using the method of literature and data, and sort out the correlation. In order to analyze the correlation between sports participation consciousness and campus football policy, cross-theory model scale was used to measure the stage of sports behavior of teenagers. Using the methods of logic analysis and mathematical statistics, this paper systematically analyzes the intervention strategies of campus football policy on teenagers' sports consciousness and the long-term goals of daily fitness and exercise habit formation.

Result: First, the school implementation of campus football policy dilemma: mainly affected by the local authorities, funds cannot be timely, often delinquent phenomenon. The funds cannot fully arrive at the school or be moved by the school to do it, resulting in the campus football development is restricted. Interference in the process of enrollment, affecting the quality of enrollment. Some children with football talent are influenced to participate in football training because of family economic situation and parents' one-sided understanding of football. School funds in relatively backward areas are limited, and the funds invested in school sports are seriously lacking, which makes sports teaching equipment difficult to meet the teaching needs. Physical education teachers in primary and secondary schools in some areas are insufficient, and PE classes are basically supervised by other teachers. There is a serious shortage of football teachers, and some schools cannot guarantee daily football teaching and training. The participation of social organizations in school sports is limited, public welfare activities rarely involve a wide range of primary and secondary schools, and some primary and secondary school students do not know enough about football, so it is difficult to form a daily exercise habit. Second, popularize and publicize campus football policy, carry out campus football knowledge lectures, organize to watch campus football column programs, organize campus football teaching and training, competition, stimulate the interest of primary and secondary school students in football, establish a healthy concept of sports. To cultivate the daily exercise habit of primary and secondary school students and develop a healthy lifestyle. Enhance football for promoting health and motor skill learning, the ideology of the harmonious development of body and mind, organization region, intercollegiate football match, the campus a variety of forms, increase the communication among students with learning, with the power of the model affect the surrounding more primary and middle school students to participate in football, to learn football skills, for football reserve talents.

Conclusion: The implementation of campus football policy is affected by many factors, among which the coordination between various administrative departments and executive departments is the most important factor. Lack of supervision links, parents know little about football, the school to carry out football training in and out of class has funds, teachers and other barriers. Youth football consciousness is not firm, understand the crowd accounted for a relatively small. The school lacks communication with parents, and some children who are interested in football are restricted by their families to participate in football activities. It is suggested that the disorderly exchange of inspection and evaluation between regions can promote the effective implementation of campus football policy and "blossom everywhere and bear fruit". Focus on supervising the transfer of campus football funds for special purposes, forming a virtuous cycle of supervision and assessment mechanism. To expand the campus football policy publicity channels, take many forms in primary and middle school campus in various public places, public transportation sites, newsagent campus football information such as propaganda, with advanced deeds, excellent football players, excellent campus football for example of primary and middle school students, stimulate students' interest in football and love, training football consciousness since childhood. Explore the home of football, football stars and excellent football teams, expand the influence of football on family sports awareness, call on families to participate in football and daily exercise, encourage people to form a healthy lifestyle, form a habit of daily exercise, and lay a solid foundation for a strong sports country and a healthy China.

Acknowledgements: Humanities and Social Science Research Planning of Ministry of Education Foundation Item: Research on the dilemma and countermeasures of Campus football Policy Implementation in China from the perspective of Synergetic Science (18YJA890014).

* * * * *

APPLICATION OF BAYES FACTOR IN PSYCHOLOGICAL RESEARCH

Xuefeng Cao & Xingrong Sun

Huanggang Normal University, Huangzhou 438000, China

Background: In the history of psychology and many social sciences, hypothesis testing has long been favored by researchers as an easy-to-use statistical tool for inferential reasoning. However, in recent years, more and more researchers gradually realize that hypothesis testing has many deficiencies or limitations in theory and practice. Such as actual research often occur on *P* value (1926) tend to be less than 0.05, Fisher,

