

# Relationship between Leisure Experience and Aggression: Mediating Effect of Self-esteem

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## Article

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# Abstract

Studies have suggested that leisure has divergent effects on adolescent aggression. Our aim was to further study the relationship between leisure experience and aggression according to the theory of leisure boredom. We investigated the role of leisure experience from four aspects: perceived freedom, perceived intrinsic motivation, perceived extrinsic motivation, and perceived competence. Furthermore, based on the ABCs of rational–emotive theory, we explored the mediating role of self-esteem between leisure experience and aggression. The participants included 660 Chinese teenagers with an average age of 14. Among them, male students accounted for 310 (49.4%) and female students totaled 318 (50.6%). We used three questionnaires to measure leisure experience, self-esteem and aggression. We found that leisure experience was positively correlated with self-esteem and negatively correlated with aggression. Self-esteem was also negatively correlated with aggression. Additionally, self-esteem played a mediating role between leisure experience and aggression. The results suggest that the focus should not only be on the influence of content of youth leisure activities on aggression, but also on experience during leisure, since the latter could have wide-ranging effects by influencing self-esteem levels.

## 1 Introduction

Aggression is a type of anti-social behavior that is performed with the purpose of harming other individuals or groups. It can assume the form of physical, verbal or relational aggression <sup>[1, 2]</sup>. Aggression and violence are major social problems affecting adolescents <sup>[3]</sup>. Adolescents are particularly likely to be perpetrators of aggression or victims of bullying. According to an American study, 23.6% of adolescents in Grades 9–12 reported experiencing at least one incident of physical conflict within a year <sup>[4]</sup>. Globally, interpersonal violence is the fourth leading cause of death among 15-19-year-olds, with a mortality rate of 5.5% <sup>[5]</sup>. Similar to other countries, school bullying is common among adolescents in China. The study demonstrated that self-reported rates of traditional victimization and violence were as high as 66% and 34%, respectively <sup>[6]</sup>.

Any form of aggression can cause long-term negative effects on both the perpetrators and victims, including character disorders, increased risk of dropping out of school, substance abuse, and economic hardship <sup>[7, 8]</sup>. Previous studies also showed that a high tendency of aggression can lead to a series of adverse psychosocial and academic consequences, such as internalizing problem behavior, poor academic performance and low social competence <sup>[9, 10]</sup>. Therefore, it is imperative to determine the tendency of adolescent aggression and analyze the risk factors triggering it.

## Leisure Experience and Aggression

Leisure is important for adolescents' personal development. As teenagers mature, they begin to gain more behavioral and emotional autonomy. Leisure environment is generally more liberal than others, allowing for further self-exploration and experimentation <sup>[11]</sup>. Positive leisure practice and experience can help adolescents develop their potential and improve their subjective well-being <sup>[12]</sup>. Leisure experience refers to the individual's perception of the meaning of leisure activities, and it is a construction with theoretical tradition and practical application <sup>[13]</sup>. Many scholars have acknowledged that the two basic components of perceived leisure experience are perceived freedom and intrinsic motivation <sup>[14]</sup>. Additionally, scholars have determined that individuals are driven by both intrinsic and extrinsic motivations <sup>[15]</sup> building on Neulinger's findings <sup>[16]</sup>. Walker and Wang <sup>[17]</sup> proposed that extrinsic motivations can be categorized into "rewards" (e.g., others see me in a positive light) and "punishments" (e.g., others make me feel ashamed), which relate to interpersonal relationships. According to self-determination theory (SDT), scholars study leisure behavior and experience mainly from three inherent human needs: autonomy (freedom), competence, and relatedness <sup>[18]</sup>. Combining these findings, we studied leisure experience from four aspects: perceived freedom, perceived intrinsic motivation, perceived extrinsic motivation, and perceived competence.

Perceived freedom is a fundamental element of leisure life, understood as being capable of participating in leisure activities without restriction <sup>[19]</sup>. This feeling emphasizes the subjective experience of voluntary behavior. The perception of freedom is not only an important aspect of leisure participation <sup>[20]</sup>, but also influences leisure motivation, leisure satisfaction and thereby life satisfaction <sup>[21, 22]</sup>. Primarily, whether adolescents choose positive or negative leisure activities, it is based on the premise of having freedom of choice. Freedom of choice is one of the defining elements of leisure <sup>[23]</sup>. Moreover, people naturally desire to do things

freely. The study has shown that offering choices can enhance intrinsic motivation, and that a high level of perceived freedom can lead to positive leisure experience <sup>[24]</sup>.

