

**INTERRELATIONSHIP BETWEEN EMOTIONS,
PERSONALITY, COURAGE AND SPORTS
PERFORMANCE IN ADOLESCENT FOOTBALL
PLAYERS IN SHANDONG PROVINCE, CHINA**

SHUAI YING

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PLAYERS IN SHANDONG PROVINCE, CHINA**

by

SHUAI YING

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LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
BFI-2	Big Five Inventory 2
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Confidence Interval
CNKI	China National Knowledge Infrastructure
COOC	Co-Occurrence
CR	Composite Reliability
CVI	Content Validity Index,
EFA	Exploratory Factor Analysis
FES	Football Emotions Scale
ICC	Intraclass Correlation Coefficient
I-CVI	Item-level Content Validity Index
KMO	Kaiser-Meyer-Olkin measure
MI	Modification Indices
MLR	Maximum Likelihood estimation with Robust standard errors
N/A	Not Applicable
PANAS	Positive and Negative Affect Scale
RMSEA	Root Mean Square Error of Approximation
SCS	Sports Courage Scale
S-CVI	Scale-level Content Validity Index
S-CVI/Ave	Scale-level Content Validity Index (Average method)
SD	Standard Deviation,
SEM	Structural Equation Modelling
SPQ	Sport Performance Questionnaire
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index
USM	Universiti Sains Malaysia
UA	Universal Agreement
VOS	Visualization of Similarities
WOS	Web of Science

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**PERHUBUNGAN ANTARA EMOSI, PERSONALITI, KEBERANIAN DAN
PRESTASI SUKAN DALAM KALANGAN PEMAIN BOLA SEPAK REMAJA DI
WILAYAH SHANDONG, CHINA**

ABSTRAK

Kajian ini menyelidik interaksi kompleks antara ciri-ciri personaliti, emosi, keberanian, dan prestasi dalam kalangan pemain bola sepak remaja di Wilayah Shandong, China, dengan menangani jurang kritikal tersebut melalui pembangunan ukuran emosi bola sepak yang pertama berasaskan budaya dan mengkaji hubungannya dengan konstruk psikologi yang telah mantap. Menggunakan reka bentuk penyelidikan dua fasa, kajian ini secara sistematik membangunkan instrumen pengukuran dan menguji hubungan teori. Fasa 1 menggunakan reka bentuk keratan rentas yang dilaksanakan di sekolah menengah rendah di seluruh Wilayah Shandong dari Mei hingga Julai 2023, menumpukan kepada pembangunan dan pengesahan awal Skala Emosi Bola Sepak (FES) melalui semakan literatur, konsultasi pakar, penilaian kesahan kandungan, dan analisis faktor penerokaan. Seramai 492 pemain bola sepak remaja China (255 lelaki, 237 perempuan) berumur 12 hingga 15 tahun yang merupakan ahli aktif pasukan sekolah dengan sekurang-kurangnya satu tahun pengalaman latihan dan pertandingan telah mengambil bahagian. Fasa 2 pula menggunakan reka bentuk keratan rentas yang bebas di rantau yang sama dari Oktober hingga Disember 2023, memberi tumpuan kepada analisis faktor pengesahan bagi semua instrumen, pengesahan model persamaan berstruktur yang lengkap, dan ujian terhadap hubungan yang dihipotesiskan. Fasa ini melibatkan 450 peserta (235 lelaki, 215 perempuan) yang memenuhi kriteria kelayakan yang sama, kecuali mereka yang telah menyertai Fasa 1. Kajian ini menggunakan beberapa instrumen yang telah

disahkan: Skala Emosi Bola Sepak (FES) yang dibangunkan untuk menilai emosi khusus sukan, Inventori Lima Ciri Personaliti-2 (BFI-2) untuk mengukur personaliti, Skala Keberanian Sukan (SCS) untuk menilai keberanian, dan Soal Selidik Prestasi Sukan (SPQ) untuk menilai prestasi. Skala Emosi Bola Sepak menunjukkan sifat psikometrik yang kukuh melalui analisis faktor pengesahan (RMSEA = 0.033, CFI = 0.971, TLI = 0.968, SRMR = 0.037) dengan bukti kebolehppercayaan yang tinggi (Kebolehppercayaan Komposit: 0.85 untuk Emosi Positif Bola Sepak, 0.818 untuk Emosi Negatif Bola Sepak; Min Varians Diekstrak: 0.655 dan 0.6). Adaptasi dalam Bahasa Cina turut menunjukkan bukti kesahan yang kukuh: BFI-2 (RMSEA = 0.029, CFI = 0.964, TLI = 0.962, SRMR = 0.036; CR: 0.923–0.950, AVE: 0.503–0.611), SCS (RMSEA = 0.021, CFI = 0.976, TLI = 0.975, SRMR = 0.039; CR: 0.891–0.923, AVE: 0.492–0.518), dan SPQ (RMSEA = 0.067, CFI = 0.968, TLI = 0.959, SRMR = 0.027; CR: 0.932, AVE: 0.559). Model persamaan berstruktur yang menguji hubungan antara semua pemboleh ubah menunjukkan padanan yang sangat baik (RMSEA = 0.024, CFI = 0.929, TLI = 0.928, SRMR = 0.041). Dapatan utama menunjukkan bahawa ciri Conscientiousness mempunyai hubungan paling kuat dengan Emosi Positif Bola Sepak ($\beta = 0.303$, $p < 0.001$), manakala Emotionality Negatif secara signifikan meramalkan Emosi Negatif Bola Sepak ($\beta = 0.562$, $p < 0.001$). Yang penting, Keberanian Sukan muncul sebagai perantara yang signifikan antara ciri-ciri personaliti dan prestasi ($\beta = 0.277$, $p = 0.001$), menekankan peranan pentingnya dalam pembangunan bola sepak remaja. Penemuan ini memberikan pandangan teori terhadap mekanisme psikologi yang mendasari prestasi bola sepak dalam kalangan remaja China dan menawarkan implikasi praktikal bagi pencarian bakat, strategi kejurulatihan, dan program intervensi psikologi dalam pembangunan bola sepak remaja.