misinterpretation of the meaning and hypothesis testing methods of abuse, and even some researchers will also in the study on *P* values (p-hacking) manipulation-by increasing or decreasing subjects, variable, or try a different data analysis methods to control the *P* value ideal range, etc. As a result, researchers can only pay attention to the theoretical problems that embody difference, and are helpless to the theoretical problems involving invariance or constancy. At the same time, it also provides the soil for the wild growth of some academic misconduct. All in all, the psychological field is in urgent need of a statistical method that is simple and intuitive in concept, can provide support for nihilistic hypotheses and is not affected by excessive sample size, and bayes factor (BF) analysis seems to be a suitable choice at present. Compared with the traditional hypothesis testing method, bayes factor has many advantages and can reveal the possibility of the establishment of alternative hypothesis and nihilistic hypothesis. Therefore, there is a call for replacing the traditional hypothesis testing with Bayes factor analysis in the field of psychology. This study enumerates the main advantages of Bayesian factors over hypothesis testing, focuses on the calculation method and application of Bayesian factors in conventional psychological research, and illustrates the problems needing attention when using Bayesian factors in statistical analysis.

Subjects and methods: The significance of Bayesian factor. The frequency school regards the frequency of random events as an objective indicator, while the Bayes school understands probability as a subjective uncertainty from the perspective of the observer. In Bayesian statistics, the observed data can output the corresponding hypothesis probability under specific conditions. The data result after quantization can be defined as a posterior probability, namely. $P(H \mid D)$ a more appropriate method to compare hypotheses is to compare posterior probability ratios, for example, taking nihilistic hypothesis and alternative hypothesis as an example: H_0 H_1

$$\text{Posterior probability ratio} = \frac{P(H_1 \mid D)}{P(H_0 \mid D)} \tag{1}$$

The posterior probability ratio here has direct significance: if the ratio is 20, the alternative hypothesis is 20 times more likely to be true than the null hypothesis based on current data and prior expectations.

In addition, according to Bayes' formula:

$$P(H_0 \mid D) = \frac{P(D \mid H_0) \times P(H_0)}{P(D)} \tag{2}$$

Equations (2) containing and are substituted into equations (1) respectively, and can be obtained by elimination: H_0 H_1 $P(D)$

$$\frac{P(H_1 \mid D)}{P(H_0 \mid D)} = \frac{P(D \mid H_1)}{P(D \mid H_0)} \times \frac{P(H_1)}{P(H_0)} \tag{3}$$

Where is the prior probability ratio of the two hypotheses, which can be set according to the existing data results in daily analysis, or can be set as a specific numerical ratio, such as 1, so as not to be biased towards the alternative hypothesis or null hypothesis, or distribution ratio (such as the Cauchy distribution commonly used now). $\frac{P(H_1)}{P(H_0)}$ And the sum is called the likelihood ratio. $P(D \mid H_1)$ $P(D \mid H_0)$ Its ratio is defined as a Bayesian factor, namely:

$$BF_{10} = \frac{P(D \mid H_1)}{P(D \mid H_0)} \tag{4}$$

The Bayesian factor represents and compares the Bayesian factor, conversely, is and compares the Bayesian factor. BF_{10} H_1 H_0 BF_{01} H_0 H_1 It can also be seen from the above that Bayes factor is not equal to posterior probability, and they have different functions and meanings. A posterior probability is to determine our belief of a fact based on known data and reach a conclusion. Bayes factor describes how much evidence the data itself transmits.

Advantages of Bayesian factors. The concept of Bayes factor was first proposed in the mid-1960s. Due to the limited speed of computers at that time, Bayesian factors were difficult to calculate. In recent years, the rapid progress of computer science makes it possible to apply Bayesian factors widely. We summarize the main advantages of Bayesian factors as follows:

(1) Clear concept and easy to understand. According to the above definition, if the Bayes factor =10, it means that under the current data, the possibility of the alternative hypothesis is 10 times that of the null hypothesis. BF_{10} and = 0.1, 10, indicates that under the current data, the null hypothesis is 10 times more likely to be true than the alternative hypothesis. BF_{10}, BF_{01} as an indicator to evaluate the possibility of a theory, Bayes factor is more direct and easier to understand than *P*-value.