Perceived motivation affects overall leisure satisfaction by influencing leisure participation and benefits <sup>[25]</sup>. The source of motivation can be classified into two types: intrinsic and extrinsic. In general, intrinsic motivation fits better with the definition of leisure motivation because we understand leisure as an activity we want to perform from our hearts. However, extrinsic motivation also plays a part in leisure participation and experience. Extrinsic motivation refers to the external factors that control an individual's behavior, such as the promise of reward or the threat of punishment <sup>[26]</sup>. The authors further proposed that extrinsic motivation contains minimal self-determination and lacks energy, direction, and persistence <sup>[27]</sup>. Therefore, extrinsic motivation is in contrast to intrinsic motivation. Generally, people are likely to engage in leisure activities more frequently and consistently based on intrinsic rather than extrinsic motivation <sup>[28]</sup>. Kim and his colleagues <sup>[29]</sup> found that intrinsic motivation was the strongest predictor of leisure satisfaction. People are sometimes enticed by extrinsic rewards (material or non-material) to participate in certain leisure activities <sup>[30]</sup>. However, it has been found that people who engaged in leisure activities for motivations with lower levels of self-determination had lower subjective well-being, lower positive feelings, and higher negative feelings <sup>[31]</sup>. For teenagers, leisure life is the best opportunity to make spontaneous choices from intrinsic motivation.

In addition to perceived freedom and perceived motivation, researchers also focus on the role of perceived competence. Based on the perception that leisure is an emotional experience and state, the "flow" theory helps in understanding the importance of leisure competence in leisure experience <sup>[32]</sup>. When individuals apply all their energies into a certain leisure activity and pays no attention to anything else, it is called entering "the best experience" <sup>[33, 34]</sup>. People experience optimal "flow" only when their perception of competence and challenges are balanced <sup>[35]</sup>. Caldwell and Witt <sup>[23]</sup> believe that leisure is an outstanding context for adolescents to develop perceptions of competence. For the reason that even if they do not excel in academics, they may find a leisure activity that they are good at.

The type, time, experience and medium of leisure activities are some of primary factors that affect the healthy development of adolescents. Some suggested that excessive television viewing and computer games in childhood were associated with an increase in anti-social behavior in early adulthood <sup>[36, 37]</sup>. Some others added that it was the violence in the media that triggered aggressive thoughts and feelings <sup>[38, 39]</sup>. Nevertheless, the positive relationship between aggression and watching violent television disappeared when the initial level of aggression and intelligence was corrected <sup>[40]</sup>. In some cases, physical contact sports (such as football) encouraged physical aggression and violence <sup>[41]</sup>. However, there are also evidences that violence was not significantly associated with sport participation <sup>[42, 43]</sup>. The aforementioned literature suggests that the content and time of leisure activities does not necessarily imply aggression in adolescents. Since leisure is a complex human need that related to personal tastes, skills and resources, individual heterogeneity should be taken into account <sup>[44]</sup>. People's experience in leisure can be extremely different. In a sense, leisure is fulfilled through the consumption and production of leisure experiences <sup>[44]</sup>. Previous studies have shown a link between leisure satisfaction and aggressive behavior <sup>[45, 46]</sup>. Nevertheless, the role of leisure experience requires in-depth exploration. Therefore, we attempted to study the correlation between leisure and aggression from the perspective of perceived freedom, intrinsic motivation, extrinsic motivation, and competence.

According to the leisure boredom theory, different leisure feelings have diverse influences on individual emotional experience and behavior mode of life <sup>[47]</sup>. Higher levels of leisure experience imply higher levels of freedom, competence and pleasure <sup>[48]</sup>. Positive leisure experience helps cultivate higher levels of mental health and promote the physical, cognitive, emotional, and behavioral development of individuals <sup>[49]</sup>. These can reduce aggression <sup>[50]</sup>. Conversely, negative leisure experience may hinder the healthy development of individuals <sup>[51, 52]</sup>. The study has found that participating in community leisure education programs can effectively improve leisure ability and satisfaction of children from low-income families, improve their emotional control, enhance their self-understanding and provide them positive social interaction <sup>[53]</sup>. It seems that even inferior individuals can gain long-term development and self-realization in quality leisure.

