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# RELATIONSHIP BETWEEN ACTIVE PERSONALITY AND PARTICIPATION IN ICE AND SNOW SPORTS

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## Abstract

*With the drawing near of 2022 Winter Olympics, more and more Chinese are getting involved in ice and snow sports. This paper aims to disclose the effects of active personality on the participation in ice and snow sports. Firstly, four dimensions, namely, trust, participation, heredity and comprehension, were extracted from the literature to describe active personality. Next, a questionnaire survey was conducted on college students in two universities of Zhangjiakou, China, using the Proactive Personality Scale (Simplified Edition) and the Perceived Social Support Scale. Based on the survey results, the authors analyzed the current status of ice and snow sports among college students, and discussed the relationships between active personality, social support and the participation in ice and snow sports. The results show that both active personality and social support promote the participation in ice and snow sports among college students; the local government should increase the publicity on ice and snow sports to encourage mass participation. The research results provide new insights into the promotion of ice and snow sports in China.*

**Key words:** Active Personality, Ice and Snow Sports, Social Support, Regression Analysis.

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## INTRODUCTION

China's modern ice and snow movement began at the end of the 19th century. In 1980, China participated in the 13th Winter Olympics held in Lake Placid, New York, USA, and started a history of zero medals until the 2010 Vancouver Winter Olympics. At this time, Chinese delegation achieved a historic breakthrough in two sports items on the ice and snow. Modern ice and snow sports have developed in China for nearly half a century, and achieved good results in some sports items. Most of the outstanding athletes are from Heilongjiang. In 2015, under the leadership of General Secretary Xi Jinping, China successfully won the right to host the 2022 Winter Olympics with the joint efforts of the whole people. Beijing became the only city that has held both the summer and winter Olympic

Games. This has ushered in unprecedented opportunities for China's development in different fields such as politics, economic, cultural, environmental, educational, and sports.

Many researchers at home and abroad have conducted in-depth research on the participation of ice and snow sports. Dickson, Trathen, Waddington et al. (2016) conducted a survey on collected data and found that speeds attained normally exceed the testing rating for which helmets are designed. McIntosh, Fortington, Patton, et al. (2017) used the National Coronary Information System (NCIS) for case series analysis in order to understand the causes and contributing factors of death in Australia's ice and snow sports. Bailly, Afquir, Laporte et al. (2017) interviewed 295 skiers and 71 snowboarders to determine the typical mechanism leading to TBI, and identify injury mechanisms and head impact conditions. Garner, Haegeli, & Haider (2016) conducted a repetitive measurement experiment on 27 skiers and snowboarders to verify whether the use of

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head-up display (HUD) goggles would increase the risk of ski resorts with the increase in the speed of skiing and snowboarding. Weber, Horst, Lefering et al. (2016) analyzed demographic data from a prospective trauma database based on the international population, comparing post-traumatic demographics, injury patterns, and outcomes between alpine skiing, snowboarding, and sled winter sports. Kelly, Gastin, Dwyer et al. (2016) examined the heat acclimation of short-duration (27 minutes), high-intensity interval training (HIIT) in nine days for Australian ice and snow athletes, by measuring heart rate (HR), rating of perceived exertion (RPE), thermal comfort, and core and skin temperature. Hébert-Losier, Zinner, Platt (2017) determined factors related to the performance of elite sprint cross-country skiers through systematic review of the scientific literatures such as original research articles involving physiology, biomechanics, anthropometry or neuromuscular features.

However, the results of the researches above are not satisfactory. The fundamental reason is that they have great limitations in the methods and choices. So, the research on active personality has begun to become widespread.

In order to comprehensively study the advantages of active personality, there have also been many researches in different fields. Kim, Fernandez, & Terrier (2017) examined the nomological network of active procrastination in comparison with passive procrastination, studied the effects of the five-factor model, aimed at understanding which personality traits predict academic procrastination, and finally tested the effects of passive and proactive procrastination on academic performance. Some scholars believe that employee personality plays a vital role in determining how individuals respond to workplace ostracism. Xie & Yan (2016) studies the effect of proactive personality and two major types of coping strategies - initiative and avoidance - on workplace ostracism and organizational citizenship behavior. Liu, Pan, Luo et al. (2017) used the new active procrastination scale, the creative self-short scale and the Runco Conceptual Behavioral Scale to collect data and explore the mediating role of creative self-efficacy (CSE) in the relationship between proactive procrastination and creative ideation. Perroud, Hasler, Golay et al. (2016) compared the profiles of the Temperament and Character Inventory (TCI) that assesses personality dimensions in 119 adults