(2) Bayes factor can provide evidence for the establishment of nihilistic hypothesis. Hypothesis testing is to set the nihilistic hypothesis first and then test the alternative hypothesis by contradiction, but it is difficult to prove the nihilistic hypothesis. Bayes factor analysis treats nihilistic hypothesis and alternative hypothesis equally and only examines the possibility of their establishment, so it can also provide supporting evidence for nihilistic hypothesis. The latter is suitable for exploring invariance and constancy in the field of psychology. In addition, as the ratio of the probability of the null hypothesis and the alternative hypothesis is only a special case, Bayes factor is also suitable for comparing the interpretation degree of experimental data by different models (or hypotheses).

(3) For experimental effects with large sample sizes, Bayesian factors are stricter than *P*-values. Figure. 1 is the curve of the change of critical *t*-value with sample size for Bayesian factor analysis and nihilistic hypothesis testing. In the figure, the solid line represents the corresponding *t* value of the Bayesian factor when the possibility of the alternative hypothesis being true is 3 times that of the null hypothesis, and the dotted line represents the corresponding *t* value when the *P* value is equal to 0.05. From Figure 1 shows, *P* value is equal to 0.05 corresponding to the critical *t* value of less than three corresponding bayes factor is equal to the critical *t* value, and *P* values of the critical *t* value decreases continuously with the increase of sample size, and the bayes factor after reach a certain sample size instead of the critical *t* value slowly with the increase of sample size. Therefore, in some cases, *P*-values and Bayesian factors may come to completely different conclusions about the same data. to some extent, Bayesian factor analysis can avoid the wrong practice of researchers who keep collecting data until *P* value is significant.

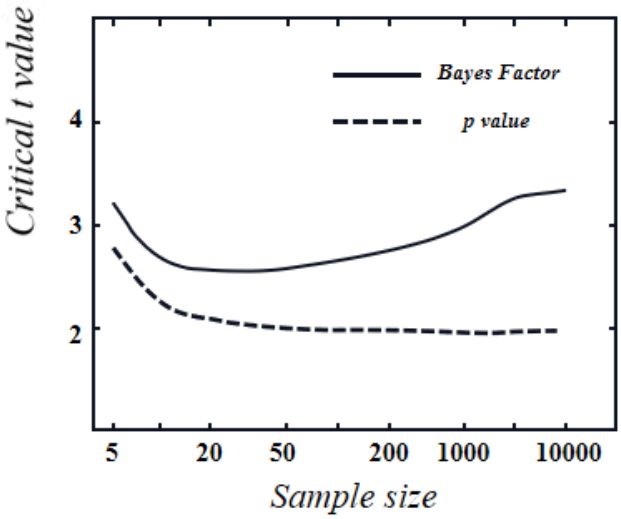

Figure 1. Curve of critical *T*-value changing with sample size for Bayesian factor analysis and nihilistic hypothesis testing

(4) Bayesian factor can be combined with the prior probability of theoretical hypothesis and sample data for statistical inference.

Traditional hypothesis testing does not consider the prior probability of theoretical validity, but only focuses on whether the theoretical hypothesis conforms to the data currently collected by researchers. In Bayesian factor analysis, we can combine previous studies, integrate prior information and current data, and calculate the ratio of posterior probability under the condition that theoretical hypotheses are established, so as to judge whether the strength of current evidence is enough to overturn (or support) previous theories. For the effect rarely studied by predecessors, the prior probability ratio of nihilistic hypothesis and alternative hypothesis is usually set as 1: 1. For theories that are well supported by evidence or assumptions that are too contrary to common sense, the ratio of prior probabilities can be set to be relatively wide. For example, Bem found in a 2011 study by statistical method of hypothesis testing that subject could predict the occurrence of specific random events with a probability significantly higher than the random level, and then discussed the possibility of extra sensory perception (ESP). Rouder and his colleagues reanalyzed the data of Bem with Bayesian factor and calculated that its Bayesian factor was about 40, that is, the possibility of the existence of the effect was 40 times higher than the possibility of the non-existence of the effect. Although its Bayes factor is high, since extrasensory perception essentially violates the law of causality and has never been supported by any scientific research, its prior probability should obviously be far lower than 1/40, so the evidence of Bem is not enough to support his conclusion. Criteria for evaluating the size of Bayesian factors. Bayesian factor analysis can help researchers evaluate the probability ratio of different hypotheses based on existing evidence, and has an independent standard

for evaluating evidence strength (see Table 1).