We can also discuss this relationship from each dimension of leisure experience. From the frustration-aggression theory, we know that frustration can lead to aggression. One of the conditions to reduce frustration is the perception of freedom <sup>[54]</sup>. Mannell and Iso-Ahola <sup>[55]</sup> believed that freedom, as compensation for the messy life, is the driving force to eradicate negative emotions and to imbibe

positive ones. Specifically, when teenagers believe that they have control over leisure time in their daily lives, their anger levels will reduce, making them less likely to attack or hurt others<sup>[56]</sup>. From the perspective of intrinsic motivation, individuals pursue the satisfaction of psychological needs in leisure. This process can help people relieve pressure<sup>[57]</sup>. Conversely, individuals under the control of extrinsic motivation may develop anger due to lack of freedom and competence<sup>[58]</sup>. In addition, engaging in leisure activities also requires skills. Based on the theoretical framework of SDT, frustration of perception competence leads to easier acquisition of aggressive thoughts, higher levels of aggressive tendency, and the likelihood of aggressive behavior<sup>[59]</sup>. Moreover, leisure is the social environment for adolescents. Lack of specific leisure skills may lead to poor integration with peer groups and ultimately loss of social skills<sup>[60]</sup>, which are not conducive to promoting pro-social behavior.

## The Mediating Role of Self-esteem

Cognitive-behavioral therapy emphasizes the impact of changes in people's cognition on behavior<sup>[61]</sup>. Specifically, the ABCs of rational-emotive theory demonstrate that it is not the events and scenes which people experience that directly lead to the generation of emotions and behavior, but people's cognition and self-evaluation of events<sup>[62]</sup>. Self-esteem is a self-evaluation that affects an individual's cognition of events<sup>[63]</sup>.

Self-esteem is defined as a cognitive schema (representation of the self) that is based on experience and influences how information is subsequently processed<sup>[64]</sup>. There is a robust relationship between lower self-esteem and externalizing problems such as aggression<sup>[65]</sup>. Low self-esteem has been found to be associated with physical aggression<sup>[66]</sup>. A meta-analytical study of Chinese students found a moderate negative correlation between self-esteem and aggression<sup>[67]</sup>. Self-esteem is even related to the recipients of aggressive behavior. Korean adolescents of high self-esteem were characterized by a high level of reactivity and defensiveness in aggressive behavior<sup>[68]</sup>.

Meanwhile, leisure experience is one of the reasons for the changes in self-esteem. For example, higher self-esteem was found to be associated with leisure activities that are significant for the individual<sup>[69]</sup>. Sedentary activities or activities that cause stress were associated with loss of self-esteem<sup>[70]</sup>. Leisure participants may withdraw from activities and even develop a generalized state of learned helplessness if they continue to experience a lack of control and pleasure in activities<sup>[71]</sup>. Leisure satisfaction has been shown to have a positive impact on self-esteem<sup>[72]</sup>. In addition, cognitive-behavioral therapy is now more focused on the role of emotion in changing cognition<sup>[73]</sup>. Exceptional leisure experience is not only a cognitive source of self-esteem, but also an emotional source. Leisure experience plays an important role in creating positive emotions and building resources<sup>[74]</sup>.

Therefore, negative leisure experience may lead to aggression by inducing a generalized sense of incompetence and low self-esteem. For young people, the benefits of leisure promote the development of pro-social skills, self-efficacy and responsibility<sup>[75]</sup>. Similarly, leisure satisfaction contributed positively to self-esteem, life satisfaction and psychological well-being<sup>[76, 77]</sup>.

Based on the related findings of leisure experience, aggression and self-esteem, this study proposed the following hypotheses:

Hypothesis 1: Adolescents' leisure experience is negatively correlated with aggression.

Hypothesis 2: Self-esteem plays a mediating role between leisure experience and aggression.

