Revija za Kriminalistiko in Kriminologijo
Journal of Criminal Investigation and Criminology
REVIJA ZA KRIMINALISTIKO IN KRIMINOLOGIJO,
ISSN :0034-690X,
STEFANOVA ULICA 2, LJUBLJANA,
SLOVENIA, 1501
Volume 76-Issue 2-(2025)
OPEN ACCESS

The Psychology of Sports Fandom in China: Emotional Dynamics, Execution Intention, and the Mediating Role of Self Efficacy

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Abstract: This study explores the intrinsic relationship between emotional and psychological factors and the willingness to act within the Chinese sports fan community (referred to as the "Sports Fandom"). It further investigates the mediating role of self-efficacy in this dynamic. Drawing on grounded theory and hypothesis-driven research, the study employed in-depth interviews to identify key evaluation indicators, followed by a survey of 458 valid responses. Structural equation modeling and mediation analysis revealed that emotional contagion, group identity, psychological needs, and competitive factors positively influence execution intention. Self-efficacy not only directly enhances this intention but also mediates the impact of the aforementioned factors. These findings provide novel insights into the psychological mechanisms underlying fan behavior in sports communities, offering valuable implications for both theoretical development and practical management strategies in the field.

Keywords: Sports Communication; Sports Fandom; Fan behavior; Mediating Effects; Self-Efficacy

Introduction

Fandom is a complex phenomenon studied from various perspectives, including life course development (Harrington & Bielby, 2010) and identity construction (He et al., 2022). Fans, passionate about sports or celebrities, engage in supportive consumption behaviors (Mastromartino et al., 2018). Social media has transformed fan communities, enabling virtual interaction and content creation (Reysen & Lloyd, 2012). Fandom intersects with consumerism, tourism (Henrik Linden & S. Linden, 2016), and activism (Bennett, 2011). Celebrity worship is linked to demographic, personality, and psychological factors (Brooks, 2018). Fan practices also aid language learning and

identity formation (Sauro, 2017). The concept of consumer fanaticism explores its social nature (Chung et al., 2018). Fandom inspires emotional attachment, creative production, and community participation (Lundy et al., 2020), with social media promoting participatory culture (Jia et al., 2022). Sport fandom has evolved with new platforms like esports (Kim et al., 2020), and fandom studies reveal insights into social dynamics and cultural trends.Fandom in China has been a topic of interest in recent years, particularly in the context of youth culture and consumption patterns.Studies show that fandom culture has transformed from celebrity-focused groups to a broader phenomenon influencing social, economic, and political spheres (Huang, 2024; Fung, 2009). The rise of digital platforms and social media has significantly shaped fan practices, leading to the emergence of data-driven fan engagement and algorithmic culture (Yin, 2020; Jia et al., 2022). Researchers have explored the intersection of fandom with nationalism, identity construction, and gender expression (Peng et al., 2022; He et al., 2022; Liao et al., 2022). The globalization of Chinese fandom is evident in the adoption of transnational elements, such as Boys' Love and cosplay (Li, 2017). These studies collectively emphasize the complex nature of fandom in China, its impact on youth culture, and its potential to influence broader societal and political dynamics in the digital age.

Sports fandom is a multifaceted phenomenon encompassing psychological, social, and cultural aspects. Fans reinforce their identities through supportive consumption behaviors (Mastromartino et al., 2018; Johnson et al., 2020). Social media has become essential for fan engagement, enabling interaction with athletes and teams (Matang et al., 2023). Fandom provides community and is shaped by commodification while supporting identity construction (Spracklen, 2021). The rise of digital platforms has transformed sports fandom, giving rise to new forms such as esports (Kim et al., 2020). In China, sports fandom is influenced by globalization, cultural identity, and digital media, with fans often supporting both domestic and international athletes (Sullivan et al., 2021; Kaplan & Langdon, 2012). Fandom serves as a means of expressing local identity amid global influences (Lee, 2021; Han & Xiong, 2023). Issues such as fan nationalism (Peng et al., 2022) and racism remain relevant, while youth culture commercialization impacts fan engagement (Fung, 2009). Ethnographic methods are increasingly used in fan studies to explore behaviors and motivations (Pujol, 2020). The evolving nature of fandom, influenced by digital media, reflects broader societal changes (Kim et al., 2020; Mansfield, 2021).

Theoretical Background and Literature Review

Social Cognitive Theory

Social Cognitive Theory (SCT) has been widely applied in health behavior research, particularly in studies on physical activity and diabetes management. SCT constructs, especially self-efficacy, have shown significant predictive ability for exercise behavior and health outcomes (Allen, 2004; Keller et al., 1999; Young et al., 2014). Meta-analyses have found that SCT accounts for approximately 31% of the variance in physical activity (Young et al., 2014). SCT-based interventions have demonstrated positive impacts on health promotion in primary care settings, with self-efficacy and observational learning being the most utilized constructs (Islam et al., 2022, 2023). However, some studies have noted inconsistent results regarding outcome expectations and socio-structural factors (Young et al., 2014). While SCT has been applied across various disciplines, its use in marketing research remains limited (Yakut, 2019). Future research should focus on improving methodological quality and integrating multiple SCT constructs to enhance intervention effectiveness (Tougas et al., 2015; Carillo, 2010). SCT posits that behavior is influenced by personal, environmental, and behavioral factors (Beauchamp et al., 2019). Coaches can leverage SCT

principles by serving as positive role models and utilizing observational learning techniques (Connolly, 2017). SCT has shown utility in explaining physical activity, accounting for 31% of variance in behavior (Young et al., 2014). However, methodological quality of many studies is poor, and some SCT constructs, such as outcome expectations, have inconsistent associations with physical activity (Young et al., 2014). In the context of fan behavior, celebrity worship has been linked to various factors, including demographics, personality traits, and psychological well-being (Brooks, 2018). Social media has emerged as a crucial platform for sports fans to express fandom and connect with athletes and teams, with use and gratification theory often framing these interactions (Matang et al., 2023). However, challenges such as racist comments among diehard fans highlight the need for further research on digital literacy in sports fandom.