**INTERRELATIONSHIP BETWEEN EMOTIONS, PERSONALITY, COURAGE
AND SPORTS PERFORMANCE IN ADOLESCENT FOOTBALL PLAYERS IN
SHANDONG PROVINCE, CHINA**

ABSTRACT

This study investigates the complex interplay between personality traits, emotions, courage, and performance in adolescent football players in Shandong Province, China, addressing critical gaps by developing the first culturally specific measure of football-related emotions and examining its relationships with established psychological constructs. Using a two-phase research design, this study systematically developed measurement instruments and tested theoretical relationships. Phase 1 employed a cross-sectional design conducted in junior high schools across Shandong Province from May to July 2023, focusing on the development and initial validation of the Football Emotions Scale (FES) through literature review, expert consultation, content validity assessment, and exploratory factor analysis. Participants included 492 Chinese adolescent football players (255 males, 237 females) aged 12-15 years who were active school team members with at least one year of training and competition experience. Phase 2 utilized an independent cross-sectional design in the same geographic region from October to December 2023, concentrating on confirmatory factor analysis of all measurement instruments, validation of the complete structural equation model, and examination of hypothesized relationships. This phase involved 450 participants (235 males, 215 females) aged 12-15 years meeting identical eligibility criteria, excluding those who participated in Phase 1. The study employed multiple validated instruments: the newly developed Football Emotions Scale (FES) for assessing sport-specific emotions, the Big Five Inventory-2 (BFI-2) for personality trait measurement, the Sports Courage Scale (SCS) for courage assessment, and the Sport Performance Questionnaire (SPQ) for performance evaluation. The Football Emotions Scale demonstrated robust psychometric properties through confirmatory factor analysis (RMSEA = 0.033, CFI = 0.971, TLI = 0.968, SRMR = 0.037) with strong reliability evidence (Composite Reliability: 0.85 for Football Positive Emotion, 0.818 for Football Negative Emotion; Average Variance Extracted: 0.655 and 0.6 respectively). Chinese adaptations also

demonstrated strong validity evidence: BFI-2 (RMSEA = 0.029, CFI = 0.964, TLI = 0.962, SRMR = 0.036; CR: 0.923-0.950, AVE: 0.503-0.611), SCS (RMSEA = 0.021, CFI = 0.976, TLI = 0.975, SRMR = 0.039; CR: 0.891-0.923, AVE: 0.492-0.518), and SPQ (RMSEA = 0.067, CFI = 0.968, TLI = 0.959, SRMR = 0.027; CR: 0.932, AVE: 0.559). The structural equation model examining relationships among all variables demonstrated excellent fit (RMSEA = 0.024, CFI = 0.929, TLI = 0.928, SRMR = 0.041). Key findings revealed that Conscientiousness was most strongly associated with Football Positive Emotions ($\beta = 0.303$, $p < 0.001$), while Negative Emotionality significantly predicted Football Negative Emotions ($\beta = 0.562$, $p < 0.001$). Notably, Sports Courage emerged as a significant mediator between personality traits and performance ($\beta = 0.277$, $p = 0.001$), highlighting its crucial role in youth football development. These findings provide theoretical insights into the psychological mechanisms underlying football performance in Chinese adolescents and offer practical implications for talent identification, coaching strategies, and psychological intervention programs in youth football development.

CHAPTER 1

INTRODUCTION

1.1 Background of Research

Football occupies a pivotal role in Chinese culture and society, transcending its status as a mere sport to become a vehicle for social cohesion, national identity, and youth development. The Chinese government's emphasis on football, particularly at the grassroots level, underscores its socio-cultural significance. As a platform for promoting physical fitness, teamwork, and discipline among youth, football plays a crucial role in fostering societal values and community spirit (Lai, 2023; Peng et al., 2019).

Building upon this cultural foundation, the psychological dimensions of football have emerged as critical determinants of athletic success. The emotional and psychological aspects of sports, including football, are widely recognized as key factors influencing athletes' performance. Emotions, whether positive or negative, significantly impact an athlete's motivation and performance, with factors such as stress, enjoyment, and courage playing crucial roles in determining athletes' participation and success in sports (Csikszentmihalyi, 1975; Scanlan et al., 1989; Wankel & Kreisel, 1985). Building upon this cultural foundation, the psychological dimensions of football have emerged as critical determinants of athletic success. The emotional and psychological aspects of sports, including football, are widely recognized as key factors influencing athletes' performance. Emotions, whether positive or negative, significantly impact an athlete's motivation and performance, with factors such as stress, enjoyment, and courage playing crucial roles in determining athletes' participation and success in sports (Anghel et al., 2009; Kim et al., 2018).

