen, 2003) and professional performance (Zhang & Jia, 2013) create good interpersonal relationship (Wang & Chen, 2003) enhance self-esteem and self-confidence (Antonio et al., 2014) cultivate psychological qualities such as innovation (Luan & Chen, 2020) empathy (Li, Wang, & Tian, 2018) and sense of responsibility (Li et al., 2018) reduce behavior problems such as aggression (Liang & Hou, 2014) internet addiction (Mo, Yang, & Xu, 2015) and promote social adaptation (Jin, Sun, & Chen, 2013; Zheng & Liu, 2013). Due to the great significance of prosocial behavior, it is increasingly concerned by all sectors of society.

At present, the advantage of College Students' prosocial behavior is manifested in reciprocity and public welfare, while the disadvantage is alienation of their prosocial behaviors (Xiu, 2018). Although the emergent prosocial behavior of college students is at higher level, their open prosocial behavior is at lower level (Zhang, 2013). Although college students are more willing to provide help, the time they are willing to provide help is relatively short, with an average of 15 to 20 minutes (Xia & Li, 2016).

College students are in a critical period of personality stability. It is of great significance to clarify the present status and relevant factors of college students' prosocial behavior for cultivating prosocial ability and promoting the growth of high-quality talents.

Based on the above analysis, this study intends to explore the current status and related factors of college students' prosocial behavior by means of large sample and multi center survey.

2. OBJECTS AND METHODS

2.1. Objects

2.1.1. Sample Size Estimation

The minimum sample size is calculated by G * power 3 (Cohen, 1992). As PTM is used to evaluate the indicators related to mental health, and disease is one of the important indicators of mental health, we use the prevalence of mental illness of college students to calculate the sample size. Previous studies have shown that the prevalence of mental illness among college students is 9.0-27.7% (Hu, 2012; Shi et al., 2013; Teng, 2017; Zhang & Zhang, 2013; Zhong & Li, 2009) and the test effect value is medium level (Hu, 2012; Shi et al., 2013; Teng, 2017; Zhang & Zhang, 2013; Zhong & Li, 2009) that is, the d value is 0.50 to 0.80 (Zhang & Xu, 2012). In this study, we set the effect value d = 0.70, the statistical test power of $1 - \beta = 0.80$, the type I error probability $\alpha = 0.05$, and the minimum sample size is calculated as 678. The minimum sample size is determined as 825 due to a 20% of possible follow-up loss rate.

2.1.2. Sampling

From March to April, 2019, a total of 1200 questionnaires were distributed to college students from freshmen to fifth year from Guangdong Pharmaceutical University, Guangdong Medical University, Guangdong Academy of Fine Arts, Xinghai Conservatory of Music, Jinan University, Guangdong University of Finance & Economics, Guangdong University of Foreign Studies, Dongguan University of Technology, Guangdong University of Technology and Shenzhen University by stratified random sampling. 1109 valid questionnaires were collected, with an effective rate of 92.4%. Among them, there were 536 males and 573 females; 243 in comprehensive colleges, 304 in science and engineering colleges, 145 in liberal arts colleges, 197 in medical colleges, 95 in finance and economics colleges, 74 in sports colleges and 50 in art colleges; 231 freshmen, 219 sophomores, 225 juniors, 230 seniors, 204 fifth year students; 415 from cities, 330 from towns and 364 from countries.

2.2. Tools

2.2.1. prosocial Tendencies Measure, PTM

It is compiled by Carlo and Randall (2002) and revised by Cong (2008) into Chinese version. There are 23 questions, divided into six subscales: "open prosocial behavior (ONPB)", "anonymous prosocial behavior" (ASPB), "altruistic prosocial behavior (ACPB)", "compliant prosocial behavior (CTPB)", "emotional prosocial behavior (ELPB)" and "emergent prosocial behavior (ETPB)". The Likert 5-point scoring method is used to score from 1 to 5 points corresponding to "not at all" to "completely yes". The higher the total score, the higher the degree of prosocial tendencies. In this study, the *Cronbach's α* coefficient of the total scale is 0.91, and the *Cronbach's α* coefficient of each subscale is 0.82 to 0.87.