Results: On the basis of t test, Jeffrey and Morey et al. developed a Bayesian factor calculation method for multivariate an OVA and multiple regression analysis. Although the calculation of Bayesian factor is relatively complicated, there are many software supporting the calculation of Bayesian factor, such as Bayes Factor software package developed in R language, visual statistics software JASP and so on. This software meets the statistical needs of most psychological research. This section provides an overview of how to calculate the *T*-test, Bayesian factors for multivariate an OVA, and how to apply Bayesian factors for statistical inference.

Bayes Factor Toolkit features and considerations: The Bayes Factor toolkit, developed by Richard D. Morey et al., is an R language toolkit that is still being updated in real time. It can be used to calculate Bayesian factors under various simple experimental designs, including contingency tables, single-sample or two-sample *T*-test designs, single-factor or multi-factor analysis of variance and linear regression models. The principle and process of Bayesian factor calculation for various commonly used designs have been introduced in detail, such as *T* test, linear regression, analysis of variance. The Bayes Factor toolkit features and usage considerations are summarized as follows: The Bayes Factor toolkit can further adjust the selection model and parameters by calling specific function statements and with the help of the original R language statistical functions (which can realize data loading, preliminary analysis of data content and accurate traditional statistical test), so as to realize the calculation and output of Bayesian factor. Although the toolkit contains explicit command input, it also contains opaque and unintelligible default Settings, which can be difficult for beginners to use.

Table 1. Different values of Bayes factor correspond to the classification of evidence strength BF_{10}

Bayes factor (BF_{10})	Classification of evidence strength
> 100	The evidence is strong H_1
30 - 100	The evidence is very strong H_1
10 - 30	The evidence is strong H_1
3 - 10	The evidence in support is moderate H_1
1 - 3	The evidence is weak H_1
1	There is no evidence to support any hypothesis
A third - 1	The evidence is weak H_0
1/10 - 1/3	The evidence in support is moderate H_0
1/30 - 1/10	The evidence is strong H_0
1/100 - 1/30	The evidence is very strong H_0
The < 1/100	The evidence is strong H_0

Toolkits are limited by specific input methods and extremely limited interfaces. For example, input functions used for calculation often contain several default parameters, and beginners may miss or ignore several optional or required Settings. Therefore, the author suggests researchers to understand the applicable conditions of the functions to be used and the types of parameters to be input in detail in combination with the function description manual in the Bayes Factor toolkit at the initial stage of use, so as to avoid the output of Bayesian factors that are not suitable for the current analysis conditions because the default parameters are not modified.

The format of the original data imported in a specific experimental design is quite different from that used in traditional statistical tests. Take repeated measurement an OVA as an example. In previous SPSS tests, each column can be the average measurement result after one observation or several observations for each behavior under a specific and specific experimental condition, and special columns can be appropriately added as grouped variables between subjects. In Bayes Factor data import, the default data format for each as a specific index type (such as the independent variable and dependent variable), each line is the corresponding specific level, dependent and independent variables and the independent variable naming need to string format to distinguish similarities and differences between conditions, such as containing conditions between subjects, you will need to separate a list of reserved subjects in string format Numbers, to be effective separation and identification of whether the subjects for the same name in different observation conditions of measurement results. When entering each function statement that contains a specific header line variable, you need to ensure that each variable name is exactly the same as

the header name of the data to be analyzed in order to run the specific function statement effectively.

