ORIGINAL ARTICLE

The Relation between Mentalized Affectivity and Negative Emotions in Chinese College Students: The Moderating Effect of Internet Altruistic Behavior

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***Abstract**: This article aims to investigate the impact of mentalized affectivity on negative emotions among Chinese college students based on a questionnaire survey of 899 university students. The study adopts a mentalized affectivity scale, an internet altruistic behavior scale, and a self-analysis questionnaire. The study's findings reveal a negative correlation between mentalized affectivity and depression, anxiety, and stress, but a positive correlation with variables linked to internet altruistic behavior in college students. Additionally, the study reveals a significant moderating effect of internet altruistic behavior on the relationship between mentalized affectivity and depression and anxiety. It is concluded that an increased level of affectivity can help modulate negative emotions and that internet altruistic behavior can play a moderator role in the modulation process.*

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***Keywords**: Mentalized Affectivity, Negative Emotions, Internet Altruistic Behavior*

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Introduction

AFFECTIVITY plays a crucial role in psychoanalytic psychotherapy, representing a sophisticated kind of affect regulation. Mentalization is the capacity to interpret others' minds, which developmentally precedes and then fosters the ability to read and understand one's own mental states (Jurist, 2005). Mentalized affectivity, as an important component of affect regulation, is of vital significance for psychotherapeutic outcomes (Jurist, 2018). It is supportive of the individual's recognizing meaningful events and situations, responding to occurrences, and encouraging appreciation of positive aspects of life, which in turn helps them understand their own emotions and predict future situations (Fonagy et al., 2002). The construct of mentalized affectivity includes three constituent elements: (i) identifying affects, the ability to name or distinguish emotions, as well as understanding and probing their complexity in the context of the individual's history; (ii) processing affects, the ability to modulate emotions, such as changing their duration and magnitude; (iii) expressing affects, the ability to communicate emotions outwardly or inwardly (Jurist, 2005; Greenberg et al., 2017). Compared with emotional intelligence, mentalized affectivity focuses more on the comprehension of present emotions and places greater emphasis on re-evaluating the impact of past experiences on present emotions in an effort to modulate them (Juliet, 2018). It provides a special perspective on the reflective role of emotions (Liotti et al., 2021). Jurist and Sosa (2019) emphasized the necessity of paying more attention to the impact of cultural differences on mentalization. The Mentalized Affectivity Scale (MAS) advanced by Greenberg et al. (2017) was well validated among American and Italian adult groups as well as student groups in Iran (Greenberg et al., 2017; Rinaldi et al., 2021; Sayarfard et al., 2021). For a larger-scale, more efficient survey, Greenberg et al. (2021) developed the Brief-Mentalized Affectivity Scale (B-MAS), a shorter version of the MAS, which has proved to be a robust assessment tool with highly predictive power for 17 mental diseases such as alexithymia, depression, and general anxiety disorder.

Internet altruistic behavior refers to acts performed voluntarily online to help someone else or the community when there is no expectation of receiving a reward (Zheng, 2010). According to Zheng's (2010) College Student Internet Altruistic Behavior Scale, there are four categories of internet altruistic behavior: (i) Internet-support: acts showing appreciation, encouragement, and support to others online, such as expressing good wishes and care to other netizens, listening to their narrative about unhappy events and saying words of consolation, and giving tips for easing emotional issues; (ii) Internet-guidance: acts concerning directions of computer and internet use, such as uploading useful programs, preventing and eliminating

computer viruses, addressing technical issues; (iii) Internet-sharing: acts of information and resources sharing online, including participating in discussion forums and giving comments, reposting meaningful articles and posts published by others, sharing one's successful learning experience, recommending good reads, and more. (iv) Internet-reminding: acts to alert others to cyber hazards, such as online crimes, particularly frauds, and to report one's own online encounters with temptations. Internet altruistic behavior has a positive effect in enhancing the individual's subjective well-being and self-efficacy (Zheng & Wang, 2017). In the information age, the internet has become a pivotal medium for college students' academic and social lives. They spend colossal amounts of time on the internet, learning new knowledge, completing assignments, enjoying entertainment, making friends, shopping, and so on, which significantly increases the incidence of internet altruistic behavior among them.