Self-efficacy

Self-efficacy, central to Bandura's social cognitive theory, refers to an individual's belief in their ability to perform tasks and influences behavior in areas like education, work, health, and psychotherapy (Gecas, 1989; Verma & Sharma, 2013). It affects motivation, performance, and coping strategies (Girardi et al., 2018), and plays a key role in counseling and healthcare interventions (Larson & Daniels, 1998; Connolly et al., 2014). In education, self-efficacy influences student success (Visoso, 2024), while in sports, it moderates performance (Samson & Solmon, 2011; Lochbaum et al., 2023). It is shaped by four sources: mastery experiences, vicarious experiences, social persuasion, and physiological states (Samson & Solmon, 2011; Juwita et al., 2023). Research highlights its role in mental health, physical activity, and academic performance (Girardi et al., 2018), with interventions showing success in improving outcomes (Elshatarat et al., 2016). However, studies in specific areas like adapted physical education are limited, and future research should explore its role in contexts such as military performance (Karamanoli & Kontodimaki, n.d.; Wurtele, 1986).

Fan Engagement

Fan engagement has emerged as a crucial concept in sports and organizational management, encompassing emotional, cognitive, and behavioral aspects of fan-team relationships (Yoshida et al., 2023; Santos et al., 2019). Research has explored various dimensions of fan engagement, including fan-to-fan relationships, team-to-fan interactions, and fan co-creation (Santos et al., 2019). Studies have investigated the impact of artistic expression (Biroo, 2023), digital platforms (Baldi et al., 2023), and social networking sites (Santos et al., 2019) on fan engagement. The use of ICT for enhancing fan engagement in motorsports has also been examined (Gabaj et al., 2021). Fan engagement has been linked to positive outcomes such as increased attendance, media viewing, and overall well-being (Yoshida et al., 2023). The concept of engagement has been explored in workplace settings as well, with research focusing on its antecedents and consequences (Simpson, 2009; Kular et al., 2008). Recent literature reviews have highlighted the need for further research to better understand and measure fan engagement in sports contexts (McDonald et al., 2022).Studies have validated scales to measure fan engagement behavior, identifying six dimensions that mediate relationships between predictors and outcomes (Yoshida et al., 2023). Fan engagement through social networking sites has been conceptualized as a multidimensional construct, influencing both online and offline behavioral intentions (Santos et al., 2019). Research has also examined oppositional behavior of brand fans (Chen & Ma, 2022) and the impact of artistic expression on fan engagement (Biroo, 2023). The role of curiosity in initially attracting individuals to sport consumption has been highlighted (Park et al., 2011). Customer engagement in sport has been

reviewed, emphasizing its potential to unify disparate areas of sport research (McDonald et al., 2022). These studies collectively contribute to a deeper understanding of fan engagement, its antecedents, and its consequences in various contexts. Social networking sites play a crucial role in fostering relationships and co-creation processes (Santos et al., 2019). limitations include reliance on self-reporting and the need for more well-designed interventional studies to establish causal relationships (Tan et al., 2021).

Research Hypothesis

Emotional contagion, as a primary form of emotional empathy, plays an important role in interpersonal interactions. In this study, emotional infection occurs during interactions with others, and the influencing factors involve individuals, inter-individuals, and contexts. Emotional infection among fans is particularly significant in the sports dining community, where positive emotional infection can stimulate fans' enthusiasm and engagement, thus enhancing their willingness to perform (Lu, 2022). Group identity has an important influence on individual psychology and behavior, and group identity not only directly affects the psychological state of individuals, but also indirectly affects individual behavior through a series of psychological mechanisms (Li,2016). In the sports fan circle, fans form a strong sense of group identity by supporting the common idol, and this sense of identity can inspire their cohesion and action, and then enhance the willingness to perform. Psychological needs are important factors that drive individual behavior. According to Maslow's hierarchy of needs theory, human beings have a variety of psychological needs, including social needs, respect needs and self-actualization needs. In the sports fandom, fans satisfy their psychological needs, such as sense of belonging, sense of achievement and self-worth recognition, by supporting their idols (Han, 2023). The fulfillment of these psychological needs can stimulate fans' motivation and action, thus enhancing the willingness to perform. The competition factor plays an important role in the sports field, competition can stimulate the fighting spirit and aggressiveness of individuals, prompting them to pursue their goals more diligently (Zhang,2023). In the sports fandom, competition among fans (e.g., fighting for votes and ranking for idols) can stimulate their participation and execution. Self-efficacy is an individual's beliefs and expectations about his or her own abilities, which has an important influence on behavior. Self-efficacy can affect an individual's goal setting, action adherence, and emotion management ability, etc. (Wang, 2023). In the sports fandom, fans' self-efficacy is often closely related to their level of support for their idols. When fans perceive their support as crucial to the success of their idols, their self-efficacy increases, and they are thus more willing to exert effort and take action on behalf of their idols .