ADHD and 403 controls, and ANCOVA was used to examine differences between groups in temperament and personality ((controls vs. ADHD and ADHD inattentive type vs. ADHD combined + hyperactive/impulsive types). Jacob, Grosslesch, Reichert et al., (2014) selected 910 patients (452 females, 458 males) affected with persistent adult ADHD and made assessment for comorbid PDs with the Structured Clinical Interview of DSM-IV and for personality traits with the revised NEO personality inventory, and the Tridimensional Personality Questionnaire. The results showed that the most common PDs were narcissistic PD in males and histrionic PD in females. Contractor, A., Armour, Shea et al. (2016) used a nationally representative sample of 1266 traumatic-exposed military veterans and evaluated typologies of DSM-5 PTSD symptoms and personality traits in regard to coping styles and treatment preferences. Vollmann, Pukrop, & Salewski (2016) investigated the effects and interplay of active personality (i.e. personality and coping) on life satisfaction in patients with rheumatic diseases; in particular, it's tested whether the coping mediates the impact of personality on life satisfaction.

This paper aims to study the effect of active personality on the participation of ice and snow sports. To this end, it firstly compiled the Questionnaire about College Student Ice and Snow Sports Participation, which extracted four factors of active personality based on previous literatures: trust, participation, heredity, and comprehension, as the four dimensions of the initial questionnaire. According to the statistical analysis of the initial questionnaire results, a formal questionnaire was formed, using the Proactive personality Scale (Simplified Edition) and the Perceived Social Support Scale. Then, a sample survey was conducted among college students of University A and B. Next, it analyzes the status quo of college students' participation in ice and snow sports; the relationship between college students' active personality, social support and participation in ice and snow sports.

## METHOD

### Research methods

#### *Literature method*

Through the Internet and library digital resources, the full-text database of Chinese

journal, etc., more than 100 articles related to the popular ice and snow sports were reviewed, which provided a substantial and authoritative theoretical basis for this research. After reading the relevant documents carefully, the author learned about the research status of the popular ice and snow sports and the related countermeasures, such as the significance and development status of the popular ice and snow sports in the winter Olympics background etc.

#### *Expert interview*

The author also attempted to fully understand the development of public ice and snow sports after the successful bid for the Winter Olympics in Zhangjiakou City, such as the participation, the layout and construction of the national fitness venues, the capital investment status of relevant departments, and the management and regulation construction of the Municipal Sports Bureau is responsible etc. The leaders of the Volkswagen Ice and Snow Sports held a discussion and obtained more realistic and detailed information. Some citizens who ever participated in the winter snow sports were interviewed, helping to understand the participation status of the public ice and snow sports in Zhangjiakou City.

#### *Questionnaire method*

Zhangjiakou City consists of 6 districts and 10 counties currently, with a population of more than 4.6 million. Based on the relevant literature and in-depth interviews with the heads of the Municipal Sports Bureau, the survey content was determined, and the questionnaires for sports crowd and sports instructors were formulated respectively after the successful bid for the Winter Olympics in Zhangjiakou City and were randomly distributed.

### **Active personality**

#### *Definition of active personality*

Bateman and Crant found the active component contained in the research on organizational behavior, and proposed the concept of active personality. Active personality refers to the tendency of individuals to influence the stability of the environment by their own active behavior. The individuals with active personality are different from those with inactive personality: the former is less constrained by environmental factors, so they

can identify opportunities that are good for themselves, and take a series of active behaviors until they can make meaningful changes; they're also accustomed to actively changing the environment; they are willing to communicate tasks in the team, good at discovering, dealing with problems, and taking the initiative to influence the environment of life. Whereas, the latter exhibits the opposite characteristics, that is, they are accustomed to passively responding to the environment, being bound by environmental factors, passively adapting to the environment, or even being changed by the environment; they are unable to identify opportunities in the environment that are beneficial to them, not to mention taking the opportunity to make some changes.

#### *Measurement of active personality*

Bateman and Crant compiled the Proactive Personality Scale (PPS), which included exploratory factors in 27 items and was also a single dimension scale consisting of 17 items. The scale's reliability and validity are in line with psychological standards. However, in many studies, most of their experimenters used a simplified version of PPS, such as 10-item scale, 6-item scale, 5-item scale, and 4-item scale. Through cross-cultural testing in Europe and America, it's found that among these versions, only the 10-item scale and 6-item scale is acceptable in reliability. However, domestic scholars have found that when these two versions are subjected to the adaptive test, the results are all below acceptable levels. Therefore, considering the different groups tested, the researchers revised the simplified version of PPS, including the student version of the 11 items, the employee version of the 10 items, and the secondary student version of the 9 items.