According to Rudd's (2012) study, positive emotions like awe have the effect of increasing individuals' time input in prosocial behavior, motivating them to spend more time helping others. Nevertheless, the effect of negative emotions on helping behavior remains inconclusive. Isen (1970) argued that negative emotions led to the decline in altruistic behavior. David's (2005) research findings show that negative emotions cause the reduction in child altruistic behavior but contribute to the increase in adult altruistic behavior. As per the Aristotelian theory of emotions, emotions are conducive to the development of perceptual ability in practice, specifically, the capacity to perceive others in the right way and at the right time. Contrarily, the Stoicism theory of emotions asserts that emotions are overwhelming, and thus, one should avoid taking any action under the influence of emotions (Fonagy et al., 2002). As per Yuan and Yang (2023), the online discourse helps release pressure, providing opportunities for temporary emancipation in virtual public spaces. However, Yan and Li (2022) argued that negative emotions on the internet are characterized by decadence, confusion, and excessive sentimentality. College students are a group of heavy users of the internet, experiencing a wide variety of emotions online daily. They also have more chances to express negative emotions online (Wu, 2024). Mentalization is the cognitive and affective ability to understand the thoughts and emotions of oneself and others (Jurist, 2018), which is of higher value to college students who have relatively more needs for active communication and interactions.

The study proposed two hypotheses:

H1: Mentalized affectivity is beneficial for college students coping with negative emotions through effective affect regulation.

H2: Internet altruistic behavior moderates the positive effects of mentalized affectivity on negative emotions, such as depression, anxiety, and stress, in college students.

Research Methodology

Participants

Adopting randomized cluster sampling, the study recruited 917 subjects from two universities in Nanjing, Jiangsu Province. The questionnaire survey was conducted on the principle of anonymity and voluntariness, with informed consent by subjects. After removing those with abnormal answers, the research team obtains 899 valid questionnaires, with 430 from male students, 469 from female students, 641 from freshmen, and 258 from sophomores.

Research Tools

The College Student Internet Altruistic Behavior Scale

The College Student Internet Altruistic Behavior Scale, developed by Zheng (2010), consists of 26 question items in four dimensions: internet support, internet guidance, internet sharing, and internet reminding. The scale adopts the Likert 5-point rating method (from 1 denoting "never" to 5 denoting "always"). The higher the score, the more altruistic actions the subject takes in internet use. In this study, the questionnaire's Cronbach's α is 0.84.

The Depression Anxiety Stress Scales

The study adopted the short-form version of the Depression Anxiety Stress Scales (DASS-21) (Lovibond & Lovibond, 1995). The original Depression Anxiety Stress Scales (DASS-42), also known as the Self-Analysis Questionnaire, include three subscales with a total of 42 items. DASS-21, retaining the three subscales of depression, anxiety, and stress, has 21 items in total with seven in each subscale; the dimensions of the original scale remain unchanged. In the four-point rating scales, 0 represents "did not apply to me at all," 1 means "applied to me to some degree, or some of the time," 2 denotes "applied to me to a considerable degree, or a good part of the time," and 3 signals "applied to me very much, or most of the time." The higher the score, the higher the level of severity of each emotional state the subject has experienced. In Gong et al.'s (2010) survey based on a large sample of Chinese college students, the coefficient of Cronbach's α of the DASS is 0.89, indicating it is a suitable tool for extensive screening in scientific research and clinical practice. In the present study, the coefficients of Cronbach's α for the three subscales of depression, anxiety, and stress are 0.831, 0.808, and 0.818, respectively, with the overall coefficient of the questionnaire being 0.864.