Therefore, the following hypotheses are proposed in this paper:

H1: Emotional contagion has a significant positive effect on the intention to execute.

H2: Group identification significantly positively influences the intention to execute.

H3: Psychological needs have a significant positive impact on the intention to execute.

H4: Competitive factors significantly promote the intention to execute.

H5: Self-efficacy significantly enhances the intention to execute.

Self-efficacy is an individual's belief in his or her ability to perform a task or achieve a goal, and this belief influences the individual's behavioral choices and level of effort (Wang, 2023) . Emotional contagion, the primary form of emotional empathy, stimulates an individual's emotional response, which in turn influences his or her behavior (Li, 2021) . Positive emotional contagion enhances individuals' self-efficacy and thus their willingness to perform. Group identity is an individual's sense of belonging to the group to which he or she belongs, and this sense of identity

can stimulate the individual's behavioral motivation (Zhao, 2023). Group identity enhances the self-efficacy of individuals because they receive more support and recognition in the group. Psychological needs are the needs of individuals seeking to satisfy their psychological balance and development, and these needs include security, belongingness, respect and self-actualization. In this study when individuals' psychological needs are satisfied, their self-efficacy increases, which makes them more willing to take action to fulfill higher needs (Luo, 2012). The competition factor can stimulate the individual's fighting spirit and aggressiveness, which motivates them to pursue their goals more diligently (Li, 2021) . Competition enhances an individual's self-efficacy because they believe they have the ability to excel in the competition.Therefore, the following hypotheses are proposed in this paper:

H6: Self-efficacy exerts a significant mediating effect between emotional contagion and the intention to execute.

H7: Self-efficacy exerts a significant mediating effect between group identification and the intention to execute.

H8: Self-efficacy exerts a significant mediating effect between psychological needs and the intention to execute.

H9: Self-efficacy exerts a significant mediating effect between competitive factors and the intention to execute.

Research methodology

Grounded Theory

Grounded theory is a qualitative research methodology that aims to generate theory from empirical data (Hallberg, 2010; Khan, 2014). It aims to generalize and lead to theories from empirical data, and it emphasizes the researcher's sensitivity to theories to build substantive theories from the bottom up through systematic data collection and analysis and to ensure that the theories are derived from the original source materials and are fully developed (Luo, 2023). This study adhered to academic ethical standards and received ethical approval from the relevant research ethics committee. This study involved in-depth interviews with 53 sports fans, all of whom provided and signed informed consent prior to participation. The proposal for this study was approved by the Academic Ethics Committee of University Academic Commission and complied with established scientific standards. Measures were taken to protect the privacy and anonymity of the participants, aligning with established ethical guidelines for research involving human subjects.The method aimed to comprehensively and deeply explore their psychological and behavioral characteristics in the sports fandom. The interview process was semi-structured to ensure the openness of the topic and the possibility of in-depth exploration. Based on the grounded theory, this study systematically coded, categorized and refined the interview data, gradually forming a conceptual framework that reflected the real experiences and perspectives of the interviewees. In conjunction with the research hypotheses, secondary-level indicators were further refined. These indicators encompass the interviewees' experiences related to psychological needs within sports fandom (such as the pursuit of enhanced self-esteem, a sense of achievement, and self-worth recognition), competitive factors (including the desire to compete, the impact of competition on supportive behaviors, and how competition enhances participation and execution), self-efficacy (such as the positive influence on supportive behaviors, perceptions of behavioral effectiveness and value, and the ability to overcome challenges), and the intention to execute (including the willingness to take concrete actions, the perceived necessity and significance of such actions, and plans for future participation) (Table 1).

Table 1 Primary and Secondary Indicators of Grounded Theory and Interview Content

Primary Indicator	Secondary Indicator	Indicator Codes
Emotional Contagion	Emotional Influence	QX1
	Positive Emotion Sharing	QX2
	Enhancement of Supportive Behavior	QX3
	Collective Emotional Perception	QX4
Group Identity	Self-awareness in Groups	QT1
	Common Goal	QT2
	Shared Value	QT3
	Group Recognition	QT4
Psychological Needs	Self-fulfillment	XL1
	Embodied Experience	XL2
	Achievement in Action	XL3
	Collective Belonging	XL4
Competitive Factors	Competitive Atmosphere	JZ1
	Competitive Enjoyment	JZ2
	Competitive Cohesion	JZ3
	Competitve Engagement	JZ4
Self Efficacy	Self Value	ZW1
	Sense of Connectedness	ZW2
	Behavioral Value	ZW3
	Achievement After Adversity	ZW4
Execution Intention	Voluntary and Active Participation	ZX1
	Execution Consensus	ZX2
	Intrinsic Motivation for Execution	ZX3
	Behavioral Strategy	ZX4

Note: The data is compiled by the researcher according to interview.

