
| RESEARCH ARTICLE

Light Triad Traits and Altruistic Behaviors in College Students: The Mediating Role of Meaning in Life

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| ABSTRACT

This study examines the relationship between Light Triad Traits (including faith in humanity, humanism, and Kantianism), meaning in life, and altruistic behaviors among college students. An online questionnaire survey was conducted with 408 university participants. Key findings reveal: (1) Light Triad Traits significantly promote altruistic behaviors; (2) Meaning in life mediates the positive effect of Light Triad Traits on altruism. These results elucidate the mechanism through which value-based traits (Light Triad) enhance altruism via a strengthened sense of meaning, providing theoretical and practical insights for cultivating prosocial behaviors in higher education. Fostering Light Triad Traits and meaning in life may effectively encourage altruistic engagement, facilitating personal growth and social harmony.

| KEYWORDS

Light Triad Traits; Altruistic Behavior; Meaning in Life; College Students

| ARTICLE INFORMATION

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1. Introduction

Altruistic behavior is a selfless act of helping others without expecting anything in return, and it is an important manifestation of prosocial behavior (Li, 2008). The term "altruistic behavior" was first proposed by the French sociologist Comte in 1851 to describe an individual's selfless act towards others, emphasizing the importance of an individual voluntarily providing help to others without expecting anything in return. Altruistic behavior not only enables individuals to gain sincere friendship and trust in the complex social environment and build stable interpersonal Bridges, but also plays an irreplaceable role in maintaining the stability and harmony of social order. It is a highly valuable prosocial behavior. Meanwhile, with the development of positive psychology, an increasing number of researchers are exploring the development of prosocial behavior from a positive perspective. As the future pillars of society, college students' personal traits and behavioral patterns have a profound impact on social development. Studies have shown that the positive personality traits of college students are one of the important factors promoting prosocial behavior (Li, 2022). It can be seen from this that if the relationship between college students' altruistic behaviors can be explored from the perspective of new positive personality traits, it can not only deepen the understanding of the motives and mechanisms of college students' prosocial behaviors, but also help develop effective educational intervention measures and promote the development of college students' sense of social responsibility and moral behaviors.

In recent years, in the field of personality psychology, the dark triangle traits - including psychopathy, narcissism and Machiavellianism - have been widely studied. These traits are usually associated with negative social behaviors and interpersonal relationship problems. Kaufman et al. proposed a relatively new positive personality structure model, namely the Light Triad, which contains three positive traits that are opposed to the traits of the Dark Triad - human belief, humanitarianism and Kantianism (Kaufman et al., 2019). Many previous studies have explored the prosocial behaviors of different groups of people from the negative and positive aspects of personality structure, but few studies have explored the role of the Light Triad trait in improving the altruistic behaviors of college students and the underlying deep psychological mechanisms. Given that college students are at a crucial turning point in their lives, and their psychological traits and behavioral patterns are taking shape and stabilizing, choosing

college students as research subjects has significant practical significance. In conclusion, this study aims to promote the cultivation of positive psychological qualities among college students through empirical research support and strategic suggestions, enhance their sense of social responsibility and altruism, and thereby drive individual healthy growth and social harmony.

1.1 Altruistic Behavior

There are many factors influencing altruistic behavior, and this is also a hot topic in psychological research. Domestic scholar Li Yuan believes that altruistic behavior is usually influenced by both individuals and the environment, and has summarized it from aspects such as personal factors, situational factors, and social culture (Li, 2015). From an individual perspective, altruistic behavior is initiated by the individual, and thus such behavior is naturally influenced by the personal traits of the actor, mainly reflected in the individual's personality traits. For instance, the trait of being cold-hearted is significantly negatively correlated with altruistic behavior among college students (Zhang et al., 2024). In addition, scholars such as Zhang Heyun have found that good people with kind personality qualities tend to engage in more altruistic behaviors (Zhang et al., 2021); From the perspective of context, research has found that college students who experienced a higher degree of unpredictability in their childhood tend to exhibit less altruistic behavior, and the trait of being ruthless plays a mediating role between the two (Zhou et al., 2023). In the online environment, the richer the social support college students receive, the more frequently they will help others online (Ye et al., 2018). Meanwhile, positive moral emotions and a sense of moral improvement on the Internet are also conducive to promoting altruistic behaviors (Liu et al., 2023). From a social and cultural perspective, previous studies have found that social norms can affect the willingness of bystanders of school bullying among junior high school students to help others (Yang, 2024). Furthermore, collectivism can directly predict helping behavior (Feng & Zhang, 2021), and some studies have confirmed that altruistic behavior usually increases with the increase of collectivism but decreases with the decrease of individualism (Frederik et al., 2021).