The interplay between emotions and personality becomes particularly evident when examining athletes' sporting experiences and their subsequent behavioral outcomes. Athletes' perceptions of their sporting experiences can elicit emotional responses, leading to motivational outcomes that directly influence their performance. Positive emotional responses such as enjoyment can enhance motivation and commitment, while negative emotions like stress can lead to avoidance behaviors (Scanlan et al., 1993; Scanlan & Passer, 1978; Scanlan & Passer, 1979). Furthermore, personality traits such as determination and venturesomeness, which represent key aspects of courage, have emerged as significant factors in sports performance contexts, highlighting the need for deeper research into these psychological dynamics.

Given the importance of these psychological factors in sports performance, their application to Chinese youth football development becomes particularly relevant. In China, football serves as a vital developmental tool for adolescents, offering a comprehensive platform for physical, emotional, and social growth that extends beyond traditional sports participation. The strategic promotion of campus football underscores its perceived value in enhancing discipline, teamwork, and leadership among youth, highlighting the broader educational and developmental objectives of incorporating football into young people's lives (Cheng, 2021). This structured environment fosters not only physical development but also psychosocial maturity, providing a foundation for life skills that transcend the sport itself while contributing to emotional resilience, teamwork skills, and perseverance among youth participants (Scanlan et al., 2003).

Within this national context, Shandong Province has emerged as a leading model for school football development in China, demonstrating the practical implementation of comprehensive youth football programs. As of 2018, the province

had established 1,318 schools with a focus on youth campus football, providing an average of 9.04 meters of space per student. The province's dedication to football development is evident through substantial financial backing, including a billion-yuan special fund allocated for campus football development over five years and an additional 60 million yuan specifically designated for football-focused schools. The quality of football education in Shandong has shown marked improvement, with the percentage of specialized football teachers among recruited physical education instructors increasing to 15% between 2015 and 2018, while part-time physical education teachers at football-focused schools rose from approximately 9% to 22.5%, showcasing the province's commitment to enhancing educational quality.

This comprehensive development in Shandong Province provides an ideal context for investigating the psychological mechanisms underlying youth football success. The present research focuses on examining the psychological aspects driving these advancements in Shandong's youth football program by investigating how emotions, personality traits, and courage interact to influence athletic performance. Through this investigation, the study aims to reveal the interconnectedness of these psychological elements and their impact on young athletes' achievements, providing both theoretical insights and practical applications for football development programs.

The significance of this research extends beyond academic contribution to offer concrete evidence that can assist coaches, physical education instructors, and policymakers in enhancing youth football programs and fostering exceptional football skills. By systematically examining the relationships among emotions, personality traits, courage, and athletic performance among football players in Shandong Province, this study aims to contribute to the continuous growth and enhancement of football education throughout China.

1.2 Problem Statement

Football, as one of the most popular sports globally, demands not only physical prowess but also sophisticated psychological competencies from athletes. In competitive football environments, adolescent players experience a complex array of emotions that significantly influence their performance, motivation, and overall sporting experience. Despite these benefits, adolescent football players in China often face intense emotional pressures in competitive environments. These pressures, stemming from performance expectations from coaches, parents, and society, as well as the inherent competitiveness of the sport, can adversely affect their development and performance (Gould et al., 2002; Scanlan & Simons, 1992; Scanlan et al., 1989).. However, there remains a critical gap in understanding football-specific emotional experiences, particularly within the Chinese cultural context.

A fundamental challenge in contemporary sports psychology research is the lack of culturally specific and validated instruments to assess football-related emotions among Chinese adolescent players. While general emotion scales exist, they fail to capture the unique emotional experiences inherent to football participation within the distinct sociocultural environment of Chinese youth sports. This limitation significantly constrains researchers' and practitioners' ability to accurately assess, understand, and intervene in the emotional dimensions of football performance among Chinese adolescents.

Moreover, there is a lack of research examining football-specific emotions, their measurement, and their influence on footballers in China. Specifically, there is no validated questionnaire to measure football-related emotions that considers the unique cultural and competitive environment of Chinese adolescent football. This

study addresses the need for a culturally sensitive and validated instrument—the Football Emotions Scale (FES)—tailored specifically to the experiences of Chinese adolescent football players.

A significant methodological limitation exists regarding the lack of culturally validated assessment instruments in Chinese sports psychology research. Specifically, established measures examining personality characteristics (BFI-2), athletic courage dimensions (SCS), and performance metrics (SPQ) require systematic validation within the Chinese cultural context to effectively investigate the relationships between psychological attributes and athletic achievement in Chinese sports settings. Validating these instruments in the context of Chinese adolescent football players is crucial for accurately assessing psychological constructs that are deeply tied to cultural context.

Furthermore, existing studies have yet to comprehensively explore the interrelationships between football-specific emotions, personality traits, sports courage, and sports performance among young athletes in China. Understanding how these factors interact is essential for optimizing athlete performance and psychological well-being. Specifically, the lack of research into the impact of personality traits and sports courage on the emotional and performance outcomes of young football players represents a significant knowledge gap. The interaction between emotions, personality traits, and courage is vital for athletes' cognitive control, decision-making, and resilience in high-pressure scenarios, which are common in competitive football environments (Martinent et al., 2012).