Structural Equation and Mediation Effects

Structural equation modeling (SEM) is a statistical technique that integrates various statistical methods, including factor analysis and linear regression, to analyze complex relationships among multiple variables. It is widely used in research across social sciences, psychology, education, and related fields. Mediation effect is an important concept in psychology and sociology, referring to the phenomenon where the influence of an independent variable on a dependent variable is not direct, but rather occurs through one or more mediating variables. The existence of mediation effects reveals the complexity and indirect nature of relationships between variables (Yang, 2024).

Based on the research hypotheses, this study employed the AMOS 28.0 tool to utilize structural equation modeling to deeply analyze the intricate relationships among emotions, psychological needs, and behavioral intention within the Chinese sports fandom. By collecting and organizing a substantial amount of primary data, a structural equation model was constructed to investigate the potential impacts of emotions and psychological factors on behavioral intention. Furthermore, self-efficacy was introduced as a mediating variable. Through mediation analysis, this study elucidates its mediating role in the relationship between the two, specifically how self-efficacy acts as a transmission mechanism between emotions and psychological needs and behavioral intention, thereby influencing the behavioral tendencies and actual actions of members within the sports

fandom.

Results

Descriptive Analysis

The sample shows a roughly equal gender ratio, with males slightly more prevalent at 50.90%, while females account for 49.10%, indicating a good balance in terms of gender within the research sample. The age distribution is quite broad, covering all age groups from 0-17 years to over 41 years. Among them, the proportions for the age groups 0-17 years, 18-25 years, 26-40 years, and 41 years and above are 23.60%, 24.70%, 23.60%, and 28.20%, respectively (Table 2).

Table 2 Descriptive Analysis

Indicator	Category	Frequency	Percentage
Gender	male	233	50.90%
	women	225	49.10%
Age	0-17 years	108	23.60%
	18-25 years	113	24.70%
	26-40 years	108	23.60%
	41 years and over	129	28.20%
Education Background	Junior High School and Below	82	17.90%
	High School	100	21.80%
	Associate Degree	98	21.40%
	Bachelor's Degree	101	22.10%
	Master's Degree and Above	77	16.80%
Professions	Student	95	20.70%
	Employee of Enterprises and Institutions	90	19.70%
	Individual Business Owner	89	19.40%
	freelancer	88	19.20%
	Other	96	21.00%
Daily Internet Usage Duration	Less than 2 hours	96	21.00%
	2-4 hours	101	22.10%
	4-6 hours	83	18.10%
	6-8 hours	84	18.30%
	More than 8 hours	94	20.50%

	0-2000 dollars	87	19.00%
	2001-4000	108	23.60%
Average Monthly Income	RMB 4,001-6,000	96	21.00%
	8001-10000 yuan	84	18.30%
	More than $10,000	83	18.10%

The educational distribution is relatively uniform, encompassing all levels from junior high school and below to master's degree and above. Specifically, the proportions for the education levels junior high school and below, high school, associate degree, bachelor's degree, and master's degree and above are 17.90%, 21.80%, 21.40%, 22.10%, and 16.80%, respectively.The occupational types are diverse, including students, employees of enterprises and institutions, individual business owners, freelancers, and others. The proportions of various occupations are relatively balanced, with the "other" category having the highest proportion at 21.00%.The percentage of individuals spending more than 2 hours online daily exceeds 80%, specifically categorized into four intervals: 2-4 hours (22.10%), 4-6 hours (18.10%), 6-8 hours (18.30%), and over 8 hours (20.50%), indicating a generally high internet usage rate among the sample group.The monthly income levels show a wide distribution, ranging from 0-2000 yuan to over 10,000 yuan. The proportions for each income range are relatively balanced, but the high-income group (over 10,000 yuan) has a slightly lower proportion compared to several other major ranges.

Reliability and Validity Testing

The Cronbach's alpha coefficients for all dimensions are greater than 0.869, with the highest reaching 0.935, indicating good internal consistency and stability among the items in the scale, reflecting high reliability. Notably, the overall scale's Cronbach's alpha coefficient is 0.959, which is close to the ideal value of 1, further confirming the high reliability of the entire scale (Table 3).

Table 3 Reliability and validity Testing Result

Dimension (math.)	Item	Cronbach Alpha	KMO	Bartlett's test of Sphericity
Emotional Contagion	4	0.903	0.831	1182.482
Group Identity	4	0.898	0.813	1159.848
Psychological Needs	4	0.885	0.821	1029.010
Competitive Factors	4	0.904	0.835	1175.202
Self-Efficacy	4	0.869	0.817	941.756
Execution Intention	4	0.935	0.826	1700.032
Overall Scale	24	0.959	0.944	9384.828

Regarding the KMO values, all dimensions have KMO values greater than 0.813, with the highest being 0.835, and the overall scale's KMO value is 0.944, all significantly exceeding the acceptable threshold of 0.7. This suggests a strong partial correlation among the variables, making it suitable for factor analysis.The results of the Bartlett's test of sphericity indicate extremely high test values for all dimensions (e.g., 1182.482 for emotional contagion and 1700.032 for behavioral

intention), with the overall scale's test value reaching 9384.828. The corresponding significance level (not listed, but typically assumed to be $p < 0.001$) is very low, indicating that the correlation matrix of the scale items is not an identity matrix, suggesting shared variance among the variables and confirming its suitability for factor analysis, thereby validating the structural validity of the scale. In summary, the scale demonstrates excellent reliability and validity, with high reliability and effectiveness, making it suitable for subsequent research and analysis.