The Mentalized Affectivity Scale (Adolescent Version)

The Mentalized Affectivity Scale (MAS) is a 60-item self-report measure with three dimensions: identifying emotions, processing emotions, and expressing emotions (Greenberg et al., 2017). The dimension of identifying emotions consists of 24 items, one of which is a reverse-scored item. The dimension of processing emotions consists of 23 items, six of which are reverse-scored items. There are 13 items in the dimension of expressing emotions, eight of which are reverse-scored items. This study adopts the Chinese version of the Brief-Mentalized Affectivity Scale for Adolescents (B-MAS-A), a 19-item questionnaire including four factors: Identifying Emotions, Processing Emotions, Expressing Emotions, and Autobiographical Memory (Hu, 2023). "Identifying Emotions," consisting of four items, is to measure the subject's ability to discern their emotions. "Processing Emotions," with seven items, assesses the subject's capacity to use their cognitive ability to control emotions. "Expressing Emotions," with four items, evaluates the subject's ability to represent and communicate emotions. "Autobiographical Memory," with four items, measures the subject's ability to reflect on their early life and childhood emotional experiences and use them to regulate present emotions. The higher the subject scores, the more skilled they are in emotional identification and processing and in constructing self-narrative through reflections on previous experiences, with a higher tendency towards inward emotional expression. In this study, the coefficient of Cronbach's α of the B-MAS-A is 0.817, and the coefficients of Cronbach's α of the four factors of identifying emotions, processing emotions, expressing emotions, and autobiographical memory are 0.770, 0.877, 0.814, and 0.707, respectively.

Data Analysis

SPSS Amos 21.0 was applied to information analysis, including descriptive statistics and independent sample t-tests. Harman's one-factor test method was used to test common method biases. The direct effects between variables were tested by SEM; the indirect effects between variables were tested by the bias-corrected nonparametric percentile Bootstrap method; and the moderation effect was analyzed using SPSS Process 3.2.

Analysis Results

Test of Common Method Biases

Harman's one-factor test was adopted to test the common method biases in questionnaires (Zhou & Long, 2004). Exploratory factor analysis was

administered to all factors of internet altruistic behavior, negative emotions, and mentalized affectivity. According to the analysis results, there were seven factors with greater-than-1 Eigen values, and the first factor showed a variance of 27.56%, which was much lower than the criterion of 40% proposed by Harrison et al. (1996), indicating that there were no significant common method biases in this study.

Descriptive Analysis of Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students

According to the analysis results, the M±SD value of college students' mentalized affectivity was 93.82 ± 16.18, with a median of 95, which was higher than the median of 76 on the scale. The M±SD value (49.89 ± 15.16) of college students' internet altruistic behavior and the median of 51 were both lower than the scale's median of 65, indicating that internet altruistic behavior among college students under survey was insufficient. The mean of depression among them was 10.64 ± 8.79, within the range of 10-13 for mild depression. The mean of anxiety was 10.09 ± 8.61, within the range of 10-14 for moderate anxiety. The mean of stress was 11.21 ± 8.84, within the range of 0-14 for the absence of stress.

T-test Results of All Variables in Various Dimensions

There was no gender difference in mentalized affectivity among college students ($p > 0.05$). Male students exhibited a higher level of internet altruism than their female peers, showing a gender difference in this regard ($p < 0.05$). There was no significant gender difference in overall levels of depression, anxiety, and stress ($p > 0.05$). The mean of depression in male students was higher than that in their female counterparts, but anxiety and stress in the former were lower than those in the latter (**Table** 1).

There was no grade difference in mentalized affectivity and internet altruistic behavior among college students ($p > 0.05$). The levels of depression, anxiety, and stress were lower in the freshmen than in the sophomores, with statistical significance to varying degrees ($p < 0.05$, $p < 0.01$, and $p < 0.001$, respectively) (**Table 2**).

