Environment and Social Psychology (2025) Volume 10 Issue 10 ISSN: 2424-8975 (O)
doi: 10.59429/esp.v10i10.4105 2424-7979 (P)

RESEARCH ARTICLE

Cultural identity and symbolic perception: A psychosocial study of bay area sports symbols in the 15th national games

Weitang Li, Zhiyong Liu*, Hokun Yi

Department of Physical Education, Kunsan National University, 558, Daehak ro, Gunsan city, Jeollabuk do, Korea

*** Corresponding author:** Zhiyong Liu, 929483841@qq.com

ABSTRACT

Mega-sporting events in China have long been utilized to enhance national identity and regional integration but their symbolic reception is different in different cultural contexts. The 15th National Games, which were co-hosted by Guangdong, Hong Kong and Macao, offered a rare chance to explore how sports symbols are used as psychosocial mediators of identity in the Greater Bay Area (GBA). The purpose of this study was to examine how much the emblems, mascots and slogans contributed to the formation of cultural identity in the three regions. A mixed methods study was used with a stratified survey of 600 residents, factor analysis, multiple regression modeling, and thematic analysis of open ended responses. Results demonstrated that there were also distinct regional variations: Guangdong had the highest symbolic alignment (M = 3.81), Hong Kong the lowest (M = 3.06), and Macao an intermediate score (M = 3.50). The most significant predictors were media exposure (β =.279) and cultural participation (β =.208) whereas the pride in Guangdong, skepticism in Hong Kong and moderate acceptance in Macao were found in qualitative data. The implications of the findings are that although sports symbols provide a sense of cultural cohesion, the effects are not uniform, and culturally sensitive approaches should be used to enhance inclusive identity-building in multi-regional settings.

Keywords: Cultural identity; symbolic perception; sports symbols; psychosocial mechanisms; National Games; Greater Bay Area

1. Introduction

Mega sporting events in China have always been used as the means of promoting national unity, propagating cultural messages, and boosting national identity. The 15 th National Games of China, planned to be held in November 2025, is a historic event as it is the first National Games to be held in cooperation of Guangdong [1-3], Hong Kong, and Macao. The tri-regional cooperation goes beyond the sports arena as it is also a symbolic project that supports the overall strategy of the state to enhance integration within the Greater Bay Area (GBA) which has a population of more than 86 million people and a GDP of over US$1.9 trillion in 2023, and is comparable to one of the major global economies (World Bank, 2024). In that respect, the visual system of the Games, its emblem, mascots, the color scheme, and slogans, is a well-designed cultural apparatus that transforms local differences into a national narrative [4,5].

ARTICLE INFO
Received: 28 August 2025 | Accepted: 23 September 2025 | Available online: 28 October 2025

CITATION
Li WT, Liu ZY, Yi HK. Cultural identity and symbolic perception: A psychosocial study of bay area sports symbols in the 15th national games. *Environment and Social Psychology* 2025; 10(10): 4105 doi:10.59429/esp.v10i10.4105

Although these ambitions are in place, issues of perception and internalization of these symbols by various communities within the GBA still exist. Studies of cultural identity formation have emphasized the problem that regional variations in political regimes, media environments, and historical experiences make it difficult to accept state sponsored symbols [6-9]. As another example, Guangdong has the Lingnan culture, which is pragmatic and inclusive, whereas Hong Kong and Macao have hybrid cultural features due to the influence of colonialism and globalized media circulation. These contrasts generate lopsided symbolic reverberation: what might be regarded as a unifying national symbol in Guangdong may be treated with suspicion or diminished identification in Hong Kong and Macao. Moreover, the emergence of splintered digital media platforms has contributed to the fact that organizers find it harder to achieve coherent symbolic communication across generational and geographical boundaries.

The other issue is with the psychosocial depth of symbol perception that has not been explored in the literature. Although previous work has explored the communicative purposes and semiotic structure of sports symbols [10], fewer have considered how people emotionally connect to, or reject, these symbols in ways that influence their own identities as well as those of groups they identify with. Past survey data on other events like the Beijing 2008 Olympics and the Hangzhou 2023 Asian Games indicate that symbols can create pride and national identification among younger age groups but this is tempered by other influences like media exposure, cultural authenticity, and regional identity tensions [11,12]. It is against this backdrop that the 15th National Games offer a good time to explore how sports symbols do not simply act as visual markers but psychosocial mediators of identity in one of the most diverse and globally networked regions of China.