Different from traditional statistical tests (such as variance analysis), the Bayesian factor of given experimental conditions and data results is not a stable value, but an interval, and there are certain fluctuations between the interval of results obtained by each calculation. This is related to monte Carlo simulation in the process of Bayesian factor calculation. In order to avoid selecting specific Bayesian factor results for selective reporting when the error is large, Morey suggests providing the error range of the corresponding order during reporting, or simultaneously reporting the results that can support the stability of Bayesian factors such as sequential analysis in combination with JASP software.

Characteristics of JASP software. JASP is a free open-source statistical analysis software with graphical interface. Compared to the Bayes Factor toolkit, this software is more comprehensive, user-friendly and user-friendly for researchers familiar with using SPSS software. The underlying layer is based on the Bayes Factor toolkit. In addition to the traditional function of statistical test, it can also realize such functions as exploratory factor analysis, principal component analysis, structural equation model and so on. Do research focused on the present stage can realize the bayes factor of computing functions, such as *t* test (independent, pairing, single sample), correlation analysis, Pearson, spearman and Kendall correlation), consistency test, analysis of variance (single factor, the covariance, repeated measurement), linear regression (also including the logarithm linear regression), columns, scale, binomial distribution and meta- analysis. Here, only the characteristics of JASP software in calculating Bayesian factors and matters needing attention are summarized as follows: The overall interface design of JASP software is relatively simple and bright. After importing data, users can select corresponding functions according to the data structure to be analyzed. The related functions and layout are in line with the existing habits of most researchers. Traditional statistical tests can be performed at the same time as the Calculation of Bayesian factors, and the output is a three-line table that can be used directly. JASP results are comprehensive and standardized, and researchers can choose the analysis content they need according to their needs, or even directly use the relevant analysis charts in their research papers. The analytical function of JASP is also opaque. Without a deep understanding of the various functional labels in JASP, users can easily miss the more appropriate analysis methods not provided by the current user interface. Therefore, when not sure whether each label or parameter is the most appropriate option, the author suggests to combine the subtle differences in function positioning of different analysis software to improve understanding, or to communicate and discuss specific items through relevant forum websites.

Conclusions: Compared with traditional statistical methods, Bayesian factor has many advantages, among which the most prominent advantage is that it treats both nihilistic hypothesis and alternative hypothesis equally. On the one hand, it can help researchers to solve the problem of providing evidence for the nihilistic hypothesis, and on the other hand, it can help researchers to broaden their thinking and make more hot psychological questions get rigorous answers. In addition, statistical software supporting Bayesian factor calculation is gradually increasing, and Bayesian factor analysis itself is also developing, which provides conditions for the wide application of Bayesian factor analysis in the field of psychological research. Although bayes factor has many advantages and convenience compared with traditional hypothesis testing, it is not a “panacea” and has the same problems that are difficult to be solved under the statistical framework as hypothesis testing. Before applying it to psychological research, the following three considerations need to be reinforced: (1) The value of Bayes factor is relative rather than absolute. This is especially important in statistical modeling such as multiple regression analysis. For example, 100 means that the probability of model 1 being established is 100 times higher than that of Model 2, but this does not guarantee that model 1 can fit the data well. It is possible that the data fitting effect of both models is poor, but model 2 is worse than model 1.

(2) The Bayesian factor is stricter than the *P*-value, but it can still be manipulated. Blind expansion of sample size, selective reporting and arbitrary elimination of extreme values will affect the size of Bayesian factors, leading to the so-called “B-value manipulation” similar to *P*-value manipulation.

(3) Bayes factor cannot fundamentally solve the problem of publication bias. “Publication bias” refers to the phenomenon that among similar studies, results of studies with statistical significance (e.g., $P < 0.05$) are more likely to be published in academic journals, which can easily mislead other researchers. The evaluation standard of Bayesian factor has been mentioned above. The main purpose of establishing this standard is to objectively evaluate the strength of evidence, but if this standard (such as $BF > 3$) and $P < 0.05$ is also regarded as the golden rule for deciding whether a paper can be published, so abandoning the *P*-value in favour of the Bayesian factor is nothing more than a reinvention. Therefore, in terms of how to rationally use the evaluation criteria of Bayesian factors and how to avoid publication bias in the process of using Bayesian factors, academic circles need to discuss and improve from perspectives other than statistics and psychology.