Correlation Analysis

All correlation coefficients were tested using a two-tailed test and are significant at the 0.01 level (marked as **), indicating a significant correlation between these variables. Emotional contagion is positively correlated with group identification, psychological needs, competitive factors, self-efficacy, and intention to execute, with correlation coefficients ranging from 0.492 to 0.571, suggesting a certain degree of mutual reinforcement among these variables. Notably, the correlation between emotional contagion and self-efficacy and intention to execute is particularly strong.Group identification is also positively correlated with the other five variables, and the correlation coefficients are generally high (ranging from 0.505 to 0.626), indicating that group identification plays an important role in promoting individual psychological needs, participation in competition, and enhancing self-efficacy and intention to execute. Additionally, there are significant positive correlations among psychological needs, competitive factors, self-efficacy, and intention to execute, with generally high correlation coefficients (particularly, the coefficients among competitive factors, self-efficacy, and intention to execute all exceed 0.669), indicating a strong intrinsic connection and mutual influence among these variables in individual behavior and psychological states (Table 4).

Table 4 Correlation Analysis

	Emotional Contagion	Group Identity	Psychological Needs	Competitive Factor	Self-Efficacy	Execution Intention
Emotional Contagion	1					
Group Identity	0.559**	1				
Psychological Needs	0.492**	0.505**	1			
Competitive Factors	0.497**	0.498**	0.809**	1		
Self Efficacy	0.533**	0.585**	0.669**	0.703**	1	
Execution Intention	0.571**	0.626**	0.672**	0.707**	0.732**	1

** Significant correlation at the 0.01 level (two-tailed)

the correlation analysis results in Table 3 reveal the close relationships and inter-dependencies among these variables, providing robust data support for further exploration of their mechanisms

and pathways of influence.

Regression Analysis

From the regression coefficients (B), all independent variables have positive coefficients, and except for psychological needs, the coefficients for the other variables are statistically significant ($p < 0.05$ or $p < 0.001$). Specifically, group identification ($B = 0.193$, $p < 0.001$) and self-efficacy ($B = 0.304$, $p < 0.001$) have the most significant predictive effects on intention to execute, followed by competitive factors ($B = 0.235$, $p < 0.001$) and emotional contagion ($B = 0.114$, $p = 0.001$). Although the predictive effect of psychological needs is positive ($B = 0.107$), its significance is relatively weak ($p = 0.022$), please refer to Table 5.

Table 5 Regression Analysis

	Unstandardized Coefficient		Standardized Coefficient	t	Significance
	B	Standard Error	Beta		
(Constant)	0.556	0.110		5.032	0.000
Emotional Contagion	0.114	0.033	0.120	3.433	0.001
Group Identity	0.193	0.034	0.204	5.630	0.000
Psychological Needs	0.107	0.047	0.111	2.293	0.022
Competitive Factor	0.235	0.049	0.242	4.840	0.000
Self Efficacy	0.304	0.043	0.304	7.119	0.000
R2			0.664		
F			179.011		
P			0.000		

The standardized coefficients (Beta) provide the relative magnitude of the impact of the independent variables on the dependent variable. Consistent with the unstandardized coefficients, self-efficacy has the highest Beta value (0.304), indicating that it has the greatest influence on intention to execute. The model's goodness of fit is represented by the R^2 value, which is 0.664, suggesting that these five independent variables collectively explain approximately 66.4% of the variance in intention to execute. The F value is 179.011, and the corresponding p-value is less than 0.001, indicating that the overall model is highly statistically significant. The results of the regression analysis demonstrate that group identity, self-efficacy, competitive factors, and emotional contagion all have significant positive predictive effects on intention to execute, while the predictive effect of psychological needs, although present, is relatively weak.

Confirmatory Factor Analysis

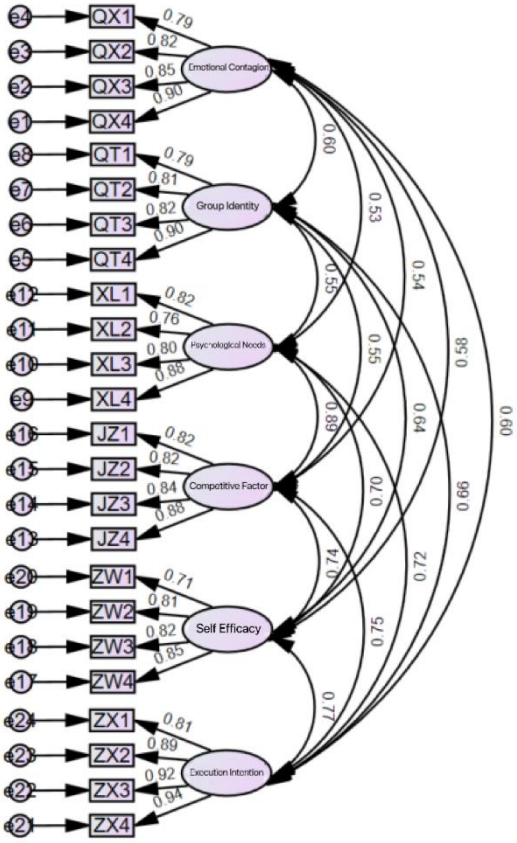

Figure 1 Confirmatory Factor Analysis

The Confirmatory Factor Analysis (CFA) path evaluates the path relationships between each latent variable and its observed variables using indicators such as Estimate, Standard Error (S.E.), Critical Ratio (C.R.), and significance level (P). All path estimates are greater than 0.9, indicating a strong positive correlation between each latent variable and its corresponding observed variable. All C.R. values for the paths are well above the critical value of 1.96, and the corresponding P values are marked as *** (typically indicating $p < 0.001$), suggesting that these path relationships are statistically significant, thereby validating the reasonableness of the predefined relationships between latent and observed variables in the research model (Figure 1).