2.2.2. Interpersonal Reactivity Index, IRI

It is compiled by Davis (1980) and revised into Chinese by Han, Ye, and Leng (2013). IRI has 22 items, divided into four dimensions: empathy and care (EC), fantasy (FS), perspective taking (PT), personal pain (PP). The 5-point scoring method is used to score from 0 to 4 points corresponding to "very inconsistent" to "very consistent". The higher the total score, the higher the empathy level. In this study, the *cronbach'a* coefficient of the total scale is 0.84, and the *cronbach'a* coefficient of each dimension is 0.69 to 0.78.

2.2.3. Moral Disengagement Questionnaire, MDQ

Compiled by Bandura (1985) and revised by Lu (2015). There are 20 items, which are divided into four dimensions: moral defense (MD), favorable comparison(FC), responsibility attribution (RA) and responsibility disengagement (RD). The higher the total score, the higher the level of moral disengagement. In this study, the *cronbach'a* coefficient of the total scale is 0.89, and the *cronbach'a* coefficient of each dimension is 0.72 to 0.85.

2.2.4. Social Support Rate Scale，SSRS

Compiled by Xiao and Yang (1987)， There are 10 items, divided into three dimensions: objective support (OS), subjective support (SS) and utilization of support (US). The higher the total score, the higher the level of social support. In this study, the *cronbach' a* coefficient of the total scale is 0.92, and the *cronbach' a* coefficient of each dimension is 0.83 to 0.87.

2.2.5. Self-compiled Personal General Information Questionnaire

The CNKI, Wanfang database, VIP database, Baidu, google, Pubmed and other search engines were used to search the literatures about the prosocial behavior among undergraduates (869 in Chinese and 7433 in foreign

languages). Based on that, the basic content of the questionnaire was constructed, with a total of 19 items. Combined with the results of 3 collective discussions with 10 representatives of undergraduates and 5 experts in the field of higher education, 2 items were deleted and 1 item was added. The final questionnaire for personal general information involved 18 items, including age, grade, gender, origin, nationality, "Do you have any religious beliefs", "Are you or have you ever been a class cadre", "Are you working or have you ever worked part-time", school category, major category, academic performance, only-child or not, father's education level, mather's education level, father's occupation, mather's occupation, monthly household income, and "Are you or have you ever been in love"and so on.

2.3. Data Manipulation

SPSS 20.0 was used for statistical analysis. Descriptive statistics were used to calculate the average score and standard deviation of each scale; independent sample t-test, Pearson product correlation and one-way ANOVA were used to explore the correlation between variables; multiple stepwise linear regression was used to analyze the related factors of PTM total score.

3. RESULT

3.1. Descriptive Statistics of the Total Score and Factor (dimension) Score of Each Scale

As can be seen from Table 1 that the scores of PTM, IRI and MDQ of this group are all in the middle level (Carlo & Randall, 2002; Han et al., 2013; Lu, 2015) and the social support is in the high level (Xiao & Yang, 1987).

Table-1. Descriptive analysis of total score and each dimension (subscale) of 4 scales (n = 1109).