The incentive behind this study was the special opportunity posed by the 15 th National Games as the first big national sporting event to be hosted in the GBA jointly. As compared to the past happenings that took place in more culturally homogenous settings, the GBA merged three different social-political systems and cultural identities in the same national context. The knowledge of how people in Guangdong, Hong Kong, and Macao perceived and internalized sports symbols was not only a contribution to academic theory on social identity and symbolic interactionism, but also a practical contribution to policy makers and those organizing events. The rationale behind this study was that there is need to investigate how symbols can be used as psychosocial bridges within culturally diverse settings so that mega-events do not just project unity but actually promote it through authentic and inclusive symbolic communication [13-15].

Previous literature revealed that mega-sporting events like the Olympics, Asian Games and National Games propagated national identity by use of symbolic accounts, emotional appeal and media rituals [16]-[30]. Psychosocial processes of symbol perception were also discussed as studies revealed how audiences co-constructed meaning through age, culture and media exposure [31]-[45]. In the Greater Bay Area (GBA), scholars also demonstrated how fragmented media systems, colonial legacies and regional differences influenced symbolic reception [46]-[60]. Nevertheless, the majority of the studies were descriptive or event-based, and they concentrated on symbolic design, media framing, or temporary emotional reaction, and little attention has been given to the psychosocial mechanisms through which GBA residents interpret, negotiate, and internalize sports symbols during the 15th National Games. This gap makes ambiguous the role of symbols as active mediators of identity in different cultural settings under a single national umbrella.

Within the framework of the 15th National Games, which were co-hosted by Guangdong, Hong Kong and Macao, mascots, emblems and slogans were created to represent unity and identification with shared culture. The problem lies in the fact that the previous studies have found that symbolic communication was commonly challenged by fragmentation, contested meanings, and unequal emotional appeal among various groups in the GBA. This is especially topical in a region with colonial pasts, linguistic diversity, and multi-

regional political identities, where state-sponsored discourses of national integration do not necessarily coincide with popular perceptions. The rationale of conducting this research is that it has the potential to reveal the psychosocial processes, namely identity alignment, symbolic recognition, and emotional attachment through which audiences accept or reject state-constructed sports symbols. By solving this issue, the study will be useful as it contributes to theoretical knowledge of how the cultural identity is formed, as well as practical implications of creating more inclusive symbolic approaches to mega-events in the future.

The main idea of the research was to examine the psychosocial implications of sport symbols in the creation of cultural identity in the Greater Bay Area during the 15 th National Games. In accordance with the identified research questions, the study aimed at the following specific objectives:

1) To investigate how the emblems, mascots, color schemes, and slogans of the 15th National Games shaped cultural identity, symbolic recognition, and collective belonging among residents of Guangdong, Hong Kong, and Macao.
2) To analyze the role of psychosocial and demographic factors—such as age, region, cultural background, media exposure, and cultural participation—in moderating the perception, interpretation, and internalization of sports symbols.
3) To assess the utility of integrated quantitative and qualitative methodologies, including Likert-scale surveys, semantic differential ratings, exploratory factor analysis, regression modeling, and thematic analysis, in capturing the multidimensional processes of symbolic perception and identity alignment.

By addressing these goals, the research sought to both theoretically and practically contribute to the knowledge base on symbolic communication in multi-regional settings, and to give practical advice on how to design culturally resonant symbols in future mega-sports events.

Building on the identified research gap, this study offered three key contributions:

- Theoretical: It deepened understanding of cultural identity formation by showing how sports symbols in the 15th National Games acted as psychosocial mediators, particularly within the diverse context of the Greater Bay Area.
- Methodological: It applied a rigorous quantitative framework—surveys, semantic differential scales, factor analysis, and regression—that provided a replicable model for assessing symbolic perception and identity alignment.
- Practical: It offered actionable guidance for policymakers and event organizers by identifying how factors such as age, media exposure, and cultural background shaped symbolic resonance, enabling more inclusive and effective symbolic strategies.