Table 6 Path Results of Confirmatory Factor Analysis

	Estimate	S.E.	C.R.	P
Emotional Contagion ---> QX4	1.137	0.053	21.641	***
Emotional Contagion ---> QX3	1.027	0.051	20.002	***
Emotional Contagion ---> QX2	1.024	0.054	19.122	***
Emotional Contagion ---> QX1	1.000			
Group Identity ---> QT4	1.090	0.050	21.772	***
Group Identity ---> QT3	1.022	0.053	19.435	***

Group Identity ---> QT2	1.019	0.053	19.198	***
Group Identity ---> QT1	1.000			
Psychological Needs--->XL4	1.057	0.047	22.318	***
Psychological Needs--->XL3	0.956	0.049	19.699	***
Psychological Needs--->XL2	0.927	0.051	18.299	***
Psychological Needs--->XL1	1.000			
Competitive factors --> JZ4	1.048	0.045	23.067	***
Competitive factors --> JZ3	1.004	0.047	21.215	***
Competitive factors --> JZ2	0.973	0.047	20.515	***
Competitive factors --> JZ1	1.000			
Self Efficacy ---> ZW4	1.227	0.073	16.880	***
Self Efficacy ---> ZW3	1.194	0.073	16.403	***
Self Efficacy ---> ZW2	1.146	0.071	16.138	***
Self Efficacy ---> ZW1	1.000			
Execution Intention --> ZX4	1.172	0.047	25.110	***
Execution Intention ---> ZX3	1.143	0.047	24.372	***
Execution Intention---> ZX2	1.134	0.049	23.162	***
Execution Intention ---> ZX1	1.000			

The first observed variable for each latent variable (e.g., QX1 for emotional contagion, QT1 for group identification, etc.) is set as the reference indicator, with its estimate fixed at 1.000 for standardization and comparison of the path coefficients of other observed variables.Therefore, the path results of the Confirmatory Factor Analysis in Table 6 support the validity of the predefined relationships between each latent variable and its observed variables in the research model, providing a solid foundation for subsequent structural equation modeling analysis.

The AVE value reflects the average contribution of the observed variables to the variance of the respective latent variable. All latent variables in the table have AVE values greater than 0.5, indicating good convergent validity, meaning that the observed variables effectively capture the constructs of the latent variables. Notably, the AVE for intention to execute is the highest at 0.790, suggesting that its observed variables contribute the most to the variance of intention to execute (Table 7).

Table 7 AVE and CR Values from Confirmatory Factor Analysis

	Estimate	AVE	CR
Emotional Contagion ---> QX4	0.903	0.705	0.905

Emotional Contagion ---> QX3	0.845		
Emotional Contagion ---> QX2	0.816		
Emotional Contagion ---> QX1	0.789		
Group Identity ---> QT4	0.902		
Group Identity ---> QT3	0.822	0.696	0.901
Group Identity ---> QT2	0.815		
Group Identity ---> QT1	0.794		
Psychological Needs--->XL4	0.878		
Psychological Needs--->XL3	0.804	0.667	0.889
Psychological Needs--->XL2	0.762		
Psychological Needs--->XL1	0.818		
Competitive Factors --> JZ4	0.884		
Competitive Factors --> JZ3	0.836	0.706	0.905
Competitive Factors --> JZ2	0.817		
Competitive Factors --> JZ1	0.821		
Self Efficacy ---> ZW4	0.852		
Self Efficacy ---> ZW3	0.825	0.640	0.876
Self Efficacy ---> ZW2	0.810		
Self Efficacy ---> ZW1	0.705		
Execution Intention --> ZX4	0.936		
Execution Intention ---> ZX3	0.918	0.790	0.938
Execution Intention---> ZX2	0.888		
Execution Intention---> ZX1	0.808		

The CR value is used to assess the degree of consistency among the observed variables within each latent variable. All latent variables have CR values greater than 0.7, indicating a high level of internal consistency among the observed variables, meaning these variables can reliably measure their corresponding latent constructs. The CR value for intention to execute is also the highest at 0.938, further validating the high consistency among its internal observed variables.The results of the Confirmatory Factor Analysis presented in Table 7 indicate that all latent variables possess good convergent validity and internal consistency, providing a reliable measurement foundation for subsequent structural equation modeling analysis.