Subscale (factor)	M	SD	Min	Max
Total score of PTM	53.8	29.1	23.0	102.0
Open prosocial behavior (ONPB)	8.9	4.9	4.0	18.0
Anonymous prosocial behavior (ASPB	12.1	6.9	5.0	22.0
Altruistic prosocial behavior (ACPB)	11.6	6.3	5.0	24.0
Compliant prosocial behavior (CTPB)	4.4	2.4	2.0	10.0
Emotional prosocial behavior (ELPB)	9.4	5.2	4.0	20.0
Emergent prosocial behavior (ETPB)	7.5	4.3	3.0	14.0
Total score of IRI	65.5	14.4	28.0	79.0
Empathy and care (EC)	17.2	7.3	7.0	22.0
Fantasy (FS)	18.4	6.7	8.0	21.0
Perspective taking (PT)	14.2	4.6	3.0	14.0
Personal pain (PP)	15.7	6.8	8.0	18.0
Total score of MDQ	39.4	10.2	20.0	61.0
Moral defense (MD)	17.4	4.1	9.0	19.0
Favorable comparison (FC)	10.6	2.5	7.0	15.0
Responsibility attribution (RA)	6.2	3.3	4.0	13.0
Responsibility disengagement (RD)	5.2	2.4	11.0	15.0
Total score of SSRS	31.0	13.6	15.0	58.0
Objective support (OS	6.5	4.5	2.0	19.0
Subjective support (SS)	17.0	8.0	9.0	32.0
Utilization of support (US)	6.6	2.6	4.0	13.0

3.2. Correlation Analysis between the Scores of Each Scale

It can be seen from Table 2 that there is a significant positive correlation between the total score of PTM and IRI, MDQ , SSRS.

Table-2. Correlation analysis of total score and dimension (factor) score of each scale.

Variable	IRI	EC	FS	PT	PP	MD	FC	RA	RD	MDQ	OS	SS	US	SSRS
1.ONPB	0.218**	0.223**	0.353**	0.256**	0.277**	0.051	0.009	0.021	0.062	0.046	0.188*	0.184**	0.173**	0.231**
2.ASPB	0.328**	0.349**	0.201**	0.431**	0.376**	-0.128**	-0.232**	-0.106**	-0.083	-0.167**	0.050	0.113**	0.168	0.094**
3.ACPB	0.301**	0.286**	0.266**	0.409**	0.380**	-0.014	0.006	0.033	0.067	0.016	0.185*0.	0.266**	0.229**	0.234**
4. CTPB	0.262**	0.354**	0.251**	0.388**	0.334**	-0.173**	-0.157**	-0.122**	-0.052	-0.163**	0.033	0.235**	0.038	0.021
5.ELPB	0.391**	0.399**	0.403**	0.326**	0.442**	0.259**	-0.080**	-0.183**	-0.015	-0.197**	0.024	0.045	0.0270.	0.043
6.ETPB	0.421**	0.408**	0.390**	0.500**	0.338**	-0.302**	-0.229**	-0.296**	-0.123**	-0.299**	0.092	0.041	0.015	0.017
7.total score of PTM	0.369**	0.317**	0.325**	0.379**	0.449**	-0.195**	-0.134**	-0.124**	-0.017	-0.162**	0.054	0.155**	0.102**	0.174**

Note : $*P<0.05, **P<0.01, ***P<0.001.$

3.3. Single Factor Analysis of Total Score of PTM

3.3.1. Variable Assignment

The possible situations (alternative answers) of 17 demographic classification variables that may affect the total score of PTM were assigned, and the results were shown in Table 3.

Table-3. variable assignments.