## 2 Methods

### 2.1 Participants and Design

All of our studies were conducted in 2021. The participants included Chinese middle school students with an average age of 14. Overall, 660 paper questionnaires were distributed to Grades 7–12. Grades 7–9 fall under junior high school and Grades 9–12 fall under high school. We collected 628 questionnaires after eliminating uncollected and invalid questionnaires (blank, too many missing values and a large number of repeated options). The effective recovery rate was 95.15%. Among them, male students accounted for 310 (49.4%) and female students totaled 318 (50.6%). In terms of grades, 300 students (47.8%) were in Grades 7–9 and 328 (52.2%) were in Grades 9–12.

The experimenters were trained before the test to ensure the quality of the questionnaires. We used class time to conduct surveys to ensure the efficiency of answering questionnaires. The experimenters first read the instructions and the principle of confidentiality, and subsequently organized students to answer the questionnaires. We collected the questionnaires on the spot and limited the answer time to 20 minutes.

## 2.2 Measures

### 2.2.1 Leisure Experience

This study used the leisure experience scale developed by Hairong Yu <sup>[78]</sup>. The scale is classified into four sections: perceived freedom, perceived intrinsic motivation, perceived extrinsic motivation and perceived competence. Among them, perceived freedom includes five questions such as "I can freely spend my leisure time." Perceived intrinsic motivation includes eight questions such as "I find a lot of fun in leisure activities." Perceived extrinsic motivation includes four questions such as "I engage in leisure activities to receive rewards from my parents." Perceived competence includes four questions such as "I think leisure activities can exercise some of my abilities." In this study, the Cronbach's  $\alpha$  coefficient of the scale was 0.87, and the Cronbach's  $\alpha$  coefficients of the four subscales were 0.81, 0.90, 0.82, and 0.83, respectively. Besides,  $\chi^2/df = 3.23$ , CFI = 0.94, TLI = 0.93, GFI = 0.92, NFI = 0.91, AGFI = 0.89, RMSEA = 0.06. It showed that the scale met the requirements of psychometrics. Using the Likert 5-point scoring method, the participants were asked to choose from 1 (completely inconsistent) to 5 (completely consistent). When calculating the total score, the perceived extrinsic motivation dimension was scored in reverse. A higher score means a higher level of leisure experience.

### 2.2.2 Aggression

This study adopted the Chinese version of the Buss–Perry aggression questionnaire <sup>[79]</sup>. It was revised based on Buss and Perry <sup>[80]</sup>. The scale consists of 20 items, which are categorized into four dimensions of physical aggression, anger, hostility, and substitution aggression. The scale uses a five-level rating system. The participants were asked to choose from 1 (Not at all true) to 5 (Very true), with a higher score indicating a higher tendency of aggressive behavior. In this study, the Cronbach's  $\alpha$  coefficient of the total scale was 0.88, and the Cronbach's  $\alpha$  coefficient of the four dimensions were 0.77, 0.85, 0.81, and 0.79, respectively.

### 2.2.3 Self-esteem

We used the self-esteem scale (SES) in this study <sup>[81]</sup>. The scale consists of 10 items, five of which are scored backwards. Using a four-level rating system, the participants were asked to choose from 1 (completely inconsistent) to 4 (completely consistent). A higher score indicates a higher level of self-esteem. In this study, the Cronbach's  $\alpha$  coefficient of the scale was 0.88.

## 2.3 Data Analysis

We used SPSS 21.0 and AMOS 24.0 to analyze the data. We first used SPSS for common method deviation test, descriptive analysis, Pearson correlation analysis and linear regression analysis. We tested mediating effect in Amos using 5000 bootstrap samples and the 95% bias-corrected confidence interval (95% CI). The level of statistical significance was set as  $p < 0.05$ .

## 3 Results

### 3.1 Common Method Biases

We adopted the Harman single-factor analysis method to conduct factor analysis on all items. The results showed that there were 10 factors with characteristic values greater than 1. The variance explanation percentage of the first common factor was 24.24%, lower than the critical value of 40%. Therefore, there was no serious common method deviation.

### 3.2 Descriptive Statistics and Correlations

The means ( $M$ ) and standard deviations ( $SD$ ) for all variables are displayed in Table 1. In addition, there was a positive correlation between leisure experience and self-esteem ( $r = 0.48$ ,  $p < 0.01$ ), and a negative correlation between leisure experience and aggression ( $r = -0.39$ ,  $p < 0.01$ ). Self-esteem was negatively correlated with aggression ( $r = -0.71$ ,  $p < 0.01$ ). Only extrinsic motivation was not significantly correlated with substitution aggression. The results can also be seen in Table 1.