Path Analysis

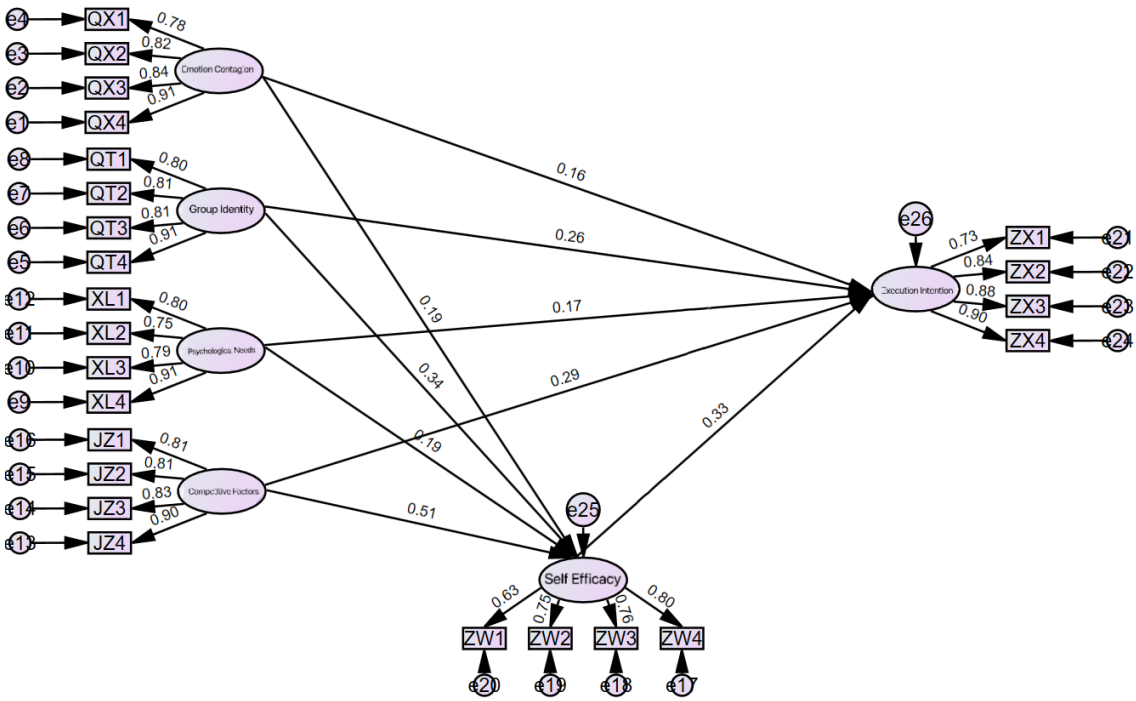

Figure 2 Structural Equation Model of Psychological and Behavioral Influencing Factors for Fans in the Chinese Sports Fandom

The path analysis from the Structural Equation Model (SEM) aimed at exploring the impact paths and their significance among different variables(Figure 2). The path coefficients (Estimate) indicate that all paths exhibit positive effects. The influence of competitive factors on self-efficacy and intention to execute is the most significant, suggesting that competitive factors play an important role in the model. The stability and significance of the path coefficients can be assessed through the Standard Error (S.E.) and Critical Ratio (C.R.). All paths have C.R. values greater than the critical value of 1.96, and the corresponding P values are marked as *** (typically indicating $p < 0.001$), indicating that these path relationships are highly significant statistically(Table 8).

Table 8 Path Analysis of the Structural Equation Model of Psychological and Behavioral Influencing Factors for Fans in the Chinese Sports Fandom

trails	Estimate	S.E.	C.R.	P
Emotional Contagion --> Self Efficacy	0.133	0.032	4.2	***
Group Identity ---> Self Efficacy	0.231	0.034	6.835	***
Psychological Needs --> Self Efficacy	0.127	0.031	4.064	***
Competitive Factors --> Self Efficacy	0.35	0.039	9.075	***
Self Efficacy --> Execution Intention	0.345	0.066	5.224	***
Emotional Contagion ---> Execution Intention	0.112	0.029	3.805	***

Group Identity ---> Execution Intention	0.185	0.032	5.692	***
Psychological Needs --> Execution Intention	0.122	0.029	4.198	***
Competitive Factors --> Execution Intention	0.21	0.037	5.624	***

Self-efficacy acts as a mediating variable in the model, playing a crucial role. It is not only directly influenced by emotional contagion, group identification, psychological needs, and competitive factors, but also significantly affects intention to execute (Estimate = 0.345, $p < 0.001$). This suggests that enhancing an individual's self-efficacy may be an effective strategy for increasing their intention to execute. The path analysis results from Table 8 reveal the complex relationships among the variables and emphasize the importance of competitive factors and self-efficacy within the model.

Mediation Effect Analysis

The results of the mediation effect analysis aimed at exploring the indirect effects of independent variables (emotional contagion, group identity, psychological needs, and competitive factors) on the dependent variable through the mediating variable (Table 9). From the estimates of each path, all independent variables have positive and significant direct effects on self-efficacy ($p < 0.05$ or $p < 0.001$), indicating that these independent variables effectively enhance an individual's self-efficacy. Among them, competitive factors have the most substantial impact on self-efficacy (Estimate = 0.507), while the impact of psychological needs is relatively smaller but still significant ($p = 0.026$).