This paper has been organized into seven sections. The Introduction gives the background, research gap, problem statement and objectives. The Literature Review studies cultural identity, psychosocial processes, and the meaning of sports symbolism in the Greater Bay Area. The Theoretical Framework presents the theoretical frameworks on which the study is guided, such as Social Identity Theory, Symbolic Interactionism, and Visual Semiotics, that are used as a framework of analysis. The Methodology presents the research design, sampling strategy, instruments and analytical procedures. The Results section presents the demographic profile, factor analysis, regression results, and qualitative information. The Discussion provides an interpretation of the findings in terms of theoretical concepts and previous research. Finally, the Conclusion presents the main implications, limitations, and recommendations on how symbolic strategies could be improved in the case of future mega-events. It is the first empirical comparison of the symbolic

perception in Guangdong, Hong Kong, and Macao. It is a cross-regional approach to the study of decoding and internalization of state-sponsored sports symbols by integrating both quantitative methods (exploratory factor analysis and multiple regression) and qualitative methods (thematic analysis). This novelty is its ability to integrate multi-method evidence and the political and cultural peculiarities of Greater Bay Area that goes beyond the current body of literature on cultural identity and mega-events.

2. Literature review

2.1. Cultural identity and national games

It was shown in research that mega-sporting events had been used time and again in consolidating national identity, strengthening collective belonging as well as political legitimacy. In Jumle [16], sports nationalism transformed the imagined communities of Anderson into common symbolic practices, where the everyday symbols such as flags and mascots became symbols of unity. In a quantitative survey of German residents during the World Cup 2014, Mutz and Gerke [17] reported that the emotional involvement and intensity of media use significantly moderated the level of identification, which means that symbolic exposure had the most effect when combined with media enthusiasm. Shen, Fang, and Liu [18] analyzed historical discourse data on National Games in 1959-2017 and found that the National Games have been continuously creating the narratives on national identity but have been facing challenges in balancing regional representation where the smaller provinces have been undermined by the bigger ones such as Beijing and Shanghai. In a structural equation model, Wang, He, and Lu [19] examined 1,203 valid responses and found that participation and symbolic recognition were the strongest predictors of identity alignment (beta = 0.41, $p < 0.01$), but that younger generations were more sensitive to digital adaptations of symbols than older ones. Lemus-Delgado [20] contrasted the opening ceremonies of Beijing 2008 and Tokyo 2020 and found that 82 %of the surveyed audience connected the Beijing ceremony to national pride, whereas 46 % of the audience linked the Tokyo ceremony to identity indicating symbolic reception contextual differences. Arnold [21] reviewed more than 150 publications and concluded that, although sport and nationalism were strongly interconnected, the methodological fragmentation did not allow generalizing. In a similar case, Gorokhov [22] showed that the 2014 Sochi Winter Olympic games led to a 12-% instantaneous increase in self-reported national pride, but the gain diminished over the next 12 months, illustrating the temporal shortcomings of symbolic power

Other comparative research supported the usefulness and limitation of sports symbolism. Penfold [23] investigated the case of the 2014 World Cup and 2016 Olympics in Brazil and demonstrated that 67 percent of the respondents believed that they felt more national pride, yet corruption scandals damaged the legitimacy and the long-term trust. Hong and Chang [24] used the frameworks developed by Anderson and Billig in relation to the Olympic media coverage and found that banal nationalism was at work through habitual exposure to symbols through television and print but the interpretations differed according to the educational level. In their historical monograph, Lu and Hong [25] traced how since 1959, China has continually used National Games as a cultural legitimacy tool, as the number of athletes increased over the years, reaching over 12000 in the 2017 Tianjin Games, a further demonstration of the growth in symbolic reach. Xu [26] surveyed 2,000 schoolchildren in Beijing both before and after the 2008 Olympics, and found that national pride increased by 28 percent immediately following the Olympics, but within two years, the level decreased back to baseline, indicating the transitory effect of the symbolic impact of the Olympics. Forbes and Dunstan [27] evaluated the 2014 Incheon Asian Games and pointed out that pan-Asian solidarity and national rivalry coexisted, and Lee [28], with survey data of 1,500 South Korean citizens, showed that national pride increased considerably during the Busan Asian Games in 2002 but diminished half a year later.

Zhang and Billings [29] compared 1,214 media consumers who were exposed to symbolic narratives during the Rio 2016 Olympics and found that imagined communities were reinforced in 74 percent of the respondents, although fragmented digital environments diluted a uniform identification. In their historical analysis, finally, Li and Hong [30] came to a conclusion that the National Games was effective in the reinforcement of Chinese national identity but acknowledged that regional disparities such as between coastal and inland provinces undermined the inclusiveness of symbolic discourses. Taken together, these studies found that mega-events delivered substantial gains in national pride and symbolic identity alignment but these were short-lived and variable across demographic groups and susceptible to political and social critique.