Meanwhile, foreign scholars have discussed the factors influencing altruistic behavior from a more specific perspective. According to the review of previous research, foreign scholars mainly explore the influencing factors of altruistic behavior from the following three aspects: Altruistic factors, situational factors, and recipient factors (Zheng & Gu, 2010). Among them, the most important factor is cognitive. The influence of cognitive factors on altruistic behavior is significant. Researchers generally believe that altruistic behavior is largely influenced by the cognitive factors of altruists. These cognitive factors mainly include the ability to select viewpoints and the level of moral judgment. Viewpoint selection ability, that is, an individual's ability to understand and feel others' thoughts and emotions from their perspective, is a cognitive strategy with a prosocial tendency. The ability to select viewpoints plays a crucial cognitive role in the formation of altruistic behavior and can predict the altruistic tendencies displayed by children. Children with a strong ability to choose viewpoints are more likely to take altruistic actions if they can clearly recognize the needs of others (Barrett & Yarrow, 1977). Furthermore, Moore's research findings also show that there is a significant positive correlation between opinion selection ability and altruistic behavior, and this connection becomes even closer as children grow older (Moore et al., 1998).

1.2 Traits of the Light Triad and Altruistic Behaviors

Positive personality traits are closely related to helping behaviors, such as extraversion and agreeableness. These traits not only promote individuals to be more inclined to offer assistance in social interactions, but are also crucial for establishing and maintaining positive social relationships. The Light Triad is a positive personality structure model. The meanings of the three traits it contains are, respectively, human belief, that is, believing in the kindness of human nature; Humanitarianism means attaching importance to the dignity and value of every individual. Kantianism, which advocates treating people sincerely and avoiding regarding them as tools, and the scale based on the Light Triad trait, which was introduced in 2019, has been cited nearly two hundred times in just two years and has been practically applied in research in the United States, Poland, and other Western countries (Sevi & Doğruyol, 2020; Gerymski & Krok, 2019; Neumann et al., 2020). Furthermore, in the initial measurement study of LTS, it was found that the Light Triad is positively correlated with multiple positive criteria such as kindness, agreeableness, empathy, compassion, tolerance, curiosity, and gratitude, indicating that there is potential unique value in studying the relationship between the traits of the Light Triad and altruistic behavior (Kaufman et al., 2019). More importantly, no one at home or abroad has studied the relationship between the traits of the Light Triad and the altruistic behavior of college students so far.

Therefore, this study proposes **Hypothesis 1**: The traits of the Light Triad can promote altruistic behavior among college students.

1.3 Meaning in Life

In recent years, the exploration of the meaning of life has become an important topic in psychological research. It refers to an individual's perception of the life ideas and values they possess at present, as well as their pursuit of the meaning and goals of future life (Steger et al., 2008). The meaning of life, as an important psychological resource, is closely related to an individual's mental health, happiness and life satisfaction (Czekierda et al., 2017; Kim et al., 2019). Research has found that there is a significant positive correlation between altruistic behavior and a sense of life meaning. Perceived social support and self-esteem play a mediating role in the process of enhancing life meaning through altruistic behavior (Li et al., 2018). Furthermore, some studies have also shown that there is a significant positive correlation between college students' sense of life meaning and their online