The unique sociocultural environment in China necessitates an investigation into the psychological factors affecting Chinese athletes. There is insufficient understanding of how emotions, personality traits, and courage contribute to

performance within the Chinese sports framework, particularly in the context of youth football development (Zhao et al., 2021). This study seeks to fill this gap by examining these psychological factors in adolescent football players in Shandong Province, China—an area known for its emphasis on school football development.

In summary, this research aims to address several key gaps in the literature: The absence of a culturally specific, validated instrument to measure football-related emotions in Chinese adolescent football players. The lack of validated Chinese versions of psychological instruments crucial for understanding personality traits, courage, and sports performance. The limited exploration of the interrelationships between football-specific emotions, personality traits, courage, and sports performance in Chinese adolescent football players.

By addressing these gaps, this research aimed to develop and validate the FES, adapt and validate the BFI-2, SCS, and SPQ, and examine the complex interplay between emotions, personality, courage, and sports performance in Chinese adolescent football players. The findings were expected to provide valuable insights for coaches, educators, and policymakers to foster youth football development in China through evidence-based psychological interventions.

1.3 Rationale and Significance

The primary reason for conducting this study is to understand how psychological factors influence the performance of adolescent football players in China. With the increasing popularity of football in China, it is crucial to investigate the interrelationships between emotions, personality traits, courage, and sports performance among these athletes. This research aims to uncover the mechanisms that shape athletes' mental processes during football activities in Shandong Province, China. This deeper insight is essential for designing evidence-based training programs,

coaching techniques, and interventions that address the psychological needs and challenges faced by Chinese football players.

A significant component of this research was the development of a culturally specific FES. By developing and validating this tool, coaches, educators, and practitioners were equipped to assess the emotional states of young football players more effectively. This assessment was crucial for identifying emotional challenges early on and implementing targeted psychological interventions to support optimal emotional development. Such interventions were intended to help athletes understand and manage their emotional responses during training and competition, ultimately leading to improved mental resilience and on-field performance.

Additionally, this study involved adapting and validating the Chinese versions of the BFI-2, SCS, and SPQ. These instruments enabled a more comprehensive understanding of personality traits, courage, and performance-specific psychological characteristics in Chinese adolescent football players. The validation of these tools addressed a significant gap in the literature and ensured that psychological constructs were accurately measured within the Chinese cultural context.

By exploring the relationships between football emotions, personality traits, sports courage, and performance, this study aimed to provide a holistic understanding of the factors influencing adolescent athletes in China. Specifically, the structural equation model developed in this research elucidated how these psychological factors interacted to influence performance outcomes. This knowledge was intended to inform the design of personalized training and coaching strategies that enhanced athletes' mental readiness, emotional control, and resilience—ultimately supporting their well-rounded growth, both in sports and in personal development.

The anticipated findings of this study hold significant practical implications for stakeholders engaged in football development and athlete performance in China. By examining the interactions among emotions, personality traits, courage, and sports performance, the results provide valuable guidance for optimizing coaching strategies, designing psychological support frameworks, and informing policymaking. For example, utilizing the FES to assess athletes' emotional states can enable coaches to implement targeted interventions aimed at enhancing mental resilience. Additionally, insights into personality traits can support the development of personalized training approaches that leverage and strengthen individual player attributes.

Moreover, this study was intended to provide coaches and practitioners with tools to develop new personalized training strategies for young football players. By understanding the impact of emotions, personality, and courage on athletic performance, they were expected to create training programs that focused not only on physical skills but also on psychological qualities such as emotional regulation, resilience, and courage. These programs were designed to empower young athletes to effectively manage emotional stressors, build psychological strength, and overcome challenges, ultimately enhancing their performance in sports competitions.

Furthermore, the results of this study contributed to the broader conversation in sports psychology by offering insights into athlete development within the Chinese context. By emphasizing the unique socio-cultural environment of China, this research added depth to the existing body of knowledge in sports psychology, highlighting cultural nuances that influence athletic performance (Reeves & Roberts, 2018; Skirstad et al., 2017). This contribution not only enriches academic discourse but also informs policy decisions and interventions aimed at fostering the holistic development of young athletes in China. Ultimately, the significance of this research extends beyond

academia, offering practical implications for coaches, practitioners, policymakers, and stakeholders committed to nurturing Chinese football talent.

1.4 Research Question

Phase 1

1. What are the key emotional dimensions and underlying factor structure of football-related emotions among adolescent players as determined through exploratory factor analysis?
2. Is the newly developed FES content valid for measuring football-related emotions as judged by subject matter experts?
3. Does the FES demonstrate acceptable face validity among the target population?
4. What are the psychometric properties (construct validity and reliability) of the FES as determined through exploratory factor analysis and internal consistency measures?

Phase 2

5. Does the FES demonstrate acceptable construct validity and reliability as confirmed through confirmatory factor analysis?
6. Are the Chinese translated versions of BFI-2, SCS, SPQ, and PANAS valid and reliable measures as assessed through confirmatory factor analysis?
7. Do all instruments (FES, BFI-2, SCS, SPQ, and PANAS) demonstrate temporal stability as assessed through test-retest reliability?
8. Does the FES show hypothesis-testing validity when correlated with the PANAS?

9. How does structural equation modelling explain the interrelationships between Big Five personality dimensions, sports courage, sports performance, and football emotions?

Note: All research questions pertain to adolescent football players in Shandong Province, China.