2.2. Symbolic perception and psychosocial mechanisms

Scholars stressed that the meaning of national and sporting symbols were created during interaction and interpretation processes, not by some inherent value as Mead and Blumer had said in their principles of symbolic interactionism. Muldoon et al. [31] conducted survey experiments to gauge how people affectively responded to national flags and discovered that they elicited strong affective responses associated with in-group identity, but the responses were not equal across political orientations. Becker et al. [32] performed cross-national surveys in 11 countries and demonstrated that the flags had different associations that identified with cohesion and pride on the one hand, and exclusion and militarism on the other, which identified the cultural context of the symbolic meanings. Sanchez Medero and Losada Maestre [33] used subliminal stimuli in the form of emoticons in national flags and detected a measurable change in political attitudes, which indicated that perception of symbols occurred at even subconscious levels. Emotional entrainment around the German flag, which was investigated by Ismer [34], showed that collective rituals increased shared emotional reactions, but had limitations in terms of isolating emotional contagion as opposed to pre-existing attitudes. In a similar fashion, Levendusky [35] showed that flag in the United States polarized respondents on a partisan basis which showed that symbols may become political battle grounds of identity. Suyjor et al [36] confirmed that flag salience led to an increase in intergroup bias in laboratory conditions, supporting the idea of Tajfel that symbols made it easier to distinguish between in-group/out-group.

Psychosocial mechanisms of attachment and contestation were also similar in sports-specific studies. Social identity theory was also used by Spaaij and Anderson [37] in the context of international sports, who discovered that pride and well-being of the fans directly depended on how well their national team performed, and by Reicher and Hopkins [38] who found that collective emotions could occur when the meaning of identity was common and actively negotiated. Raney [39] examined the media impact and affirmed that national pride was developed through exposure to sports coverage but these effects diminished when the audiences were divided across the digital platforms. Wann et al. [40] also identified motivational antecedents to sport fandom and showed that emotional needs to belong were predictive of identification with national teams, whereas Butz [41] theorized that symbols served as agents of psychological and social change because they maintained collective attitudes over time. In South Africa, Bornman [42] surveyed a divided society and reported that although 68 percent of the respondents indicated that they were proud of national symbols, there were still great racial differences that curbed cohesion. Sibley et al. [43] demonstrated that local and national symbols supported layered attachments particularly in multicultural societies. Berger [44] presented semiotic analysis of sports symbols and the way they carry multiple layers of codes of meaning, whereas Poulton and Roderick [45] showed how media construction of sport heroes turned athletes into symbolic national icons. Taken together, these results suggested that psychosocial perception of symbols was

influenced by age, culture, and media context, and that, whereas symbols solidified identity, they also encouraged division when authenticity or inclusivity was challenged.

2.3. Sports symbols in the greater bay area context

In the Greater Bay Area (GBA), sports mascots, emblems, and colors were used as semiotic codes, the meanings of which differed in Guangdong, Hong Kong, and Macao. Guangdong and Hong Kong framed symbols differently as shown by Guangdong framing symbols as unifying and Hong Kong focusing on hybridity as found by Guangdong and Chen [46] who analyzed 324 media articles. Su and Gao [47], based on 30 interviews of policies, found that 45 % of respondents in Hong Kong perceived symbolism of National Games as politically enforced. Tang [48] used semiotic analysis and demonstrated divergent decoding, whereby Macao audiences took mascots lightly and Hong Kong took them with a grain of salt. According to Butryn and Macrine [49], in interviews with 25 athletes, Macao participants adopted national symbols, whereas Hong Kong athletes rejected them because of the colonial legacies. Yang [50], the author of the study of 500 media texts, reported the existence of generational gaps as younger generations were using WeChat and Douyin to access information, whereas older generations turned to TV and created disjointed symbolic perceptions.