Table 1  
Descriptive statistics and correlations

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1 Perceived freedom	3.98	0.83	1										
2 Perceived intrinsic motivation	3.93	0.86	0.53**	1									
3 Perceived extrinsic motivation	1.92	0.83	-0.08*	-0.08*	1								
4 Perceived competence	4.41	0.63	0.50**	0.50**	0.07	1							
5 Leisure experience	4.16	0.51	0.75**	0.83**	-0.43**	0.68**	1						
6 Self-esteem	3.56	0.53	0.42**	0.39**	-0.10*	0.41**	0.48**	1					
7 Physical aggression	1.12	0.24	-0.24**	-0.29**	0.16**	-0.19**	-0.33**	-0.41**	1				
8 Anger	2.32	0.97	-0.17**	-0.14**	0.23**	-0.21**	-0.27**	-0.53**	0.26**	1			
9 Hostility	2.28	0.86	-0.22**	-0.20**	0.11**	-0.20**	-0.27**	-0.54**	0.27**	0.50**	1		
10 Substitution aggression	1.98	0.86	-0.27**	-0.31**	0.07	-0.34**	-0.36**	-0.63**	0.34**	0.46**	0.52**	1	
11 Aggression	1.87	0.56	-0.28**	-0.29**	0.18**	-0.31**	-0.39**	-0.71**	0.47**	0.82**	0.78**	0.81**	1
Note: * $p < 0.05$ , ** $p < 0.01$ . Leisure experience is the sum of perceived freedom, perceived intrinsic motivation, perceived extrinsic motivation and perceived competence. Aggression is the sum of physical aggression, anger, hostility and substitution aggression.													

### 3.3 Linear Regression Analysis

To further explore the relationship between leisure experience and aggression, we performed a linear regression test. We used grade and gender as control variables, four dimensions of leisure experience as independent variables, and aggression as dependent variable. The linear regression analysis was performed using the "enter" method. The results can be seen in Table 2. After controlling for all other leisure experiences, perceived extrinsic motivation ( $\beta = 0.17$ ,  $p < 0.001$ ) and aggression were positively correlated. While perceived freedom ( $\beta = -0.11$ ,  $p = 0.021$ ), perceived intrinsic motivation ( $\beta = -0.11$ ,  $p = 0.022$ ) and perceived competence ( $\beta = -0.22$ ,  $p < 0.001$ ) were negatively correlated with aggression.

Table 2  
Regression analysis for effects of leisure experience on aggression

Variables	$\beta$	$F$	$R^2$	$\Delta R^2$
Step 1		4.67**	0.01	
Grade	-0.10*			
Gender	0.08			
Step 2		21.60***	0.17	0.16
Grade	-0.09*			
Gender	0.06			
Perceived freedom	-0.11*			
Perceived intrinsic motivation	-0.11*			
Perceived extrinsic motivation	0.17***			
Perceived competence	-0.22***			
Note: * $p < 0.05$ , ** $p < 0.01$ , *** $p < 0.001$ .				

### 3.4 The Mediating Effect of Self-esteem on Leisure Experience and Aggression

We considered leisure experience as the independent variable, self-esteem as the mediating variable, and aggression as the dependent variable to construct a mediating effect model in AMOS. The results are shown in Fig. 1.

The results of the mediating effect test showed that  $\chi^2/df = 4.90$ , CFI = 0.94, TLI = 0.92, GFI = 0.96, NFI = 0.93, AGFI = 0.93, RMSEA = 0.08. The model fit well. According to Table 3, the standardized coefficient of the path from leisure experience to self-esteem was 0.79 ( $p < 0.001$ ). The standardized coefficient of the path from self-esteem to aggression was -0.36 ( $p < 0.001$ ), while the standardized coefficient of the path from leisure experience to aggression was -0.02 ( $p = 0.42$ ).