There was no significant difference in mentalized affectivity ($p > 0.05$) between introverted and extroverted college students. There was an extremely significant difference in internet altruistic behavior between the two groups ($p < 0.001$). Differences in the levels of depression ($p < 0.01$), anxiety ($p < 0.05$), and stress ($p < 0.01$) between them showed varied degrees (**Table 3**).

Table 1. Gender Differences in Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students.

Factors	Gender	N	Mean and Standard Deviation	T Value	P
Mentalized affectivity	Male	430	93.53±17.53	-0.527	0.598
	Female	469	94.09±14.86		
Internet altruistic behavior	Male	430	51.04±15.96	2.175	0.030
	Female	469	48.84±14.32		
Depression	Male	430	11.01±8.76	1.217	0.224
	Female	469	10.29±8.83		
Anxiety	Male	430	9.66±8.63	-1.460	0.145
	Female	469	10.49±8.57		
Stress	Male	430	10.95±8.97	-0.856	0.392
	Female	469	11.45±8.72		

*Note: ***p < 0.001；**p < 0.01；*p < 0.05*

Table 2. Grade Differences in Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students.

Factors	Grades	N	Mean and Standard Deviation	T Value	P
Mentalized affectivity	Freshmen	641	94.26±16.79	1.282	0.20
	Sophomores	258	92.73±14.53		
Internet altruistic behavior	Freshmen	641	50.08±15.49	0.592	0.554
	Sophomores	258	49.42±14.32		
Depression	Freshmen	641	10.18±8.83	-2.452	0.014
	Sophomores	258	11.77±8.61		
Anxiety	Freshmen	641	9.55±8.50	-3.001	0.003
	Sophomores	258	11.45±8.72		
Stress	Freshmen	641	10.35±8.72	-4.667	0.000
	Sophomores	258	13.36±8.78		

*Note: ***p < 0.001；**p < 0.01；*p < 0.05*

Table 3. Introversion versus Extroversion Differences in Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students.

Factors	Personality traits	N	Mean and Standard Deviation	T Value	P
Mentalized affectivity	Introverted	542	93.34±16.17	-1.108	0.268
	Extroverted	357	94.56±16.19		
Internet altruistic behavior	Introverted	542	48.27±15.01	-3.979	0.000
	Extroverted	357	52.35±15.08		
Depression	Introverted	542	11.36±8.54	3.044	0.002
	Extroverted	357	9.54±9.08		
Anxiety	Introverted	542	10.62±8.73	2.230	0.026
	Extroverted	357	9.31±8.36		
Stress	Introverted	542	11.86±8.79	2.715	0.007
	Extroverted	357	10.23±8.83		

*Note: ***p < 0.001；**p < 0.01；*p < 0.05*

Table 4. Correlations between Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students.

	Mentalized Affectivity	Internet Altruistic Behavior	Depression	Anxiety	Stress
Mentalized affectivity	1				
Internet altruistic behavior	0.133**	1			
Depression	-0.108**	0.193**	1		
Anxiety	-0.090**	0.199**	0.727**	1	
Stress	-0.082*	0.180**	0.624**	0.825**	1

*Note: ***p < 0.001；**p < 0.01；*p < 0.05*

Correlational Analysis of Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions among College Students

As shown in **Table 4**, there was a positive relation between mentalized affectivity and internet altruistic behavior in college students ($r = 0.133 < 0.4$, $p < 0.01$) and negative relations between mentalized affectivity and depression ($r = -0.108 < 0.4$, $P < 0.01$), anxiety ($r = -0.090 < 0.4$, $p < 0.01$),

and stress ($r = -0.082 < 0.4$, $p < 0.05$). Hence H1 was corroborated. There were low levels of positive relation between internet altruistic behavior and depression ($r = 0.193 < 0.4$, $p < 0.001$), anxiety ($r = 0.199 < 0.4$, $p < 0.001$), and stress ($r = 0.180 < 0.4$, $p < 0.001$), which seems to be contradictory with common sense but is in conformity with the theory of the negative state relief model. According to this theory, individual experiencing adverse emotions may engage in altruistic behavior because they believe that helping others can alleviate their negative emotions. In other words, the individual can relieve their own sadness and distress by helping others (Guo, 2005), which conforms to Zheng's (2012) research finding that anxiety could significantly positively predict internet altruistic behavior ($r = 0.14 < 0.4$, $p < 0.001$).