1.5 Research Objective

1.5.1 General Objective

To develop and validate the Football Emotions Scale (FES), validate Chinese translated versions of established psychological instruments, and examine the interrelationships between personality, emotion, courage, and sports performance among adolescent football players in Shandong Province, China.

1.5.2 Specific Objectives

Phase 1

1. To identify and explore the emotional dimensions experienced by adolescent football players through qualitative and quantitative methods leading to FES development.
2. To examine the content validity of the newly developed FES.
3. To examine the face validity of the FES among the target population.
4. To examine the construct validity and reliability of the FES through exploratory factor analysis and internal consistency measures.

Phase 2

5. To confirm the construct validity and reliability of the FES through confirmatory factor analysis.

6. To examine the validity and reliability of Chinese versions of BFI-2, SCS, SPQ, and PANAS through confirmatory factor analysis.

7. To examine the temporal stability of all instruments through test-retest reliability assessment.

8. To examine the hypothesis-testing validity of the FES by comparing correlations with PANAS.

9. To develop a structural equation model explaining the interrelationships between Big Five personality dimensions, sports courage, sports performance, and football emotions.

Note: All objectives are conducted with adolescent football players in Shandong Province, China.

1.6 Research Hypothesis

Phase 1:

1. The FES will demonstrate satisfactory content validity as judged by subject matter experts.

2. The FES will show acceptable face validity among adolescent football players.

3. The FES will demonstrate good construct validity and reliability based on exploratory factor analysis and internal consistency measures.

Phase 2

4. Confirmatory factor analysis will confirm the construct validity and reliability of the FES.

5. The Chinese versions of BFI-2, SCS, SPQ, and PANAS will demonstrate acceptable validity and reliability based on confirmatory factor analysis.

6. All instruments will demonstrate good temporal stability as indicated by acceptable test-retest reliability coefficients.

7. The FES will demonstrate strong hypothesis-testing validity, with significant correlations between FES scores and corresponding PANAS dimensions.

8. A structural equation model will effectively explain the relationships between Big Five personality dimensions, sports courage, sports performance, and football emotions, demonstrating acceptable model fit indices.

Note: All hypotheses are tested with adolescent football players in Shandong Province, China.

1.7 Operational Definition

1.7.1 Personality

Personality is defined as the relatively stable and enduring individual differences in patterns of thinking, feeling, and behaving that characterize adolescent football players in Shandong Province, China (Allport, 1961; Costa Jr & McCrae, 2000). The Big Five personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism) were assessed using the Chinese version of the NEO Five-Factor Inventory (NEO-FFI; (Costa Jr & McCrae, 2000)), a widely used and validated measure of personality.

1.7.2 Emotion

In this study, emotions refer to the affective experiences of adolescent football players in Shandong Province, China, in relation to their football activities. These emotions encompass both positive and negative states, such as happiness, excitement, anxiety, and frustration, which arise from the players' perceptions of their football experiences (Hanin et al., 2000; Jones, 2003). The emotional experiences were

assessed using the newly developed FES, which measures emotions specific to the context of football, including emotions related to matches, training, and football culture.

1.7.3 Courage

In this study, courage is operationalized as the willingness and ability of adolescent football players in Shandong Province, China, to face and overcome challenges, fears, and adversities in pursuit of their football-related goals (Konter & Ng, 2012a; Pury & Lopez, 2010). Courage was measured using the Chinese version of the Sports Courage Scale (Konter & Ng, 2012a), which assesses five dimensions of courage: mastery, determination, assertiveness, venturesome, and self-sacrifice.

1.7.4 Football

Football is a complex team sport that extends beyond its basic rules of two teams competing to score goals. It is a multidimensional activity that integrates physical performance, technical skills, tactical understanding, and psychological elements. In the context of youth development, football serves as both a competitive sport and an educational platform that facilitates physical, cognitive, and social development (Giulianotti & Robertson, 2012; Kirk & MacPhail, 2002; Tomlinson, 2014).

1.7.5 Adolescent

Adolescence represents a critical developmental period characterized by significant physical, psychological, and social changes. The World Health Organization (WHO, 2021) defines adolescents as individuals between 10-19 years old. However, for this study, we specifically focused on early adolescents aged 12-15 years, a period that aligns with junior high school age in China and represents a crucial

stage in youth sports development (Sawyer et al., 2018). This age range is particularly significant in football development as it encompasses what the Chinese Football Association terms the "golden age" for football skill acquisition and tactical understanding development (Chen et al., 2022).

1.7.6 Confirmatory Factor Analysis (CFA)

CFA is a type of structural equation modelling that manages specially the measurement models, which is, the relationships between observed variables or indicators (items, test scores, social perception appraisals) and latent variables or factors (Brown & Moore, 2012). It gives a more miserly comprehension of the covariation among a number of indicators on the grounds that the quantity of factors is not exactly the quantity of measured variables.

1.7.7 Structural Equation Modelling (SEM)

SEM analyzes the structural relationships between measured variables and latent constructs (Kline, 2005). SEM is adopted in this study to examine the relationships between personality traits, football-specific emotions, general emotional states, sports courage, and sports performance among adolescent football players.

1.8 Organization of the thesis

This thesis comprises five chapters. Chapter 1 serves as an introduction to the study and outlines its content, including the background, statement of the problem, and study objectives. Chapter 2 presents a literature review, offering insights into the study, research theories underpinning the hypotheses, and previous studies that corroborate them. Chapter 3 details the research methodology employed, while Chapter 4 presents the research findings. Finally, Chapter 5 provides the discussion, conclusion and recommendation of the study.