### **Perceived social support**

#### *Definition and classification of social support*

In the early 1970s, social support was first proposed as a terminology in the psychiatric literature. To explore the relationship between social support and physical and mental health, researchers have conducted extensive research using sociological and medical measurement methods. At the early stage of the study, the content of social support was mainly discussed from two perspectives: from a functional point of view, social support refers to the sum of

spiritual and material support that individuals receive from their own social relationships; from an operational point of view, it refers to the quantitative representation of the social relationships that individuals have.

Previously, researchers mainly classified social support in terms of its nature or the source into two categories: 1) objective support, that is, the actual visible social support, and it is not the subjective feeling of the individual, but an objective reality, including social networks, group relations, material support, and social relations; subjective support, that is, the emotional support that individuals experience subjectively, including the respect that individuals feel in social life, understanding of experience and satisfaction. Many researchers believe that objective social support may not be as predictive as subjective feelings. This is because the subjective support felt by individuals is not objective reality, but what individuals can feel is psychological reality, and such reality affects people's behavior and development.

#### *Perceived social support*

In 1986, Zimet et al. extracted the social support perceived by the individual as an independent research object. Barrera et al. believe that of the perceived social support is the individual's expectation and estimation of support from the surrounding environment, and is the belief in the support that can be obtained. Compared with objective support, the perceived social support is an individual's understanding and feeling of support for surrounding social networks, and it has a highly abstract feature. Although this kind of support is not realistic, it is the psychological reality reflected by the individual's inner feelings, which can affect the individual's behavior and development. Perceived social support is more likely than objective support to help understanding and predicting the individual's mental health, and it is easier to embody the gaining function of individual mental health.

#### *Measurement of perceived social support*

Currently, Zimet's "Perceived Social Support Scale" (PSSS) has been applied to many studies on perceived social support. This scale is a self-assessment scale focusing on assessing individual self-experience and Self-perception. It can measure the degree of support from the

family, friends and others perceived by the individual, and also reflect the total social support perceived by the individual. The PSSS contains 12 items, each of which adopts a seven-level scoring system, i.e., 1-7 points, from low to high, including very disagree, basically disagree, somewhat disagree, uncertain, somewhat agree, basically agree, and strongly agree. For the three dimensions of family support, friend support, and others supporting, the Cronbach  $\alpha$  coefficients of each sub-dimension was 0.705, 0.744, 0.613 and 0.830, respectively, indicating good reliability. A large number of studies have shown that this questionnaire can better avoid the social expectation effect and reduce the errors. Thus, this scale was used in this study to measure the psychological quantity of perceived social support.

## EXPERIMENT

### Research object

In this study, a total of 500 university students were selected from two universities, University A and B, as formal participants, including 162 males and 302 females. They were freshmen, sophomores, juniors and seniors. 500 questionnaires were distributed, and 464 valid copies were recovered, with a recovery rate of 92.8%. These.

### Evaluation indicators

#### *Proactive personality Scale (Simplified Edition)*

In this study, the revised 11-item scale was adopted for the active personality questionnaire of college students. It's rated on a seven-level scoring system of 1 to 7 points, from low to high, including "completely disagree, basically disagree, slightly disagree, uncertain, somewhat agree, basically agree, and strongly agree. The higher the score, the higher the active personality tendency of the subjects. The Cronbach  $\alpha$  coefficient of this scale was good, and the homogeneity coefficient was  $\alpha = 0.864$  in this study.

#### *Perceived social support scale*

This study used Zimen's perceived Social Support Scale (PSSS), which is a self-rating scale with 12 items, a seven-level scoring system of 1 to 7 points, including completely disagree, basically disagrees, a little disagree, uncertainty, a little agree, basically agree, and strongly agree

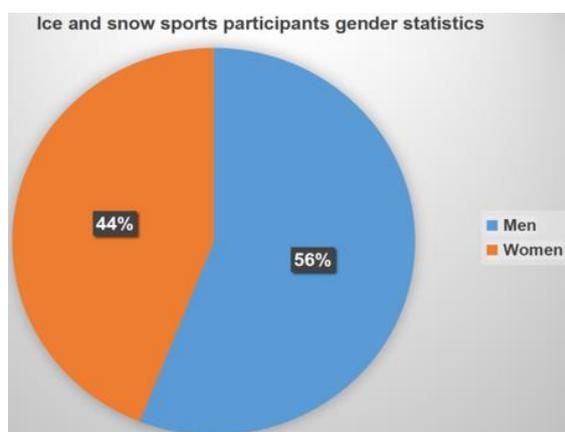
from low to high. The higher the score, the higher the level of social support that the participants can perceive. In the three dimensions of family support, friend support, and other support, the Cronbach  $\alpha$  coefficients of each dimension and the total scale were 0.705, 0.744, 0.613, and 0.830, respectively. The homogeneity coefficient  $\alpha$  in this study was 0.787, 0.852, 0.773 and 0.902 respectively.