The Mediation Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions in College Students

Based on the analysis results of the relations between mentalized affectivity, internet altruistic behavior, and negative emotions in college students, the mediating effect was tested following the procedure introduced by Wen and Ye (2014). Regression analysis was conducted using the causal steps method, and the 95% confidence interval of the mediating effect was calculated using the bias-corrected Bootstrap confidence interval method to determine the presence of any predicted and mediated effects between mentalized affectivity, Internet altruistic behavior, and negative emotions. Specific processes were as follows: First, standardize variables in the test and convert gender, grade, and personality traits (introversion vs. extroversion) into dummy variables for control. After that, Model 4 in SPSS Process 3.2 was employed to verify the mediating effect of internet altruistic behavior on the relation between mentalized affectivity and negative emotions. Under the test procedure for mediating effect, the indirect effect value is 0.0304, and the 95% confidence interval of the point estimation was [0.0118, 0.000], and the coefficient c' was significant. Hence, we made the preliminary assumption that there existed a mediating effect. Subsequent tests revealed that the indirect effect was significant and that a * b and the regression coefficient c' carried opposite signs. The results should be explained as a suppressor effect. It was determined that the indirect effect of internet altruistic behavior on negative emotions was not a mediating effect but instead, a suppressor effect (**Figure 1**).

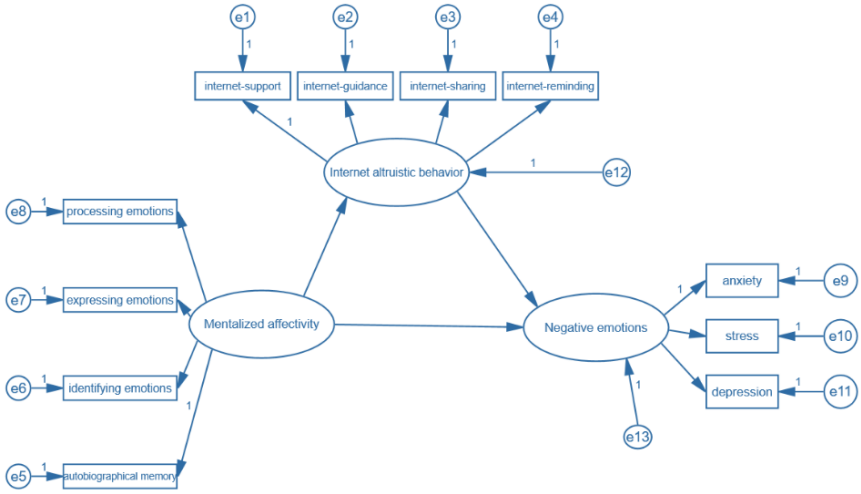

Figure 1. The Suppressor Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions.

Table 5. The Moderating Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions (N=899).

Regression Equations		Hypothesis Testing			
Dependent variables	Independent variables	R	ΔR^2	F	P
Self-reported emotions	X*W	0.258	0.067	4.508	0.034
Depression	X*W	0.238	0.0017	1.65	0.198
Anxiety	X*W	0.244	0.0059	5.60	0.018
Stress	X*W	0.221	0.0046	4.304	0.038

The Moderating Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions among College Students