1.9 Chapter summary

This chapter serves as an introduction to the study, highlighting key aspects such as football emotions, personality, courage, and sport performance among adolescent football players in Shandong Province, China. It delves into the background of the study and articulates the problem statement. The chapter elucidates the study's direction by formulating both general and specific objectives. Additionally, it underscores the significance of the study through the rationale provided. Operational definitions are also included to clarify the terminology used throughout the study. Chapter 2 proceeded with a comprehensive review of relevant literature pertaining to the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter explores the complex relationship between emotions, personality traits, sporting courage and sporting performance in adolescent football. It begins with an in-depth examination of the role of emotions in sport, particularly football, and how they psychophysically influence performance. Recognizing the limitations of current emotion measurement scales, it highlights the need for a football-specific instrument. The development and validation of the FES is detailed, including critical steps and methodological considerations. The literature review further explores the Big Five personality traits, their theoretical underpinnings and empirical evidence in sport. The impact of each trait on performance and emotional responses is examined. The concept of sports courage is then unravelled, its influence on performance is discussed and the SCS is reviewed, including its Chinese validation. Highlighting the importance of structural equation modelling in sport research, the chapter explores the complex relationships between personality traits, emotions, sports courage and sport performance. It identifies existing research gaps and the potential for a comprehensive model. The chapter concludes by developing and justifying the theoretical framework of the study, thus providing a strong foundation for subsequent phases of research.

2.2 Emotions in Sports

To investigate the research trends and hotspots related to emotion in sport, a bibliometric analysis was conducted using the China National Knowledge Infrastructure (CNKI) and Web of Science (WOS) databases. The search terms "emotion" and "sport" were used, and the data was analyzed using COOC (Co-Occurrence) 14.9 and VOS (Visualization of Similarities) viewer version 1.6.19 software.

Figure 2.1 and Figure 2.2 present the results from the CNKI database. Figure 2.1 illustrates the temporal variation in the number of papers published on this topic from 1992 to 2024. A notable increase in the number of related papers can be observed starting from 2000, with a peak of 62 papers in 2008. This trend suggests a growing interest in the emotional aspects of athletes among Chinese researchers, coinciding with the rapid development of sports in the 21st century. Figure 2.2, a pie chart of keyword distribution, highlights the central concepts in this research area, such as "sports", "emotion regulation", "anxiety", and "mental health".

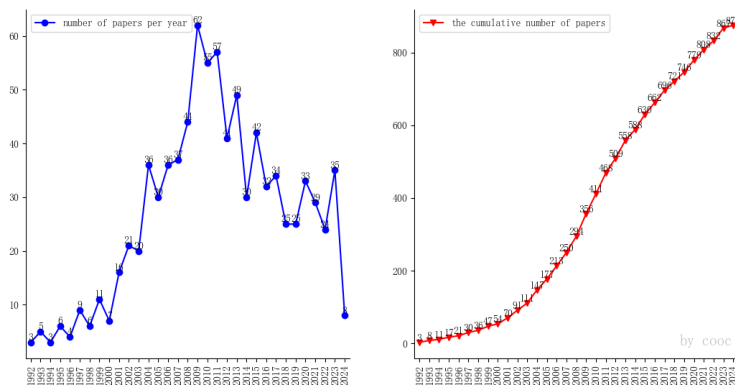


Figure 2.1 Temporal Trends in Sport Research within Emotion Studies (CNKI)

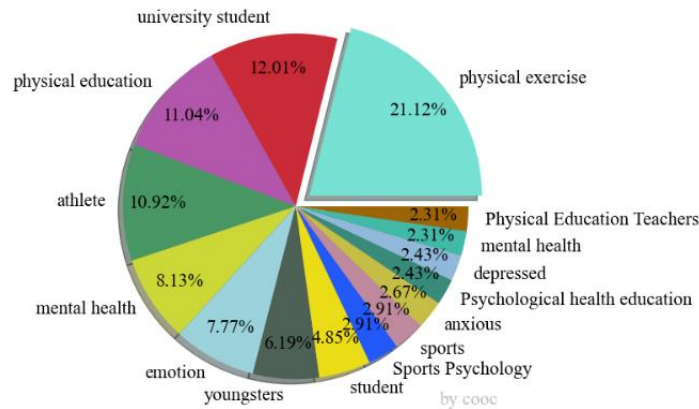


Figure 2.2 Keyword Distribution of Sport Research in Emotion Studies (CNKI)

Figure 2.3 and Figure 2.4 showcase the findings from the WOS database. The cumulative number of papers published on this topic from 1992 to 2024 (Figure 2.3) follows a similar trend to that observed in the CNKI data, with the total number of papers exceeding 800 by 2024. This indicates a sustained interest in this field among the international academic community. The radar chart of keyword distribution (Figure 2.4) positions "sport", "emotion", "physical training", "resilience", and "psychology" at the center of the keyword network, representing the core concepts in this research theme. More specific concepts such as "children", "sport courage", and "sport performance" reveal some key research directions, such as emotion management and mental health in young athletes.