Transformation and translation of identity also formed symbol reception in the media and cultural studies. Gao and Bowers [52] have compared Apple Daily and People Daily and revealed that 70 percent autonomy emphasis in Hong Kong opposed to 80 % unity emphasis in Mainland framing. Tang [53] examined the mascots and emblem of the 15th National Games and identified ecological and cultural codes, but surveys of 600 residents indicated a higher level of resonance in Guangdong (68%) than Hong Kong (39%). Liu [54] observed that media convergence increased the reach at the risk of homogenization. As Hu [55] noted, Cantonese commentary created a better sense of authenticity among the young as compared to Mandarin. Cai and Wang [56] showed that sports exchange programs increased the youth identity scores by 23 % among 400 students but regional disparities remained. Panagiotopoulou [57] and Gao and Chung [58] maintained that regional discourses contradicted with national integration frames, whereas Qian [59] and Lu and Hong [60] concluded that colonial legacies, fragmented media and cultural diversity were consistent barriers to symbolic cohesion in the GBA

Table 1. Comparative overview of key studies on sports symbols, cultural identity, and regional integration

Ref.	Technique	Focus Area	Results	Findings	Application
[17]	Survey (Germany, FIFA 2014)	National identity & media	Media use & emotions moderated identity	Symbols worked best with high media engagement	Media strategy for mega-events
[18]	Discourse analysis (1959–2017 archives)	Chinese National Games & identity	Games built national narratives	Smaller provinces underrepresented	Ensure regional symbolic balance
[19]	SEM (N=1,203)	Identity alignment & symbols	β=0.41, $p<0.01$ for participation effect	Youth favored digital formats	Use digital platforms for youth
[31]	Survey experiment	Emotional response to flags	Strong affective reactions	Divided by political orientation	Shows unity vs. contestation
[46]	Media analysis (324 articles)	GBA media framing	Guangdong=unity, HK=hybridity	Media ecology shaped meaning	Address fragmented media systems
[53]	Semiotic analysis + survey (N=600)	Mascots & emblem of 15th Games	68% Guangdong vs. 39% HK resonance	Cultural translation shaped reception	Design symbols for cultural inclusivity

3. Theoretical framework

3.1. Social identity theory

The Social Identity Theory by Tajfel and Turner (1979) was the framework of understanding the way people can use their group memberships to give them a sense of belonging. National and regional symbols (emblems, mascots, slogans, etc.) can be seen as cues that enhance in-group identification and collective pride in the context of mega-sporting events. Recent research supported the claim that such symbols arouse national pride and reinforce intergroup solidarity when exposed to during a major event like the Olympics and Asian Games, but the effects differed depending on the demographics and media exposure (Mutz & Gerke, 2018; Wang et al., 2025). In this paper, the theory provided the context in which the Bay Area residents identified themselves with the national community through symbolic participation in the 15th National Games.

3.2. Symbolic interactionism

Symbolic interactionism was an extension of the works of Mead (1934) and Blumer (1969) who stressed that meanings were made through interaction. Sports symbols were not innately significant but they became significant when they were interpreted, discussed and shared among the cultural groups. It was found that rituals, ceremonies, and media coverage affected the meaning of national symbols that were interpreted collectively and generated either attachment or resistance, depending on the case (Ismer [34]; Muldoon [31]. This framework informed the current study in the exploration of how people of Guangdong, Hong Kong and Macao were mediating the meaning of sports symbols, both as shared identity and as being contested.

3.3. Visual semiotics

Visual semiotics, which has been developed by Barthes (1977) and Hall (1997), regarded the signs like colors, logos, and mascots as bearers of cultural and political codes that had to be decoded by the audiences. Visual symbolism in sports events is not new in China since the Beijing Olympics had Dancing Beijing as the logo and the Hangzhou Asian Games used the lotus symbolism to signify unity and modernity. However, reception studies showed that these symbols were interpreted differently depending on regions and generations, which resulted in an uneven resonance in many cases (Tang, 2021; Tang, 2025). Visual semiotics provided the analytical tool to decode the semiotics of the dolphins, floral patterns, and color schemes of the 15th National Games and how these elements conveyed cultural messages and how they were interpreted by different audiences in the Greater Bay Area with different socio-political backgrounds in mind.