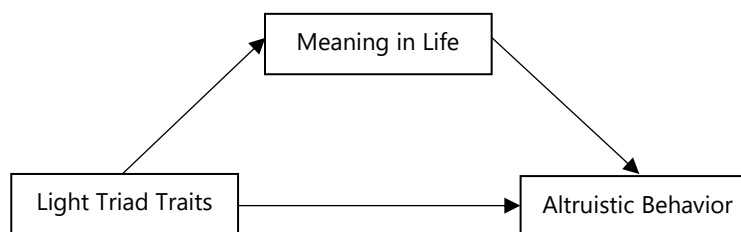
altruistic behavior (Xie, 2021). These research results indicate that a sense of meaning in life not only affects an individual's mental health and happiness but is also closely related to altruistic behavior and is an important factor promoting altruistic behavior in individuals.

In addition, there are studies that take college students in Fujian Province as the research subjects, understand the current situation of their sense of meaning in life through the questionnaire method, and study the influence and mechanism of altruistic personality and self-efficacy on college students' sense of meaning in life. The research results reveal that there is a significant positive correlation between college students' sense of life meaning and altruistic personality and self-efficacy. Altruistic personality has a direct and positive predictive effect on college students' sense of life meaning, and self-efficacy plays a partial mediating role in this effect. This further confirms the important role of the sense of life meaning in promoting altruistic behavior. However, so far, no other studies have used the meaning of life as a mediating variable to explore the influence of the Light Triad traits on altruistic behavior.

Therefore, this study proposes **Hypothesis 2**: The Light Triad traits enhance college students' sense of meaning in life, thereby improving their altruistic behavior.

In conclusion, based on the actual research purposes and hypotheses, the following research model is proposed.

Fig. 1. shows the model diagram of this study.



2. Method

2.1 Participants

The questionnaires for this research were distributed anonymously, mainly in the form of online electronic questionnaires to college students. A total of 428 pieces of data were collected. After excluding questionnaires with extreme values, short response times, and overly consistent responses, 408 valid pieces of data were included in the analysis. Among them, there were 213 male cases, accounting for 52.20%, and 195 female cases, accounting for 47.80%. There were 68 cases in freshmen, 132 cases in sophomores, 163 cases in juniors and 45 cases in seniors. There were 187 cases in science and engineering, 137 cases in humanities and social sciences, and 84 cases in art and sports. There were 138 cases from large and medium-sized cities, 170 cases from towns and 100 cases from rural areas. There were 224 only children and 184 non-only children.

2.2 Measuring tools

2.2.1 Light Triad Scale, LTS

The LTS consists of 12 items, which are divided into three dimensions: human faith, humanitarianism, and Kantianism, each with 4 items. A 7-point scoring system is adopted, where 1 represents "very inconsistent" and 5 represents "very consistent". The homogeneity coefficient of LTS is 0.54, and the test-retest reliability ($r = 0.54-0.65$).

2.2.2 College Students' Altruistic Behavior Scale

Compiled by Li Yanfang (Li, 2008), it consists of 22 items, divided into five dimensions: altruistic behavior, responsibility, respect and care for others, care and attention to one's own altruistic behavior performance, and self-interested behavior and concepts. A 7-point scoring system is adopted, where 1 represents "very inconsistent" and 7 represents "very consistent". The α coefficient of this scale is 0.87.

2.2.3 Meaning in Life Questionnaire, MLQ

This scale was developed by Steger et al. and translated by Wang Mengcheng et al. There are a total of 10 items, divided into two dimensions: experience of life meaning and search for life meaning, each with 5 items. A 7-point scoring system is adopted, where 1 represents "very inconsistent" and 7 represents "very consistent". The α coefficients for experiencing the meaning of life and seeking the meaning of life are 0.85 and 0.82 respectively.

2.3 Statistical methods

In this study, the statistical analysis software SPSS 26.0 was used to conduct common method bias test, descriptive analysis, correlation analysis and regression analysis on the research data.

3 Method

3.1 Common Method Bias

As this study collected data using the questionnaire method, it referred to the research of scholars such as Zhou Hao and adopted the exploratory factor analysis method to test for possible common method biases (Zhou, 2004). Through Harman's single-factor test, we found that the interpretation rate of the first common factor was 21.81%, which is lower than 40%. Therefore, it can be concluded that there is no obvious common method bias problem in the data of this study.