## RESULTS AND DISCUSSIONS

### Analysis of the status quo of participants in the popular ice and snow sports

Investigating the participants is one of the most basic steps to understand the current situation of mass ice and snow sports. They are the direct implementers of the snow and ice movement, determining the development of ice and snow sport. The current status of participants in this paper was mainly analyzed from the following four points: gender and age, participation form, age and ski time, occupation and income.

Figure 1. Gender statistics of participants in ice and snow

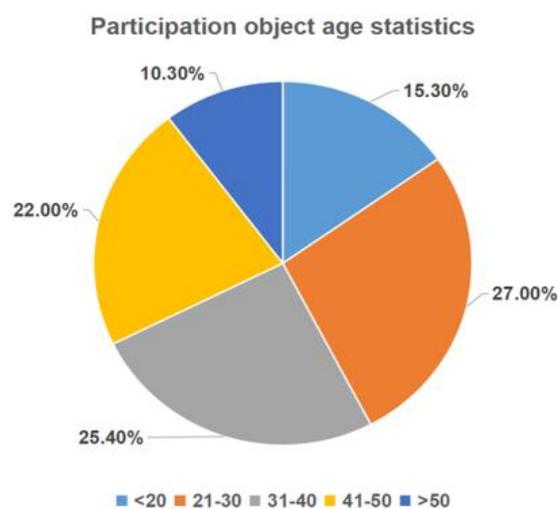


It is found in Figure 1 that women accounted for 44% of all active participants and men accounted for 56%. The gender difference has little effect on the mass ice and snow sports, because compared with the competitive sports, the mass ice and snow sports are not very demanding in terms of difficulty, physical strength and physical fitness. However, despite the small difference in the proportion, the men

are relatively more important than the women, when the mass ice and snow sports still have some more requirements for physical fitness. For men, they are relatively more inclined to some challenging or stimulating sports. Therefore, from a gender perspective, although the gap is not particularly obvious, the number of men participants is still larger than that of women.

The survey statistics in Figure 2 shows that among the respondents, the proportion of the age group at 21-30 years old was the largest, reaching up to 27%, followed by the 31-40 age group, for 25.4%, and the age group over 50 had the lowest number of participants, accounting for only 10.3% of the total. Thus, the proportion of adults is more than that of teenagers, and the elderly is the least.

Figure 2. Survey chart on age



### The relationship between active personality, perceived social support and participation in ice and snow sports

It can be seen from Table 1 that the subscales involved in the four dimensions of trust ( $r=0.564^{**}$ ), participation ( $r=0.618^{**}$ ), heredity ( $r=0.689^{**}$ ), comprehension ( $r=0.537^{*}$ ) were significantly correlated ( $P<0.05$ ); active personality scores were significantly correlated with trust ( $r=0.133^{*}$ ) and heredity ( $r=0.219^{**}$ ) ( $P<0.05$ ); perceived social support scores and participation ( $r=0.114^{*}$ ), heredity ( $r=0.182^{**}$ ), and comprehension ( $r=-0.104^{*}$ ) were significantly correlated ( $P<0.05$ ).

**Table 1. The relationship between ice and snow participation, active personality, and perceived social support**

Variable	Trust	Participation	Heredity	Comprehension	Total Score	Active Personality
<b>Trust</b>						
Participation	0.026					
Heredity	0.274	0.219				
Comprehension	0.288	0.031	0.125			
Total Score	0.133	0.024	0.219	-0.075	0.126	
Active personality	0.004	0.114	0.182	-0.104	0.109	0.543

**Table 2. Active personality to adjust the relationship between social support and participation**

Variable	SE	B	$\beta$	t	p
Perceived social support	0.111	-0.106	-0.114	-0.954	0.340
Active personality	0.116	-0.862	-0.985	-7.462	0.000
Perceived social support * Active personality	0.004	0.004	0.454	2.163	0.031