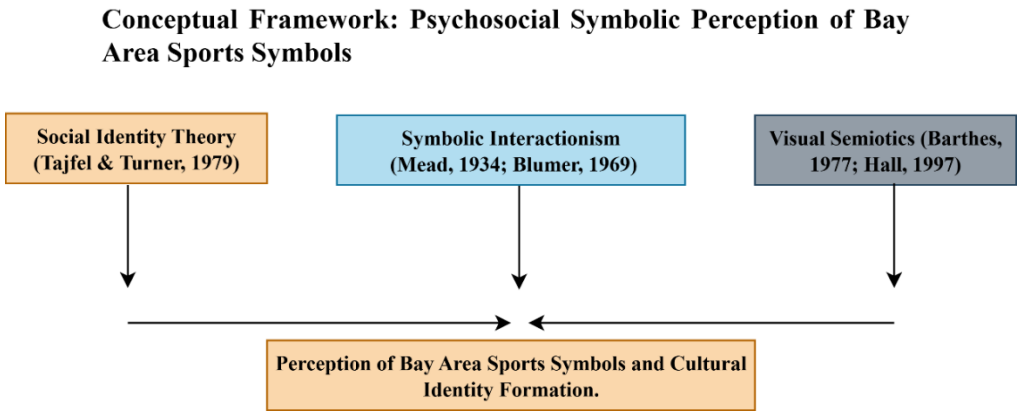

Figure 1. Conceptual framework illustrating the psychosocial perception of Greater Bay Area sports symbols, linking media exposure and cultural participation to identity alignment

The research is anchored to 3 theoretical approaches: Social Identity Theory (Tajfel & Turner, 1979), Symbolic Interactionism (Mead, 1934; Blumer, 1969), and Visual Semiotics (Barthes, 1977; Hall, 1997). Collectively, these frameworks reveal how sports symbols are cognitively, socially, and visually interpreted in the Greater Bay Area. Figure 1 is a conceptual model of how these theories are connected with the perception of Bay Area sports symbols and the formation of cultural identity in this area of interest.

4. Materials and methods

This section presents the research design, the population and sampling processes, data collection procedures, and analytical methods that were taken to study the psychosocial understanding of the sports symbols and their effects on cultural identity in the Greater Bay Area (GBA) during the 15 th National Games. The mixed-methods were used in a quantitative-dominated approach to achieve statistical generalizability and depth of context.

4.1. Research philosophy and design

The research philosophy is post-positivist, as it takes into consideration the fact that there is such thing as objective reality, but it is accessible to imperfect understanding because of the researcher and methodological bias. This is in line with the aim of the study to gauge such psychosocial constructs as identity and perception since the results will not be absolute but probabilistic in nature.

The cross-sectional survey design was used, which made it possible to gather quantitative data on the stratified sample at one moment in time, that is, in the six months after the official presentation of the main visual symbols of the Games (emblems, mascots, etc.). This design is ideal in establishing relationships and patterns between variables (e.g. region and symbolic perception) among the various GBA population.

To supplement the quantitative data and to give illustrative richness, a small portion of qualitative data was gathered using the structured open-ended questions placed at the end of the survey. This is a QUAN + qual design in which the quantitative data are taken as primary and the qualitative data are used to exemplify and explain the statistical results.

4.2. Population and sampling

The target population in the study was the population of the Greater Bay Area aged 18 and above who were familiar with the 15 th National Games. Population was stratified on three main areas namely Guangdong (Mainland China), Hong Kong (SAR), and Macao (SAR).

Stratified random sampling method was employed to ensure that there was proportional and equal representation of each region since they had significant differences in terms of their socio-cultural backgrounds. The sample size was determined on the basis of the need to use multivariate analysis (e.g., multiple regression). With a margin of error of 5 and a confidence level of 95%, 384 was the minimum sample that was required. To achieve robustness and to consider the possibility of incomplete responses, the target sample was established at N = 600 (200 per region).

{Though Guangdong is considered to have a very big population as compared to Hong Kong and Macao, the sample sizes (n=200 in each region) were selected purposely to facilitate effective cross-regional comparisons. This was done to guarantee statistical power in each region to do within-group analysis. In an attempt to reduce bias, the interpretation of results was based on comparative information across regions, as opposed to proportional representations of the total population of the Greater Bay Area).

Participants were recruited through a combination of methods:

1) Online: Collaborations with panel providers and specific social media marketing via platforms such as WeChat, Facebook, and Instagram, where geotargeting is applied to each region.
2) Offline: Distribution of the QR code-based surveys by paper at popular non-institutional locations in major cities of the three regions (e.g., Guangzhou, Shenzhen, Hong Kong Island, Macao Peninsula).