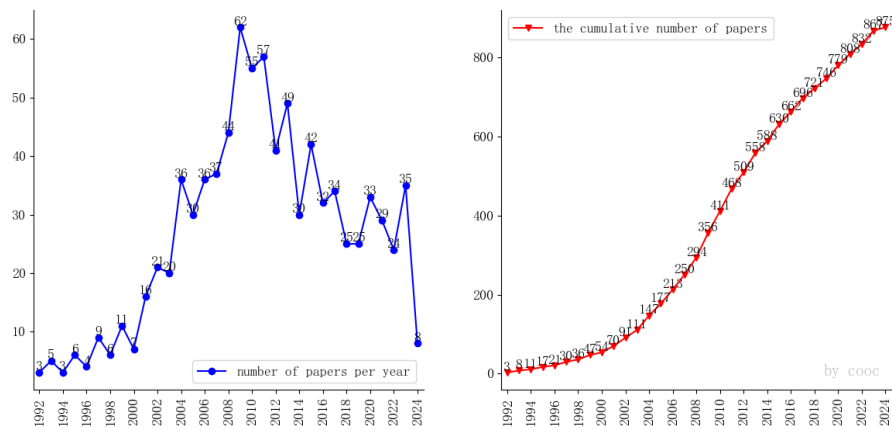


Figure 2.3 Temporal Trends in Sport Research within Emotion Studies (WOS)

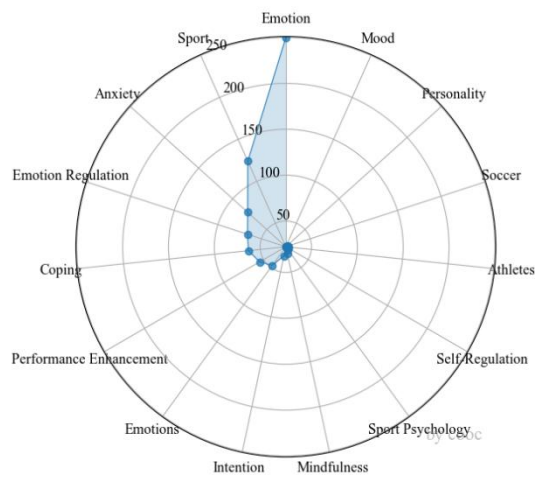


Figure 2.4 Keyword Distribution of Sport Research in Emotion Studies (WOS)

Figure 2.5 presents a matrix clustering map of keywords, with "masculinity" at the top, branching into "sport", "courage", "football", and other subcategories. "Sport performance", "self-control", and "identity" are considered lower-level dimensions of these branch concepts, with the entire conceptual system ultimately pointing towards "children" and "mental health". This framework provides valuable insights for understanding the relationships between athletes' emotions, personality traits, and sport performance.

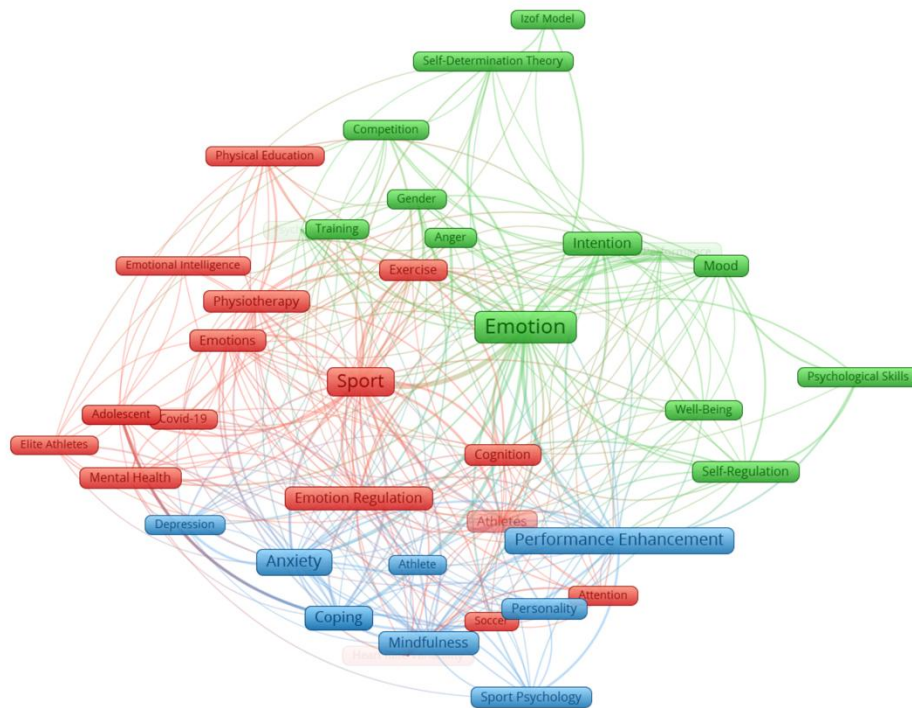


Figure 2.5 Keyword Clustering of Sport Research in Emotion Studies

In summary, the bibliometric analysis reveals that the relationship between athletes' emotions and sport performance has become a significant topic in the field of sport psychology, with particular attention given to adolescent athletes. Future research should build upon existing studies to further explore the mechanisms through which emotion regulation enhances sport performance, considering factors such as gender differences, age characteristics, and types of sports. Cultivating positive and optimistic emotional qualities in athletes and enhancing their psychological resilience are crucial for promoting their overall development and mental well-being.