3.2 Descriptive Statistics and Correlation Matrices

The results of descriptive statistical analysis are shown in **Table 1**. The Light Triad trait is significantly positively correlated with altruistic behavior ($r = 0.48, p < .001$), and Hypothesis 1 is verified. The meaning of life, as a mediating variable, was significantly positively correlated with both the Light Triad trait ($r = 0.39, p < .001$) and altruistic behavior ($r = 0.46, p < .001$). This indicates that the meaning of life may play a mediating role between the traits of the Light Triad and altruistic behavior. In addition, grade was significantly positively correlated with professional category ($r = 0.05, p < .001$). The location of one's hometown was significantly negatively correlated with whether one was an only child ($r = -0.02, p = 0.001$).

Table 1

Descriptive statistics and correlation analysis of each variable.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1 Gender	1.48	0.50	–						
2 Grade	2.45	0.90	0.05	–					
3 Professional category	1.75	0.78	0.00	-0.04	–				
4 The location of one's hometown	1.91	0.76	-0.12*	0.04	-0.04	–			
5 Whether the child is an only child	1.45	0.50	-0.03	-0.03	-0.02	0.02	–		
6 Light Triad Traits	46.09	10.98	-0.01	0.05	0.09	0.04	-0.02	–	
7 Meaning in Life	51.42	10.72	-0.02	0.07	0.07	0.04	-0.06	0.39**	–
8 Altruistic Behavior	113.36	29.21	0.03	0.07	0.07	0.07	0.04	0.48**	0.46**

Note. * $p < .05$, ** $p < .01$, *** $p < .001$; Gender: male = 1, female = 2.

3.3 Mediation Model Test

Using Model 4 in the PROCESS plugin of SPSS 26.0, a mediation model of the meaning of life between the traits of the Light Triad and altruistic behavior was established. Taking the traits of the Light Triad as independent variables, altruistic behavior as the dependent variable, the meaning of life as the mediating variable, and incorporating demographic variables as control variables, the results are shown in **Table 2**.

The results of the path coefficients not included in the control variables are shown in **Figure 2**. The mediating effect of life meaning was analyzed using Bootstrap. The sample size was selected as 10,000, and the 95% Bootstrap confidence interval was [0.19,0.51], excluding 0. The mediating effect was significant, and Hypothesis 2 was verified. The direct and indirect effects are shown in **Table 3**.

Table 2

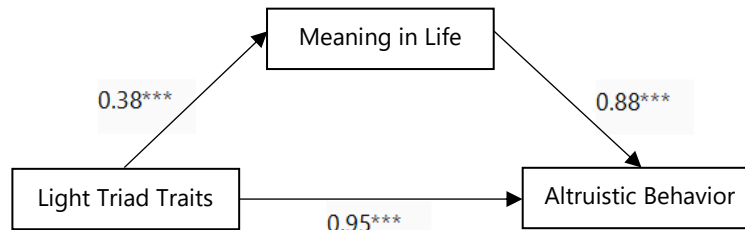
Mediation model ($N = 408$).

Variables	Meaning in Life		Altruistic Behavior	
	Not included in the control variables	Be included as a control variable	Not included in the control variables	Be included as a control variable
	β (<i>SE</i>)	β (<i>SE</i>)	β (<i>SE</i>)	β (<i>SE</i>)
Control variables:				
Gender		-0.35(0.99)		2.57(2.41)
Grade		0.60(0.55)		0.95(1.34)
Professional category		0.53(0.64)		0.91(1.55)
The location of one's hometown		0.30(0.65)		1.67(1.59)

Whether the child is an only child		-1.16(0.99)		4.18(2.41)
Predictor variable:				
Light Triad Traits	0.38(0.04)***	0.37(0.04)***	0.95(0.12)***	0.94(0.12)***
Mediating variable:				
Meaning in Life			0.88(0.12)***	0.88(0.12)***
R^2	0.15	0.16	0.32	0.33
ΔR^2			0.09	0.09
F	73.73***	12.85***	95.36***	28.12***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$; Gender: male = 1, female = 2.