Table 3  
Path coefficients for leisure experience on aggression via self-esteem

Path	Estimate	S.E.	C.R.	$p$
Self-esteem $\leftarrow$ Leisure experience	0.79	0.07	12.04	< 0.001
Aggression $\leftarrow$ Self-esteem	-0.36	0.04	-10.20	< 0.001
Aggression $\leftarrow$ Leisure experience	-0.02	0.03	-0.81	0.42

As demonstrated in Table 4, in this model, the direct effect value was -0.02 (95%CI [-0.096, 0.039]), the indirect effect value was -0.29 (95%CI [-0.382, -0.206]); and the total effect value was -0.31 (95%CI [-0.427, -0.209]). Among them, the proportion of the mediating effect of self-esteem was -0.29/-0.31 = 92.3%.

Table 4  
Bootstrap analysis for effects of leisure experience on aggression via self-esteem

	Estimate	95%CI		<i>p</i>
		lower	upper	
direct effect	-0.02	-0.096	0.039	0.47
indirect effect	-0.29	-0.382	-0.206	< 0.001
total effect	-0.31	-0.427	-0.209	< 0.001

## 4 Discussion

### 4.1 Leisure Experience and Aggression

Consistent with previous research <sup>[46]</sup>, we found that leisure experience was negatively correlated with aggression. To our knowledge, this is the first time that a variety of integrated leisure experiences have been linked to aggression. In addition, we especially examined the role of perceived external motivation and perceived competence, which were rarely mentioned in previous studies. Leisure is the development space of children and adolescents, and our research is devoted to making leisure more conducive to healthy growth. Overall, great leisure experience is often associated with many positive outcomes, such as a high level of social support and academic self-efficacy and low level of neuroticism. These reduce the likelihood of internalizing and externalizing behavioral problems <sup>[60]</sup>.

Specifically, the relationship between leisure experience and aggression can be analyzed from four dimensions. First, the results of the perceived freedom dimension showed that whether teenagers perceive the right of free choices had a significant impact on the overall aggression. According to SDT, feelings of aggression are considered to be typical maladaptive outcomes of both lack of autonomous satisfaction and relatedness satisfaction <sup>[82]</sup>. When an individual's choices are limited, it severely interferes with the ability to enjoy and engage in activities <sup>[83]</sup>. Over the years, a positive correlation between freedom satisfaction and energetic and pleasure has been steadily supported, while a negative correlation between freedom and negative emotions such as sadness and depression has also been demonstrated <sup>[84]</sup>. In a sense, the reason why people experience boredom or even anger when they watch television or videos is that their self-chosen needs are not really satisfied. They actually experience lower satisfaction than participants in real-world leisure activities <sup>[85]</sup>. In a previous study, the classroom environment in which students' sense of autonomy was frustrated encouraged bullying and interpersonal aggression <sup>[86]</sup>. Considering the dynamic and subjective characteristics of leisure experience, whether teenagers can actively and freely choose leisure activities could largely determine their cognitive status (hostility) and emotional status (anger).

Secondly, the results of two perceived motivation dimensions showed that intrinsic motivation was negatively correlated with aggression, while extrinsic motivation was positively correlated with aggression. This suggested that adolescents may gain more benefits in leisure activities from subjective well-being rather than external push. For them, even if they participate in an activity under the influence of external pressure, the activity may lose the meaning and benefits of leisure. According to the theory of leisure boredom, when people perceive that they can not achieve satisfaction in the process of leisure (the sense of pleasure and intrinsic motivation at low level), they often have negative emotional cognition, poor social adaptation, and problem behaviors <sup>[47]</sup>. Similarly, people choose video games mostly because they provide intrinsic satisfaction rather than external rewards such as money <sup>[87]</sup>. Intrinsic motivation increases people's interest and enjoyment of an activity, thereby reducing individuals' feelings of danger, boredom, and disgust <sup>[88]</sup>. High levels of self-determined friendship motivation can predict pro-social behavior, while external friendship motivation was positively correlated with control and revenge goals in adolescents <sup>[89]</sup>. People with a low level of self-determination motivation usually feel obligated and anxious <sup>[90]</sup>. It not only damages their leisure experience, but also makes them prone to hostility and aggression.