1.Grade	**0= Freshman, 1= Sophomore, 2=Junior, 3= Senior,4=fifth year**
2.Gender	0=male, 1=female
3.Origin	0=city,1=town, 2=country
4.Nationality	0= Han nationality, 1= ethnic minority
5. Do you have any religious beliefs?	0=No, 1=Yes
6. Are you or have you ever been a class cadre?	0=No, 1=Yes
7. Are you working or have you ever worked part-time?	0=No, 1=Yes
8. School category	0=science and engineering, 1=liberal arts, 2=agriculture, 3=medicine, 4=sports, 5=art, 6= comprehensive
9. Major category	0=science, 1=engineering, 2=agronomy, 3=management, 4=medicine, 5=liberal arts, 6=sports, 7=art
10. academic performance	0= failed; 1= passed; 2= medium; 3= moderate; 4= excellent
11. Are you only child or not?	0=No,1=Yes
12. Father' education level	0=primary school and below, 1=junior middle school, 2=Senior high school or technical secondary school, 3=junior college, 4= undergraduate, 5=Master degree or above
13. Mather' education level	0=primary school and below, 1=junior middle school, 2=Senior high school or technical secondary school, 3=junior college, 4= undergraduate, 5=Master degree or above
14. Father' occupation	0=business, 1=scientific researcher, 2=teacher, 3= medical staff, 4=labor worker, 5= management, 6= liberal professions
15. Mather' occupation	0=business, 1= scientific researcher, 2=teacher, 3= medical staff, 4=labor worker, 5= management, 6= liberal professions
16. Family monthly income	0=0 to 4000 yuan,1=5001 to 8000 yuan,2=8001 to 12000 yuan, 3≥12001 yuan
17. Are you or have you ever been in love	0=No, 1=Yes

Table-4. single factor analysis of demographic variables that may affect the total score of PTM.

Item	R/ *T/F*	*P*
1. Age	-0.056	0.160
2. Grade	-9.479	<0.001
3. Gender	-15.106	<0.001
4. Origin	4.945	<0.001
5. Nationality	-12.643	<0.001
6. Do you have any religious beliefs?	-25.426	<0.001
7. Are you or have you ever been a class cadre?	-11.317	<0.001
8. Are you working or have you ever worked part-time?	-22.232	<0.001
9. School category	-1.129	0.325
10. Major category	4.890	<0.001
11. academic performance	1.278	0.429
12. Only child or not?	-3.780	<0.001
13. Father' education level	1.269	0.334
14. Mather' education level	1.672	0.288
15. Father' occupation	0.837	0.566
16. Mather' occupation	0.681	0.713
17. Monthly household income	-24.488	<0.001
18. Are you or have you ever been in love	-21.123	<0.001

3.3.2. Single Factor Analysis of (for) Demographic Variables of the Total Score of PTM

It can be seen from Table 4 that 7 items such as age, school category, academic performance, father's education level, mother's education level, father's occupation and mother's occupation, have no statistic meaning on the total score of PTM (r=-.056, P=.160; $|t|/|F| = 0.681$ to 1.672, all $p> 0.05$); While the other 11 items have significant effects on the total score of PTM ($|t|/|f| = 3.780$ to 25.426, all $P < 0.01$).

3.4. Multiple Stepwise Linear Regression Analysis of Factors Related to Prosocial Behavior among College Students

Taking the total score of PTM as dependent variable and the total scores of IRI, SSRs and MDQ, as well as the above 11 demographic variables with significant effects on the total score of PTM as independent variables, multiple stepwise linear regression was carried out within the 95% confidence interval.

From Table 5, it can be found that 10 factors such as IRI total score, SSRs total score, nationality, religious beliefs, part-time job, grade, origin, love experience, major category and gender are positively correlated with PTM total score ($\beta= 0.115$ to 0.708, $P <0.05$); two factors such as family monthly income and MDQ total score are negatively correlated with PTM total score ($\beta =-.352,- 0.577$; both $P < 0.01$).

Table-5. multiple stepwise linear regression analysis of factors related to prosocial tendency among undergraduates.

Dependent	Independent	Regression coefficient		β	t	P	R^2	R_{adj}^2
Variable		B	SE					
Total score of PTM	Total score of IRI	0.746	0.088	0.708	6.148	<0.001 0.536		0.533
	Total score of SSRS	0.373	0.063	0.581	4.963	<0.001		
	Grade	0.383	0.077	0.197	5.058	<0.001		
	Part time job	0.443	0.091	0.241	2.557	0.011		
	Nationality	0.246	0.055	0.115	2.295	0.020		
	Religious beliefs	0.309	0.117	0.153	2.475	0.013		
	Origin	0.247	0.072	0.127	2.197	0.028		
	Love experience	0.382	0.059	0.188	2.134	0.031		
	Major category	0.273	0.065	0.169	3.718	<0.001		
	Gender	0.446	0.074	0.239	2.692	0.007		
	Family monthly income	-0.475	0.078	-0.352	-2.887	0.004		
	Total score of MDQ	-0.462	0.081	-0.577	-3.988	<0.001		