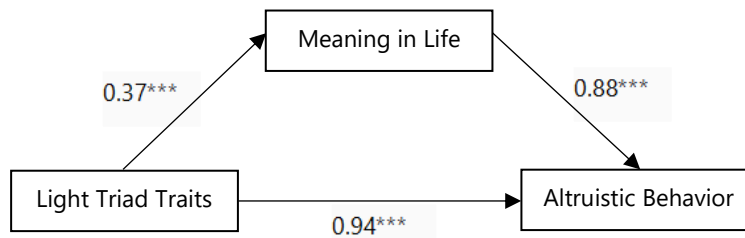
Fig. 2. A mediation model that does not include control variables.



Note. The reported non-standardized coefficient; *** $p < .001$.

The results of the path coefficients included in the control variables are shown in **Figure 3**. The mediating effect of life meaning was analyzed using Bootstrap. The sample size was selected as 10,000, and the 95% Bootstrap confidence interval was [0.19,0.50], excluding 0. The mediating effect was significant, once again verifying Hypothesis 2. Furthermore, the influences of the included control variables were not significant. The direct and indirect effects are shown in **Table 3**.

Fig. 3. The mediation model that incorporates control variables.



Note. The reported non-standardized coefficient; *** $p < .001$.

Table 3

Bootstrap analysis and effect size for the significance test of mediating effects.

Effect type	Effect value	Effect quantity (%)	A 95% confidence interval		
			Upper limit	Lower limit	
Not included in the control variables					
Direct effect	0.95	74	0.71	1.18	
Indirect effect	0.34	27	0.19	0.51	
Overall effect	1.28		1.05	1.51	
Be included as a control variable					
Direct effect	0.94	74	0.70	1.17	
Indirect effect	0.33	26	0.19	0.50	
Overall effect	1.27		1.04	1.50	

4. Discussion

4.1 Theoretical Contributions and Practical Implications

The research collected data from college students through online questionnaires and initially verified the positive predictive effect of the Light Triad traits on altruistic behavior. It was also found that the meaning of life plays a mediating role between the two. This conclusion has certain innovations and contributions to the research on altruistic behavior traits from the perspective of social psychology.

Firstly, this research enriches the theoretical foundation of the field of positive psychology. Previous studies have mostly focused on external factors of altruistic behavior, such as social environment and cultural background. However, this study verified through empirical analysis the positive impact of the emerging Light Triad trait personality structure on altruistic behavior, providing empirical support for the applicability of the Light Triad theory among college students. Specifically, the Light Triad trait can promote the emergence of altruistic behavior by enhancing an individual's faith in humanity, humanitarianism, and the tendency to treat others sincerely. This provides a new perspective for understanding the relationship between personality traits and prosocial behavior.

Secondly, this study explores the mediating role of life meaning between the Light Triad trait and altruistic behavior, revealing that individuals can promote prosocial behavior by constructing positive life meaning, which provides a new perspective for understanding the intrinsic motivation of altruistic behavior. Meanwhile, no previous studies have explored the influence of the sense of meaning in life on altruistic behavior. The introduction of the mediating variable of the sense of meaning in life to a certain extent, fills this gap, enriches the related research in the theoretical field of the sense of meaning in life, and provides a new theoretical framework and analytical path for subsequent research.

Finally, this study provides a scientific basis for mental health education and moral education in colleges and universities. By cultivating the Light Triad traits of college students, educators can more effectively promote students' prosocial behaviors and enhance their sense of social responsibility and moral standards. Specifically, colleges and universities can guide students to explore and construct positive life meanings through curriculum design, workshops, psychological counseling and other means, thereby stimulating their intrinsic altruistic motives. Furthermore, this study emphasizes the significance of the meaning of life, suggesting that educators should not only focus on students' academic achievements but also attach importance to the cultivation of their values and outlook on life, so as to promote the all-round development of students.