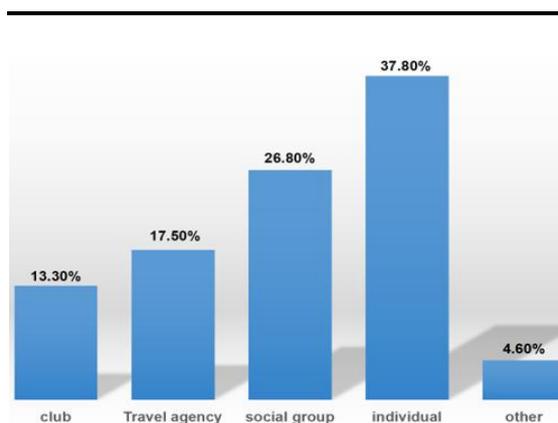
In Table 1, the SPSS statistical tools were used. The regression equations were based on the order of active personality and perceived social support. According to the survey results, it can be seen that active personality and perceived social support can significantly predict ice and snow. In terms of trust in sports, active personality can positively predict trust; the higher the active personality score is, the higher the trust score is. The perceived social support can negatively predict trust; the higher the score of social support, the lower the score of the trust. In the dimension of participation, the perceived social support can significantly predict the participation of snow and ice; the higher the score of social support, the higher the participation score. In the dimension of heredity, active personality can significantly predict the heredity in the participation of ice and snow sports; the higher the active personality score, the higher the score in the audience.

#### **The role of active personality in understanding the relationship between social support and participation in ice and snow sports**

Figure 3 shows that the proportion of individuals who participated in the ice and snow sports accounted for 37.8%, more than one-third of the total; social groups accounted for 26.8%, because in contemporary society, people have been pursuing higher life quality, and it's a good choice to carry out snow and ice sports in the form of groups; the tour groups, club and other forms of participation accounted for 17.5%, 13.3% and 4.6% respectively. For China, due to the low popularity of ice and snow sports, there

are few clubs with relatively mature management.

**Figure 3. Ice and snow sports participants participate in formal statistics**



As shown in Table 2, based on perceived social support\* active personality ( $\beta=0.454$ ,  $t=2.163$ ,  $P=0.031$ ), they jointly explained the participation variation. The amount of 43.7% ( $R^2=0.437$ ) showed that the active personality has a significant adjustment effect on the relationship between social support and participation. In the low-score group, active personality has a significant impact on the relationship between perceived social support and participation; the higher the score of social support, the higher the participation score. In the high-score group of active personality, active personality also has a significant impact on perceived social support and participation.; the higher the score of perceived social support, the lower the participation score. In the group with

active personality scores, the influence of active personality on the relationship between social support and participation was not significant.

### CONCLUSIONS

This paper attempts to study and analyze the influence of active personality on the participation of ice and snow sports. For this, it extracted four factors: trust, participation, heredity and comprehension from the active personality, and designed a questionnaire using the Proactive personality Scale (Simplified Edition) and Social Support scale. Then, a sample survey was conducted among college students of University A and B to analyze the status quo of college students' participation in ice and snow sports, the relationship between college students' active personality, perceived social support and participation in ice and snow sports, the role of active personality in the participation of college students, and the role of active personality to adjust the relationship between social support and participation. The conclusions have been drawn as follows:

(1) 23% understood the ice and snow movement, 55.6% had a relative understanding, and 21.4% did not know much about the snow and ice movement. As a whole, most of the people in Zhangjiakou have a certain understanding of the ice and snow sports, and only a small number of people do not understand much. At the preparation stage for the 2022 Beijing Olympic Winter Games in Zhangjiakou, the Zhangjiakou people should enhance the understanding of snow and ice movements. Therefore, it is necessary to increase the local propaganda for the snow and ice sports, so that the snow and ice sports become a popular sport in Zhangjiakou.

(2) Active personality was significantly positively correlated with the participation dimension ( $r=0.114, 0.182, P<0.05$ ); significantly positively correlated with trust ( $r=0.133, 0.182, P<0.05$ ) and significantly negatively correlated with comprehension ( $r=-0.104, P<0.05$ ). The regression analysis showed that the active personality of college students can significantly predict the participation in terms of trust and heredity in the questionnaire ( $\beta=0.223, 0.199, P<0.05$ );

(3) The active personality of college students has a significant adjustment effect on the relationship between trust, participation and

comprehension in the perceived social support questionnaire ( $\beta=0.561, 0.454, 0.522, P<0.05$ ). The perceived social support in college students' low personality group has a significant influence on trust, participation and comprehension. The relationship between college students' active personality and the four dimensions could be significantly adjusted ( $\beta=-0.569, -0.561, -0.595, -0.495, P<0.001$ ).

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