In the analysis of the moderating effect of internet altruistic behavior, the standard scores of negative emotions were the dependent variables. Mentalized affectivity and internet altruistic behavior were zero-centered, and their interaction term was generated. The zero-centered mentalized affectivity served as the independent variable in the first layer of the regression equation. The zero-centered internet altruistic behavior and the

interaction term served as independent variables in the second layer of the equation. The hierarchical regression analysis revealed that the effect of the interaction term of mentalized affectivity and internet altruistic behavior on the total level of negative emotions was statistically significant ($p < 0.05$), indicating that internet altruistic behavior heightened mentalized affectivity's regulation of negative emotions, and the moderating effect was statistically significant. To investigate which negative emotions were more effectively modulated by mentalized affectivity through the moderating effect of internet altruistic behavior, regression analysis was conducted using depression, anxiety, and stress as dependent variables and the zero-centered mentalized affectivity as the independent variable in the first layer of the regression equation. Subsequently, the zero-centered internet altruistic behavior and the interaction term were deployed as independent variables in the second layer of the equation. The hierarchical regression analysis showed that the moderating effect of internet altruistic behavior on anxiety and stress was statistically significant, but that on depression was not (**Table 5**). Thus, H2 was partially verified.

Discussions

Statistical Results of Mentalized Affectivity, Internet Altruistic Behavior, and Negative Emotions in College Students

College students' average scores of mentalized affectivity and its constituent elements were above the medians on the scale, indicating that their affectivity was of medium-high level. Specifically, their abilities of identifying emotions, processing emotions, and autobiographical memory were relatively strong, and there was a tendency towards inward emotional expression among them. There was no gender difference in the overall level of mentalized affectivity among them ($p > 0.05$), though the mean value of autobiographical memory of male students was significantly lower than that of female students ($t = -2.445$, $p < 0.05$). There was no grade difference in the overall level of mentalized affectivity among college students ($p > 0.05$). However, the freshmen had a significantly higher level of processing emotions than the sophomores ($t = 2.916$, $p < 0.01$). There was no significant difference in the overall level of mentalized affectivity between introverted and extroverted students ($p > 0.05$). Nevertheless, introverted students showed lower levels of identifying emotions ($t = -2.076$, $p < 0.05$) and processing emotions ($t = -3.175$, $p < 0.01$) than their extroverted peers. In terms of expressing emotions, introverted students had fewer outward expressions and were more reserved ($t = 3.166$, $p < 0.01$).

Gong et al. (2010) published a report on the testing of the Depression Anxiety Stress Scales (DASS-21) (Chinese version) among Chinese university students. In this study, M±SD of depression was 5.32 ± 4.39, higher than that of 2.97±4.13 in the report; M±SD of anxiety was 5.04 ± 4.30, slightly lower than that of 5.42 ± 4.96 in the report; and M±SD of stress was 5.61 ± 4.42, slightly lower than that of 6.12 ± 5.54 in the report. Our research findings show that depression among the college student group has undergone a growing trend in recent years and that there were significant grade differences in self-reported depression and anxiety as sophomores typically take more courses and have heavier academic pressures than freshmen. Liu et al. (2023) investigated depression, anxiety, and stress among ordinary residents in Hunan Province. In our study, college students scored 10.64 ± 8.79 on the depression scale, 10.09 ± 8.61 on the anxiety scale, and 11.21 ± 8.84 on the stress scale, lower than those scored by ordinary residents (11.00 ± 4.25, 11.26 ± 4.17, and 12.06 ± 4.22, respectively) in Liu et al.'s research, indicating that the self-reported emotional state of college students (31.95 ± 23.71) was better than that of the Hunan residents surveyed (34.32 ± 12.16). The detection rate of depression in college students was 38.93% (lower than that of 52.16% among ordinary residents in Liu et al.'s study); those suffering from extremely severe depression represented 5.67%. The detection rate of anxiety in college students was 52.39% (lower than that of 80.00% among ordinary residents). It is noteworthy that those with extremely severe anxiety accounted for 12.35%. The detection rate of stress in college students was 19.02%; those feeling extremely stressed accounted for 2.23%. Introverted students had higher levels of depression, anxiety, and stress than their extroverted peers, and the differences were statistically significant to varying degrees ($p < 0.01$, $p < 0.05$, and $p < 0.01$, respectively). The research finding indicates that more attention should be paid to the emotional issues of introverted college students.