In conclusion, this study not only expands the application of positive psychology and mediating effect theory in theory, but also provides beneficial guidance for moral education and mental health education in colleges and universities in practice, and has significant theoretical and practical value.

4.2 Research Limitations and Future Prospects

This study has several limitations when exploring the influence of the Light Triad traits of college students on altruistic behavior and its mediating role. First, the limitation of the sample is manifested in the fact that the research is limited to college students only, which may limit the general applicability of the research results. Future research should consider expanding the sample range to include individuals of different ages, cultural backgrounds and educational levels, in order to enhance the external validity of the research results. Second, the methods for measuring variables are limited. Although this study employed standardized scales to measure the traits of the Light Triad, the meaning of life, and altruistic behavior, any measurement tool has a certain degree of error. Future research could consider using a variety of measurement methods, such as behavioral observation, self-reporting scales, and peer evaluation, to enhance the accuracy and reliability of the measurements. Thirdly, the selection of the mediating model is not advanced enough. This study mainly focuses on the role of life meaning as a single mediating variable, while in reality, altruistic behavior may be influenced by multiple mediating variables. Future research can explore other potential mediating variables, such as compassion and moral identity, as well as the possibility of multiple mediating effects. Fourth, the causal relationship also has limitations. Although this study revealed the relationship among the traits of the Light Triad, the meaning of life, and altruistic behavior, due to the limitations of the research design, the causal relationship could not be determined. Future research can adopt longitudinal designs or experimental designs to further verify the causal relationships among these variables.

In conclusion, this study offers a new perspective for understanding altruistic behaviors among college students and provides rich ideas and directions for future research. Through further research, we can gain a deeper understanding of the influence mechanism of the Light Triad traits on altruistic behavior, as well as how to promote the positive development of individuals and social harmony through educational and intervention measures.

5. Conclusion

- (1) The Light Triad traits can promote altruistic behavior among college students.
- (2) The Light Triad traits enhance college students' sense of meaning in life, thereby improving their altruistic behavior.