2.2.1 Emotional influences on sports performance: Psychological and physiological effects

Emotion is a multifaceted psychological phenomenon encompassing cognitive activities, physiological reactions, and behavioral expressions. Emotions emerge from the brain's response to objective events, resulting in unique experiences that involve specific physiological and psychological mechanisms (Thatcher et al., 2011). Historically, emotions have been linked to distinct components: William James associated emotions with subjective experiences, behaviorists emphasized instrumental behavior, and psychophysicologists focused on physiological changes. Contemporary views, however, integrate all these aspects, viewing emotions as a combination of subjective experiences, psychophysiological expressions, biological reactions, and mental states (Schacter et al., 2011). Sociological perspectives, such as those presented by Thoits (1989), also incorporate cultural labels, expressive body actions, and situational appraisals. This holistic understanding underscores the complexity of emotions and their profound impact on human functioning.

Theories of emotion can be classified into three main categories: physiological, neurological, and cognitive. Physiological theories posit that bodily reactions precede emotional experiences, while neurological theories suggest that brain activities are the precursors to emotional responses. Cognitive theories emphasize the role of mental processes, particularly thoughts, in forming emotions. Foundational theories, such as the James–Lange theory and the Cannon-Bard theory, have shaped our understanding of emotions by highlighting different pathways, whether through physiological responses or simultaneous emotional and physiological reactions (Cannon, 1987; James,

1948). The Schachter-Singer two-factor theory further integrates cognitive and physiological components, suggesting that emotions arise from physiological arousal combined with cognitive interpretation of environmental cues (Schachter & Singer, 1962). These theories provide a foundational understanding of how emotions arise and how they can influence behavior.

In sports performance, emotions play a significant role in determining outcomes. Two influential frameworks in this field are the Individual Affect-related Performance Zones (IAPZ) and the Individual Zone of Optimal Functioning (IZOF) (Y. L. Hanin, 2000; Kamata et al., 2002). The IAPZ model emphasizes the relationship between varying intensities of emotions and performance outcomes, suggesting that each athlete has an optimal emotional "zone" where certain emotions enhance performance, while straying from this zone may lead to decreased performance. Research in this area shows that athletes experience a range of emotions, such as happiness and anxiety, which can either boost or hinder their performance (Santos, 2017). Using the Questionnaire on Emotions in Sports Performance (QESP), Santos (2017) found that emotions like anger, anxiety, shame, and sadness correlated negatively with performance, while joy and vigor were associated with enhanced performance outcomes. These findings highlight the need for effective emotional regulation strategies to help athletes achieve peak performance.

Emotional self-regulation is critical in sports, with athletes needing to manage both positive and negative emotions to optimize their performance. Robazza et al. (2004) highlight the importance of self-regulation in fostering performance-enhancing states,

especially in precompetitive situations. While much of the literature has focused on anxiety, there is a need to expand research to other influential emotions, such as anger, pride, and hope, which have received comparatively less attention (Kerr, 2021; Palazzolo, 2020). Emotions like frustration and courage are often highlighted in sports narratives but remain under-researched (Tenenbaum et al., 1997). Janelle et al. (2020) expanded on the relationship between emotions and performance by illustrating how emotions impact cognitive, affective, and behavioral dynamics, thereby affecting athletic outcomes.

Negative emotions have historically dominated the discussion on sports performance, largely due to the traditional focus of psychology on alleviating distress. Cerin (2003) argues that negative emotions have received more attention because of the field's origins in resolving psychological problems. Positive emotions, however, are gaining recognition for their beneficial effects on athletic performance. McCarthy (2011) emphasizes that positive emotions can enhance creativity, problem-solving skills, and decision-making, all of which contribute to improved sports performance. Additionally, Campo et al. (2019) showed that positive emotions play a crucial role in team dynamics, with higher levels of positive emotions correlating with better team performance in rugby. This shift towards understanding positive emotions enriches our knowledge of the emotional factors that contribute to successful sports outcomes.

Further research by Vast et al. (2010) and Ruoxi et al. (2023) provides additional insights into how emotions like excitement, happiness, and anxiety impact sports performance. Positive emotions such as excitement and happiness have been linked to

improved focus and enhanced performance, while anxiety can negatively impact outcomes if not managed properly. These findings stress the importance of cultivating positive emotional states and implementing effective emotion regulation strategies for athletes. Millán-Sánchez et al. (2023) further emphasize the role of emotional regulation and impulsiveness in enhancing sports performance, suggesting collaboration between coaches and therapists to develop comprehensive emotional management strategies for athletes.

Lazarus (2000) introduced a dual appraisal model that distinguishes between primary and secondary appraisals, both of which influence athletes' emotional states and subsequent performance. His Temporal Influence Model of Emotion Regulation suggests that the timing of emotion regulation strategies can either enhance or impair performance, depending on their use Beatty and Janelle (2020). In this regard, Wagstaff (2014) highlights the potential drawbacks of emotion suppression, noting that it can impair cognitive functioning, thereby affecting performance. Understanding these mechanisms is key for developing interventions that can help athletes regulate their emotions effectively in high-pressure scenarios.

The Table 2.1, as referred to, likely encapsulates the core-relational themes of the eight emotions delineated by Lazarus, serving as a visual representation to better understand the emotion-performance nexus in a sporting milieu. Through this model, Lazarus contributes a nuanced framework to dissect the complex emotional landscape athletes navigate, providing a scaffold for further exploration and understanding within sports psychology.