Table 9 Mediation Effect Analysis

Paths	Estimate	Lower	Upper	P
Emotional Contagion --> Self Efficacy	0.192	0.084	0.313	0.001
Group Identity ---> Self Efficacy	0.339	0.229	0.45	0.001
Psychological Needs --> Self Efficacy	0.185	0.024	0.373	0.026
Competitive Factors --> Self Efficacy	0.507	0.35	0.668	0.001
Self Efficacy --> Execution Intention	0.333	0.213	0.47	0.001
Emotional Contagion ---> Execution Intention	0.156	0.056	0.272	0.004
Group Identity ---> Execution Intention	0.262	0.152	0.37	0.001
Psychological Needs --> Execution Intention	0.173	0.001	0.362	0.049
Competitive Factors --> Execution Intention	0.294	0.081	0.476	0.008

Self-efficacy also has a significant direct effect on execution intention (Estimate = 0.333, $p < 0.001$), suggesting that enhancing an individual's self-efficacy can significantly increase their intention to execute. By comparing the direct effects of independent variables on intention to execute (e.g., the effect of emotional contagion on intention to execute with an Estimate = 0.156) with the indirect effects through self-efficacy (i.e., emotional contagion enhancing intention to execute by increasing self-efficacy), the existence of mediation effects can be observed.

Although the direct effects are significant, the indirect effects (through self-efficacy) may be more crucial because self-efficacy serves as an important psychological resource within individuals,

driving behavior in a more enduring and stable manner.

As a conclusion, the mediation effect analysis results presented in Table 9 indicate that emotional contagion, group identity, psychological needs, and competitive factors can all indirectly enhance individuals' intention to execute by improving their self-efficacy, and this indirect effect plays a significant role in the model.

Discussions

The Direct Effects of Emotional Contagion, Group Identity, Psychological Needs, and Competitive Factors on Execution Intention

This study, through structural equation modeling analysis, verified that emotional contagion, group identification, psychological needs, and competitive factors have a significant positive impact on intention to execute. These findings not only reveal the intrinsic motivations behind member behaviors in the sports fandom culture but also provide strong evidence for understanding the high level of participation among fan groups. Emotional contagion, as an important concept in social psychology, is vividly reflected in the sports fandom. As fans collectively focus on the athletes, their emotions become mutually infectious, creating a strong emotional resonance. This resonance, in turn, translates into steadfast support for the athletes and fandom activities, thereby enhancing intention to execute (Fa,Wang, 2021). Group identification allows fans to find a sense of belonging; they see themselves as part of the larger family within the fandom and are willing to put in effort to uphold the honor and interests of the group. This identification not only strengthens the cohesion among fans but also ignites their enthusiasm and eagerness to participate in fandom activities.

The fulfillment of psychological needs serves as an intrinsic motivation for fans to continuously engage in fandom activities. By supporting athletes and participating in fandom events, fans can satisfy their psychological needs for self-esteem, achievement, and self-worth, which further enhances their intention to execute (Zhang, 2024). Competitive factors also play a crucial role in the sports fandom. To support their favorite athletes, fans often create a competitive atmosphere within the fandom, which not only stimulates their fighting spirit but also encourages them to participate more actively in fandom activities to achieve victory.

Mediating Role of Self Efficacy

This study verifies that self-efficacy has a significant positive effect on intention to execute and reveals its mediating role between emotional contagion, group identification, psychological needs, competitive factors, and intention to execute. This finding not only enriches the application scenarios of self-efficacy theory but also provides a new perspective for understanding the psychological mechanisms behind fan behavior in the sports fandom.

Self-efficacy is the individual's subjective judgment of their ability to successfully complete a specific behavior, influencing their choices and levels of effort (Lv, 2023). In the sports fandom, fans enhance their self-efficacy by participating in various activities, which in turn increases the strength and persistence of their intention to execute (Dong, 2022).

Moreover, self-efficacy serves as a mediating variable that connects emotional contagion, group identity, psychological needs, and competitive factors to execution intention. When fans experience emotional contagion, gain group identity, fulfill psychological needs, or face competition, they assess their own abilities and confidence to determine whether to take action and the intensity and duration of that action. Therefore, the enhancement of self-efficacy not only directly promotes the increase in intention to execute but also amplifies the influence of other factors on execution

intention through its mediating role.

Conclusion

This study conducts a rigorous empirical analysis to elucidate the intricate mechanisms through which emotional contagion, group identity, psychological needs, competitive factors, and self-efficacy influence execution intention in sports fandom. It underscores self-efficacy's pivotal mediating and moderating role in these dynamics. Emotional contagion positively drives fans' execution intention, while group identity enhances it through a sense of belonging. Psychological needs, reflecting intrinsic motivation, directly impact execution intention based on satisfaction levels. Competitive factors stimulate fans' competitive psychology, fostering increased intention. Self-efficacy not only directly boosts execution intention but also mediates interactions among these variables.The findings offer profound insights for managing sports fandom: First, regulating emotional contagion is crucial. Positive emotional guidance strategies, such as disseminating positive information, can effectively modulate group emotions, enhancing fans' execution intention. Second, cultivating group identity is vital. Strategies like interactive activities and fan communities strengthen fans' sense of belonging, elevating their intention. Third, addressing fans' psychological needs is essential. Diversified activities and personalized growth paths fulfill intrinsic needs, stimulating motivation and execution intention. Lastly, incorporating competitive elements through fair mechanisms like ranking lists fosters a benign competitive environment, further augmenting fans' psychological and behavioral engagement.

These multi-dimensional strategies collectively fortify fans' execution intention, providing a robust psychological foundation for active participation in sports fandom activities. The study establishes a solid theoretical groundwork for subsequent interventions and strategy formulation, offering deep insights into the multifaceted psychological motivations behind fan behavior.

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