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References

- [1] **Yanfang. (2008). Moral Values of College Students, The Research on the Relation between Moral Value, Self-concept and altruistic behavior of College Students. Master's Thesis, *Wuhan: Huazhong University of Science and Technology*.
- [2] Li, F.-Z. (2022). Correlation study on personality traits and pro-social behavior of college students. *Journal of Campus Psychology*, *20*(3), 229–233. <https://doi.org/10.19521/j.cnki.1673-1662.2022.03.014>
- [3] Kaufman, S. B., Yaden, D. B., Hyde, E., & Tsukayama, E. (2019). The Light vs. Dark Triad of Personality: Contrasting Two Very Different Profiles of Human Nature. *Frontiers in Psychology*, 10. doi:10.3389/fpsyg.2019.00467
- [4] Li, Y. (2015). A review of altruistic behavior theories and their influencing factors. *Journal of Seeking Knowledge*, (2), 70. <https://doi.org/10.14161/j.cnki.qzdk.2015.02.054>
- [5] Zhang, Y., Zhou, J., Chen, Y., & Deng, H. (2024). The relationship between callous-unemotional traits and altruistic behavior in college students: The mediating role of generalized trust and empathy. *Journal of Yan'an Vocational Technical College*, *38*(3), 5–8+43.
- [6] Zhang, H.-Y., Xu, Y., & Zhao, H.-H. (2021). The relationship between benevolent personality and online altruistic behavior: A moderated mediation model. *Journal of Psychological Science*, *44*(3), 619–625. <https://doi.org/10.16719/j.cnki.1671-6981.20210315>
- [7] Zhou, J.-H., Chen, Y., Zhang, Y., & Deng, H.-Y. (2023). The effect of childhood environmental unpredictability on altruistic behavior in college students: A moderated mediation model. *Chinese Journal of Clinical Psychology*, *31*(3), 704–708. <https://doi.org/10.16128/j.cnki.1005-3611.2023.03.038>
- [8] e, B.-J., Yang, X., Lei, X., & Wang, M.-P. (2018). The influence mechanism of online social support on college students' online helping behavior. *Chinese Journal of Clinical Psychology*, *26*(6), 1208–1210, 1214. <https://doi.org/10.16128/j.cnki.1005-3611.2018.06.034>
- [9] Liu, L., Han, Y.-C., & He, X.-L. (2023). Positive moral emotions and altruistic behavior in online contexts: The roles of moral elevation and trait promotion focus. *Studies of Psychology and Behavior*, *21*(5), 667–674.
- [10] Yang, X.-Y. (2024). The influence of social norms on junior high school students' bystander helping willingness in school bullying and the mediating effect of self-determined motivation [Master's thesis, Southwest University]. China Master's Theses Full-text Database. <https://doi.org/10.27684/d.cnki.gxndx.2024.001841>
- [11] Feng, L.-L., & Zhang, L.-L. (2021). The impact of collectivism on helping behavior and vitality: The mediating role of basic psychological need satisfaction. *China Journal of Health Psychology*, *29*(10), 1457–1463. <https://doi.org/10.13342/j.cnki.cjhp.2021.10.005>
- [12] Frederik B ,Sevias G ,Celeste C .Horizontal and vertical individualism and collectivism and preferences for altruism: A social discounting study[J].*Personality and Individual Differences*,2021,178
- [13] Zheng, X.-L., & Gu, H.-G. (2010). A review of research on influencing factors of altruistic behavior in foreign countries. *Primary & Secondary Schooling Abroad*, (9), 51–55.
- [14] Barrett, D. E., & Yarrow, M. R. (1977). Prosocial behavior, social inferential ability, and assertiveness in children. *Child Development*, 48(2), 475–481. <https://doi.org/10.2307/1128642>
- [15] Moore, C., Barresi, J., Thompson, C.. The cognitive basis of future-oriented prosocial [16]behavior. *Social Development*, 1998, 7(2): 198-218
- [16] Sevi, B., & Doğruyol, B. (2020). Looking from the bright side: The Light Triad predicts Tinder use for love. *Journal of Social and Personal Relationships*, 37(7), 2136–2144.
- [17] Gerymski R, Krok D. Psychometric properties and validation of the Polish adaptation of the Light Triad Scale. *Current Issues in Personality Psychology*, 2019, 7(4): 341-354
- [18] Neumann CS, Kaufman SB, ten Brinke L, et al. Light and dark trait subtypes of human personality- a multi- study person-centered approach. *Personality and Individual Differences*, 2020, 164: 110121
- [19] Steger, M. F., Kawabata, Y., Shimai, S., & Otake, K. (2008). The meaningful life in Japan and the United States: Levels and correlates of meaning in life. *Journal of Research in Personality*, 42(3), 660–678.
- [20] Czekierda, K., Banik, A., Park, C. L., & Luszczynska, A. (2017). Meaning in life and physical health: Systematic review and meta-analysis. *Health Psychology Review*, 11(4), 387–418

- [21] Kim, J. Y., Lee, Y. W., Kim, H. S., & Lee, E. H. (2019). The mediating and moderating effects of meaning in life on the relationship between depression and quality of life in patients with dysphagia. *Journal of Clinical Nursing*, 28(15-16), 2782–2789.
- [22] Li, Z.-H., Zhao, M.-J., Xiao, Z.-Y., & Wang, L. (2018). Altruistic behavior and sense of meaning in life: The mediating role of perceived social support and self-esteem. *Chinese Journal of Special Education*, (5), 92–96.
- [23] Xie, Y.-M. (2021). Research on college students' sense of meaning in life and its relationship with online altruistic behavior. *Journal of Campus Life & Mental Health*, *19*(2), 115–117. <https://doi.org/10.19521/j.cnki.1673-1662.2021.02.004>
- [24] Zhou, H., & Long, L.-R. (2004). Statistical testing and control methods for common method bias. *Advances in Psychological Science*, *12*(6), 942–950.
- [25] Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter?. *Psychological Science*, 24(10), 1918–1927.