Moreover, the results of perceived competence dimension showed that the sense of competence acquired in leisure was negatively correlated with aggression. In the learned helplessness theory, game experiences that block the sense of competence can make the



players feel bad about themselves and lose motivation <sup>[71]</sup>. Caldwell <sup>[11]</sup> held the view that developing skills and competence in leisure activities is important for teenagers' future successful life and can stimulate creativity, initiative, and curiosity. Another study found that frustration with competence can lead to aggressive tendency and behavior <sup>[59]</sup>. Iso-Ahola <sup>[91]</sup> also pointed out that people with multiple leisure skills are more effective in coping with threats to leisure freedom. Moreover, getting into the "flow" statue requires considerable ability and a certain amount of effort. This type of investment can really benefit leisure participants. As studies have found, complex games can provide opportunities for self-discovery, psychological satisfaction and reduction of stress <sup>[92]</sup>. Stanton-Chapman and Chapman <sup>[93]</sup> found that when difficulty and ability were balanced, the experience of "flow" played a vital role in preventing emotional and behavioral disorder. In addition, research has shown that being able to focus on the present leisure situation was negatively associated with hostility, anger, and verbal aggression <sup>[94]</sup>.

## 4.2 The Mediating Role of Self-esteem

There were many studies confirming the mediating factors between leisure and aggression, such as self-transcendence and aggression cognition <sup>[95]</sup>. However, limited efforts have been made to explore the mediating factors between leisure experience and aggression. We have faith that leisure experiences have a wide range of effects on individuals' overall life, not just within the leisure field. This study provided evidence that self-esteem played a mediating role in the relationship between leisure experience and aggression. We found a positive correlation between adolescents' leisure experience and self-esteem. Furthermore, studies have found that a high level of intrinsic motivation in leisure activities is closely related to a high level of creativity, vitality, and self-esteem <sup>[26]</sup>. Moreover, the experience of "learned optimism" (successfully demonstrating one's competence in leisure activities, feeling a sufficient sense of control and freedom of choice) is an effective way to improve self-esteem and self-efficacy <sup>[77]</sup>. Conversely, self-esteem was negatively correlated with aggression in adolescents. Morsünbül <sup>[96]</sup> found that self-esteem significantly predicted the level of aggression during adolescence and adulthood. During adolescence, improving self-esteem may help prevent aggressive behavior <sup>[97]</sup>.

In essence, when people are unable to find satisfaction during leisure time, their sense of competence and self-value may decrease. According to the ABCs of rational–emotive theory, this outcome is negatively associated with self-esteem and ultimately leads to aggressive tendencies. Conversely, adolescents' excellent affect can positively predict self-esteem and life satisfaction in adulthood <sup>[98]</sup>. For adolescents, leisure, as a background of relative freedom and less parental control, provides opportunities for the development of important tasks. They may reap huge benefits from meaningful involvement in leisure. It has been found that leisure satisfaction could positively influence psychological well-being, including perceived stress, loneliness, and self-esteem <sup>[99]</sup>. Our research supported that it is those high-satisfaction leisure activities that enhance personal value through positive interaction with others, not all social activities, that reduce stress in life and increase the level of self-efficacy and social adaptability <sup>[100, 101]</sup>.

## 5 Conclusions And Limitations

Our study extended the link between leisure experience and aggression. First, few scholars have studied perceived competence and extrinsic motivation in leisure experience. We found that they were also significantly associated with aggression. In addition, we found that leisure experience had an indirect effect on aggression through self-esteem based on the ABCs of rational–emotive theory. These findings could provide practical basis and theoretical support for cognitive–behavioral therapy. It suggested that we should not only focus on specific leisure activities, and view some certain leisure activities as a risk factor for aggression, but rather emphasize the leisure experience.

However, we rarely considered gender differences in our study, but this is just as important. As for different genders, their aggression pattern may differ. Therefore, this aspect can be added in future research. Furthermore, self-reported aggression among adolescents may be concealed, and we need to consider how to make the data more realistic.

## Declarations

## Ethical Statement

Our research was based on the ethical standards in the WMA Declaration in Helsinki and was approved by the research ethics committee of Qingdao University, China. We informed all participants of the study before the test. The research was conducted after

the consent of the participants. In addition, our data was anonymized to ensure the privacy of all participants.

## Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Author Contributions

Designed the survey: XX XW HY. Performed the survey: HY XW. Analyzed the data: XW HY. Contributed materials/analysis tools: XX HY. Wrote the paper: XW HY XX.