4. DISCUSSION

The total scores of PTM, IRI, MDQ and SSRI are (53.8 ± 29.1), (65.5 ± 14.4), (39.4 ± 10.2), (31.0 ± 13.6), which is consistent with the previous study (An, Geng, & Chen, 2017; Gao, Song, & Chi, 2020; Lu, 2015; Sun et al., 2017; Xiu, 2018). It is suggested that the students in this group generally get high level of social support, and their prosocial behavior tendency, empathy ability and moral disengagement are at the intermedius level.

The results of multiple stepwise linear regression showed that 10 factors such as IRI total score, SSRs total score, nationality, religious beliefs, part-time job, grade, origin, love experience, major category and gender are positively correlated with PTM total score, while two factors such as monthly family income and MDQ total score are negatively correlated with PTM total score.

Empathy is a positive correlated factor of prosocial behavior tendeency, which has been supported by a large number of empirical studies (An et al., 2017; Zhu & Li, 2005). Scholars have put forward a variety of related theoretical hypotheses. Hoffman (2000) points out that empathy is one of the important motivations of prosocial behavior, the precondition of prosocial behavior; Batson, Daniel, Cynthia, Shaw, and Klein (1995) think empathy which can build emotional experience similar to others and the general connection with others' welfare is the source

of prosocial behavior; Nancy, Ivanna, Bridget, Stephanie, and Amanda (1999) think empathy is the motive basis for sympathy for others, and the effect of empathy is to achieve helping others through such model as "empathy-sympathy-social behavior". To sum up, empathy can be said to be the motivation source of prosocial behavior.

Social support is positively correlated with prosocial behavior, which is consistent with the results of previous research (Guo, 2018). Many scholars believe that social support influences prosocial behavior through self-concept. For example, Lin believes that individuals will encounter more or less difficulties in the process of growing up. If they get sufficient social support, they will have a sense of trust in others and society, feel their status and roles in society, participate more in interpersonal communication and collective activities, play their roles and make postive contribution, and obtain more recognition from others, in order to enhance their self esteem and self-confidence (Lin & Yeh, 2014). Lin Healy believes that social support plays an indirect role in prosocial behavior through prosocial reputation: Actors first establish prosocial reputation through prosocial behavior, and prosocial reputation generates external incentive effect on actors through indirect reciprocity and peer selection, and generates internal incentive effect on actors through self-concept, thus promote their prosocial behavior (Ferm & Deborah, 2013).

The total score of MDQ negatively predicts prosocial behavior tendency, which is consistent with the results of previous study (Lu, 2015). Moral disengagement is a cognitive tendency in the process of making individuals redefine their own behavior and minimize their responsibility in the consequences of behavior, so as to reduce the pain caused by behavior. Moral disengagement can make the individual reasonably separate the internal moral standards from guilt and self blame caused by immoral behavior, which reduces the self-restraint of morality, thus increases immoral behavior and reduces responsible prosocial behavior (Bandura, 1985).

This study also find that college students' prosocial behavior is significantly associated with a number of demographic variables.

First of all, the prosocial behavior tendency of girls is more obvious than boys, which is consistent with the research results of Xia and Li (2016), Lei, Nie, and Liu (2015) and Lei et al. (2015). The gender difference of prosocial behavior is not only shown in college students (Lei et al., 2015; Wang & Bao, 2015; Xia & Li, 2016) but also in primary school students (Feng, Zhang, & Zhang, 2014) and teenagers (Geng, Han, & Ye, 2012). It can be seen that it is a stable gender difference. Whether it is caused by biological factors such as genes or psychosocial factors such as gender role standards remains to be solved by follow-up studies.