Internet altruistic behavior is favorable for mental health improvement in college students (Zheng & Wang, 2017). Encouraging internet altruistic behaviors in college students helps promote the positive role of the internet and build a civilized and harmonious online community (Zhao, 2018). There was a gender difference in internet altruistic behavior ($t = 2.175$, $p < 0.05$), with male students exhibiting higher levels of altruism (51.04 ± 15.96) than their female peers (48.84 ± 14.32), which is comparable to Wang's and Chen's (2021) finding in their research into internet altruistic behavior at X University (male students' 52.61 ± 13.57> female students' 49.48 ± 13.13, $p < 0.01$). Closer examination of specific dimensions revealed an extremely significant gender difference in internet guidance ($t = 3.914$, $p < 0.001$) and a very significant one in internet reminding ($t = 3.029$, $p < 0.01$). There was no grade difference in the overall level of internet altruistic

behavior among college students ($p > 0.05$). However, in the dimension of internet guidance, the freshmen did better than the sophomores, which was statistically significant ($t = 2.142$, $p < 0.05$). The difference in internet altruistic behavior between introverted and extroverted college students ($t = -3.979$, $p < 0.001$) was extremely significant. Looking into specific dimensions, we discovered that there were extremely significant differences in internet support ($t = -3.730$, $p < 0.001$) and internet guidance ($t = -4.621$, $p < 0.001$) and very significant differences in internet sharing ($t = -3.172$, $p < 0.01$) and internet reminding ($t = -2.976$, $p < 0.01$) between the two groups.

The Suppressor Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions among College Students

Mentalized affectivity was positively related to internet altruistic behavior in college students. Specifically, there were low degrees of positive relation ($r < 0.4$, $p < 0.01$) between mentalized affectivity and internet support, internet guidance, internet sharing, and internet reminding among them. Identifying Emotions, Processing Emotions, and Autobiographical Memory had low degrees of positive relation with internet altruistic behavior ($r < 0.4$, $p < 0.01$). Expressing emotions was negatively related to internet altruistic behavior ($r = -0.081 < 0.4$, $p < 0.05$). In the meantime, internet altruistic behavior was modestly positively related to depression, anxiety, and stress in college students. Specifically, internet-sharing predicted depression, anxiety, and stress to varying degrees. That may be because the longer the students with high levels of depression or anxiety stay online, the more empathetic they become, and the more eager they are to obtain mental satisfaction by being altruistic to offset negative emotions brought on by setbacks in real-world life. Although they do not expect any rewards for their altruistic behavior online, sharing emotions online and garnering likes, followings, and comments indeed gives them a sense of accomplishment psychologically. The regression analysis results showed that the direct and indirect effects had opposite signs, indicating that internet altruistic behavior had a partial suppressor effect on the relation between mentalized affectivity and negative emotions in college students. There are several reasons for this effect. First, internet altruistic behavior concerns act of helping others online without seeking anything in return. It cannot alleviate the stress perceived by the individual and may temporarily suppress their experience of anxiety and depression; as a result, negative emotions are maintained instead of being eliminated. In the worst case, the internet user may even become more emotionally negative because they do not feel rewarded for helping others. Emotion modulation is a long-term progression, and mentalization is a

process of achievement that inevitably comes with pain (Juliet, 2018). Second, under certain negative emotions, individuals may still behave altruistically by helping others (Kou & Tang, 2004). According to the negative state relief model in prosocial theory, the individual sometimes engages in altruistic behavior because they are in a bad mood for the time being and need to mitigate negative emotions and alleviate inner distress by helping others (Guo, 2005). College students with higher levels of depression and anxiety may tend to sustain their online altruistic behavior to suppress negative feelings. Third, there are cultural differences in mentalized affectivity. In collectivist culture, mentalization is primarily aimed at understanding others, and understanding oneself is secondary (Aival Naveh et al., 2019). A portion of Chinese college students have difficulty processing and expressing their own emotions, thus being more susceptible to internet use addiction. They may have more altruistic acts on the internet than those spending less time online; nevertheless, they reported more negative emotions than the latter.