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## Data Availability Statement

The data that support the findings of this study are openly available in "OSF" at <https://osf.io/fdq4h/>. Identifier: DOI 10.17605/OSF.IO/FDQ4H.

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## Figures

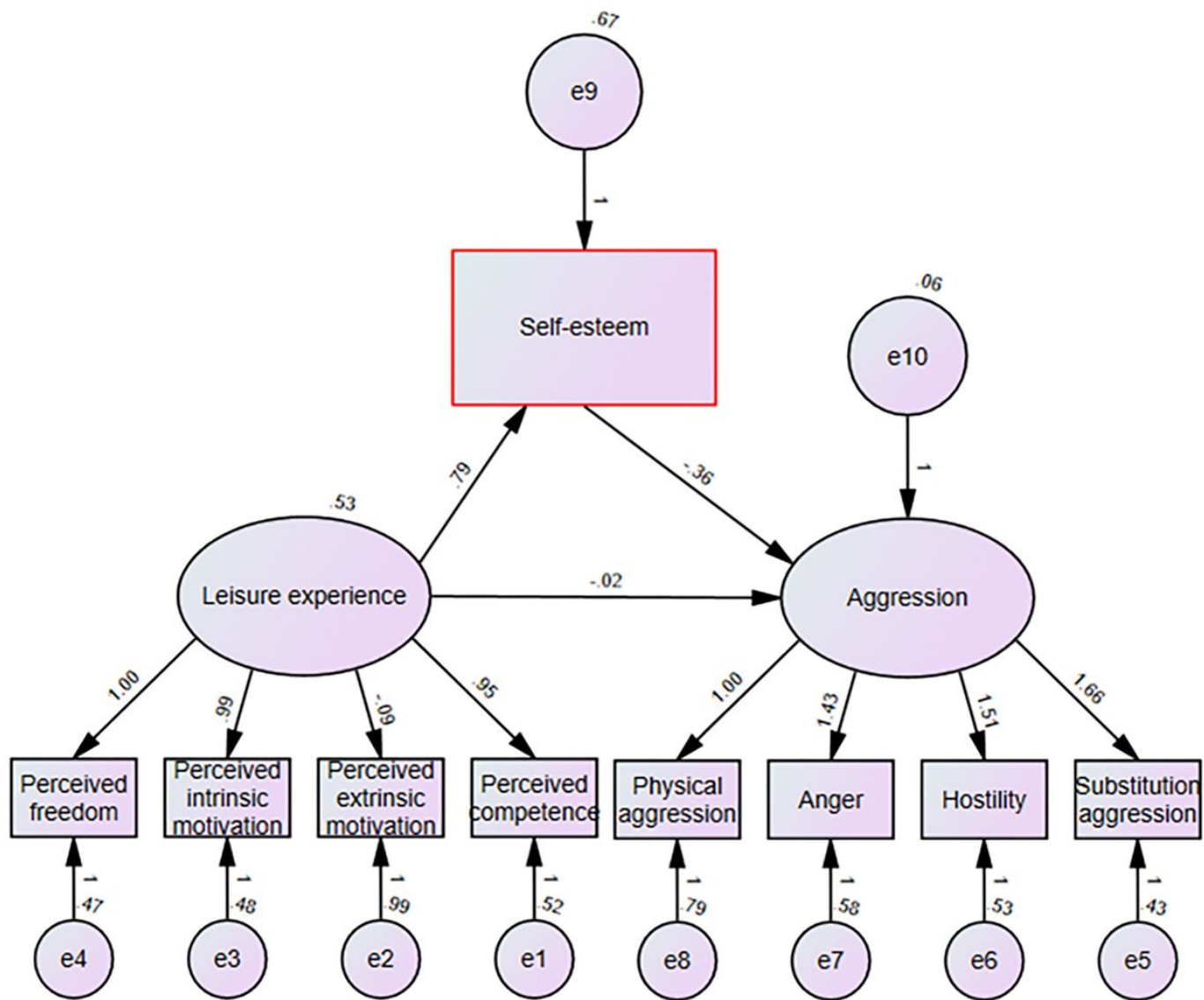


Figure 1

The mediation model of leisure experience on aggression