Secondly, grade, part-time job and love experience can positively predict prosocial behavior tendency. Compared with lower grades, the prosocial tendency of higher grades is more obvious, which is consistent with the results of previous research (Geng et al., 2012; Sun et al., 2017) suggesting that the university stage is an important period for the development of prosocial behavior. Since there is no significant correlation between age and the total score of PTM, prosocial behavior is not naturally improved with physiological maturity, but the result of socialization, which needs strong social cognition, moral internalization and moral externalization ability (Ding & Ye, 2013; Luo & Bo, 2016). Only when an individual has strong moral internalization ability, can he make value judgment on the prosocial information he inputs, internalize the corresponding thoughts and concepts purposefully and selectively, carry out self selection, self reflection and self-education, internalize the corresponding moral requirements and behavior norms into his own consciousness, and form certain prosocial values. Under the influence of internal moral emotions and values, they have the motivation of external prosocial behavior, and use their willpower to implement the corresponding prosocial behavior (Gao, Ji, & Zhang, 2020). College students are in the gradually matural stage of cognitive, emotion, personality and other psychological quality, with a strong need to understand, participate in and contribute to society. Through social practice activities (such as part-time work), gradually deepen the understanding of the society, form the correct social emotion, internalize social ethics, enhance

23

the desire to serve and contribute to society, and then produce more and more prosocial behavior. Love experience can be said to be a special social practice, with a high degree of personal involvement, which has a far-reaching impact on the development of individual social cognition and social emotion (Feng et al., 2014) and indirectly affects the development of prosocial behavior.

Third, major category has a significant impact on prosocial behavior tendency, consistent with the results of previous research (Lu, 2015) which may be due to the different understanding of prosocial behavior among college students of different majors. Generally speaking, liberal arts students have more opportunities to contact society, have deeper understanding of prosocial behavior, and are more likely to identify with the social value of prosocial behavior.

Fourth, monthly family income negatively predicts the prosocial behavior tendency of college students, the prosocial behavior tendency of minority students is more obvious than that of Han students, and the prosocial tendency of rural students is significantly obvious than that of students from town or city, which is consistent with the research results of Yue and Li (2010); Davis (1980) and Xia and Li (2016). The reason is the empathy and social responsibility aroused by the weak effect (Yue & Li, 2010). As a vulnerable group, the low-income people have to help each other, cooperate, exchange what they need and carry out other prosocial behaviors, in order to better alleviate the financial difficulties and resource shortage. At the same time, the interpersonal circle also helps them reduce the sense of isolation. Compared with the Han nationality, the living environment (conditions) of most ethnic minorities being worse, belonging to vulnerable groups, they must be closely united and cooperate with each other in order to live smoothly. Compared with students from town and city, rural stuendets' living environment (conditions) is worse. belonging to vulnerable groups, rural people must be closely united, mutual assistance and cooperation in order to live smoothly.

Finally, religious beliefs positively predict prosocial behaviors tendency, and the prosocial behavior tendency of students with religious beliefs is more obvious than that of students without religious beliefs, which is consistent with the results of previous studies (An, Zhang, & Wang, 2018; Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2011). "Supernatural monitoring hypothesis" (Stéphane, Piff, & Willer, 2013) holds that religious beliefs play a monitoring role in people's behavior. The higher the degree of religious belief, the more supernatural beliefs individuals will feel and feel supervised and evaluated by supernatural forces, thus show stronger public self-awareness and social approval. Galen, Smith, Knapp, and Wyngarden (2011); Galen (2012) also pointed out that those with high level of religious beliefs are better at internalizing the religious doctrine of "truth, goodness and beauty" into their own moral standards, expressing higher compassion and moral level, and promoting them to produce more prosocial behaviors.

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