The Moderating Effect of Internet Altruistic Behavior on the Relation between Mentalized Affectivity and Negative Emotions in College Students

The moderating effect of internet altruistic behavior on the relation between mentalized affectivity and negative emotions in college students was statistically significant ($p < 0.05$). It means that the increase in internet altruistic behavior can enhance the role of mentalized affectivity in regulating negative emotions. In order to investigate which negative emotions among depression, anxiety, and stress could be most effectively modulated, regression analysis was conducted with depression, anxiety, and stress as dependent variables and found that the interaction term of mentalized affectivity and Internet altruistic behavior had a statistically significant effect on anxiety ($p < 0.05$) and stress ($p < 0.05$), but with no significant effect on depression ($p > 0.05$). This can be explained as follows: In virtual social networks, individuals can create ideal images of themselves based on selective self-presentation (Manago et al., 2008). To make an impression online, they may choose to engage in proactive sharing and other altruistic actions, which is conducive to the alleviation of their negative emotions including stress and anxiety. On the other hand, the development of the internet has brought on many issues, increasing pressures on individuals in all facets of life and inducing a growing incidence of depression in society (Holden, 2000). As per Wang et al.'s (2021) study, 33.38% of students at Y University showed symptoms of depression. Mobile phone dependence also leads to an increase in depression levels among

college students (Shi et al, 2022). The incidence of major depressive disorder (MDD) has also undergone significant growth (Cao et al., 2023). Internet bullying can lead to depression in college students through online social anxiety (Zhou & Zhang, 2023). Factors like these may compromise the moderating effect of internet altruistic behavior on mentalized affectivity's modulation of depression in college students.

Conclusions and Prospects of Future Research

This study draws the following conclusions: (i) Mentalized affectivity has positive effects in modulating negative emotions including depression, anxiety, and stress among college students; (ii) There are gender differences in mentalized affectivity; Internet altruistic behavior varies between male and female students and between introverted and extroverted students; the levels of negative emotions differ between students of distinct grades and between introverted and extroverted students; (iii) There is a suppressor effect of internet altruistic behavior on the relation between mentalized affectivity and negative emotions; (iv) Internet altruistic behavior can moderate the effect of mentalized affectivity on anxiety and stress but not depression in college students.

Limitations of the study should be acknowledged. First, it would be better to subgroup college student internet users when examining the correlation between their internet altruistic behavior and negative emotions. For instance, students who are active in the actual world may spend less time online and thus conduct fewer altruistic acts, whereas those having more negative emotional experiences are more likely to seek identification in the virtual world. It is advisable to subdivide the internet user group to investigate the differentials in internet altruistic behavior among them. Second, the currently widely used College Student Internet Altruistic Behavior Scale was developed by Zheng in 2010 under the backdrop that internet use was not frequent among college students and applications were limited due to poor internet connectivity on campus and economic constraints. In this context, internet altruistic behavior among them was sporadic (Zheng, 2010). Amid the advances in economy and internet technology in the past more than 10 years, many new features of internet altruism have emerged. Future research should focus on the specific content of altruism among college students in addition to its motivations and forms (Zhang & Li, 2022).

We are considering undertaking deeper explorations in two areas: (i) Divide college students into two groups according to their scores on depression, anxiety, and stress scales. Students with medium, high, and extremely high levels of depression, anxiety, and stress should be identified as emotionally problematic; the rest can be thought of as normal (Henry &

Crawford, 2005). Research will be focused on mentalized affectivity and internet altruistic behavior of the first group. (ii) Delve into the internet behavior and mentalization of individuals with differential levels of depression, anxiety, and stress. More research on how to alleviate negative emotions in college students through cyber emotion and behavior regulation is warranted to provide new perspectives on mental health education for this group.

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