* * * * *

THE INFLUENCE OF CAMPUS SPORTS TEAMS ON THE HEALTHY DEVELOPMENT OF STUDENTS' PSYCHOLOGICAL QUALITY TO ADAPT TO SOCIETY IN THE POST-EPIDEMIC ERA

Yong Shi

Institute of Physical Education, Huanggang Normal University, Huanggang 438000, China

Background: The normalization of epidemic prevention and control has a profound impact on physical, psychological, and moral health and social adaptation. The implementation of the new "double reduction" policy puts forward higher requirements for primary school education. Sports education should be gradually increased in primary school to improve students' physical fitness while improving their theoretical knowledge, so as to ensure all-round development of primary school students. School exercise and extracurricular physical exercise to provide the necessity, the campus sports team is through certain selected students select and recommend competition way, again through the training and selection gradually improve students' comprehensive quality and ensure that students can improve their ability of social adaptation, expand the students' psychological and physical advantage, make the students learn in elementary school work gradually improve their physical quality and ideology, and help students to quickly adapt to the development of the society, improving the teaching of the elementary school level, to speed up the development of the school.

Objective: The impact of the epidemic on the healthy development of society, the most basic social norms and codes of conduct have put forward new health requirements. Now, the negative impact of novel Coronavirus on our society and production has been basically eliminated through the country's active response and strict assistance. But in the post-pandemic era, the threat of the virus continues to affect our daily lives. As a special group, the school sports team shoulders the heavy task of training and competition. To clarify the significance of campus sports teams in competition to cultivate students' social adaptability, according to the learning needs of primary school students, take targeted measures to improve the training of school sports teams and competition on students' ability, and then promote the overall development of students. In addition, in the training and competition work, teachers should actively guide students to carry out ideological changes, so as to achieve the purpose of enriching students' spiritual world.

Subjects and methods: Many policies or regulations in the "post-epidemic era" are bound to put forward higher requirements for social adaptability and health. Considering the functions and functions of primary school sports teams under the new situation, it is urgent to find an appropriate way out, as shown in Figure 1.

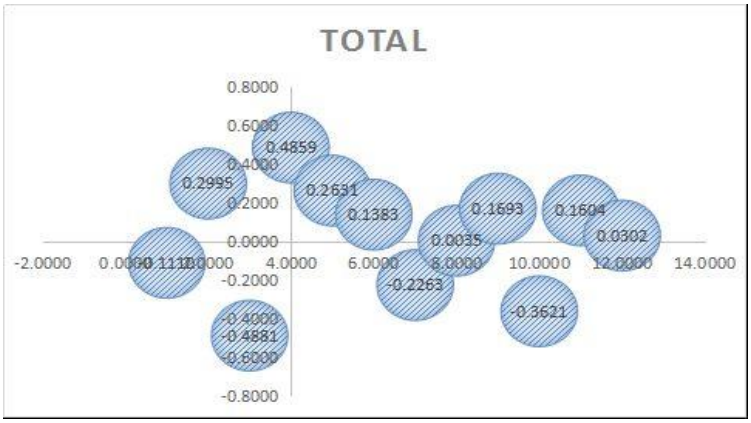

Figure 1. Increase in physical monitoring of primary school students

As shown in Table 1, the overall situation shows positive growth, but the growth rate slows down and tends to be relatively stable. Most of them are "above the X-axis", showing positive growth at or above their expectations. There are also some schools with negative values, indicating that they are not achieving their expected growth. The region as a whole has a positive value increase, which also reflects that physical fitness has been improved in the previous year through physical training.

P<0.05 indicates that there is a difference in psychological quality between students who participate in