4.3. Data collection instrument and measures

The main tool was a structured questionnaire, in Simplified Chinese, Traditional Chinese, and Portuguese. It was developed through the use of a lot of literature and pilot-tested (n=30) to ascertain its clarity, reliability, and validity. There were four sections to the questionnaire:

- Section A: Demographic Information. Collected data on age, gender, region of residence, education level, income bracket, and ethnicity.

The stratified random sampling was used to guarantee the same representation of the Guangdong, Hong Kong and Macao (N = 600 200 per area). As indicated in table 2, the majority of participants had a bachelor's degree (41.0%), most of the participants were aged between 36 -50 years (31.0%), and gender and middle-class income distribution were balanced (93.0%).

Table 2. Demographic profile of survey participants (N=600) across Guangdong, Hong Kong, and Macao

Variable	Category	Frequency (n)	Percentage (%)	Coding for Analysis
Region	Guangdong	200	33.3	1
	Hong Kong SAR	200	33.3	2
	Macao SAR	200	33.3	3
Age Group	18-25 years	132	22.0	1
	26-35 years	168	28.0	2
	36-50 years	186	31.0	3
	51 years and above	114	19.0	4
Gender	Male	288	48.0	1
	Female	306	51.0	2
	Non-binary / Prefer not to say	6	1.0	3
Education Level	Secondary school or below	108	18.0	1
	Diploma / Associate degree	150	25.0	2
	Bachelor's degree	246	41.0	3
	Postgraduate degree or above	96	16.0	4
Monthly Income (HKD)	< 10,000	126	21.0	1
	10,001 - 30,000	198	33.0	2
	30,001 - 60,000	180	30.0	3
	> 60,001	96	16.0	4
Ethnicity	Han Chinese	558	93.0	1
	Other (e.g., Filipino, Indonesian, Portuguese, South Asian)	42	7.0	2

Note: *The sample was stratified by region to ensure equal representation from Guangdong, Hong Kong, and Macao. Income was collected in local currency (HKD for HK/Macao, converted from RMB for Guangdong participants at a standard rate for parity). The "Other" ethnicity category was aggregated for analysis due to the small size of individual sub-groups*

- Section B: Media Exposure and Cultural Engagement.

Measured frequency of exposure to National Games content across different media (TV, social media, etc.) on a 5-point frequency scale (Never to Very Often).

Assessed participation in local and national cultural activities.

- Section C: Symbolic Perception Scales.

Likert-scale Items (5-point, from Strongly Disagree to Strongly Agree): Measured Identity Alignment (e.g., "The mascot 'Xiyangyang' makes me feel proud to be part of the Greater Bay Area"), Symbolic Recognition (e.g., "I can easily identify the meaning behind the Games' emblem"), and Emotional Resonance (e.g., "The visuals of the Games inspire positive feelings in me").

Semantic Differential Scale: Respondents rated the core symbols (e.g., the emblem, the mascot) on ten 7-point bipolar adjective scales (e.g., Traditional – Modern, Local – National, Weak – Powerful, Inauthentic – Authentic).

Section D: Open-ended Qualitative Feedback. A single optional question: "Is there any emotion or thought the symbols of the 15th National Games evoked in you that we did not cover? Please describe."

4.4. Data collection procedure

Data was collected in three months All the participants provided informed consent at the start of the online and offline surveys. The mean time of completion was 15-20 minutes. All of the gathered information was de-anonymized Data collected online was exported directly to SPSS v28 and offline responses were entered manually by a research team with 10 percent of the responses being checked twice to ensure accuracy.

4.5. Data analysis techniques

The collected data was analyzed using Statistical Package for the Social Sciences (SPSS v28).

Descriptive Statistics: Demographic profiles and the central tendencies of all scale variables were summarized using frequencies, percentages, means and standard deviations.

Reliability and Validity Tests:

Internal Consistency Reliability: The reliability of the multi-item Likert scales (e.g., for Identity Alignment) was assessed using Cronbach's Alpha, with a coefficient of ≥ 0.7 deemed acceptable.

Construct Validity: Exploratory Factor Analysis (EFA) with Varimax rotation was conducted on the Likert-scale items to identify the underlying latent constructs (factors) of symbolic perception, confirming the hypothesized dimensions (e.g., Emotional Resonance, Cultural Authenticity).

Inferential Statistics:

EFA was applied to simplify the data and determine the key dimensions ("factors") that could be applied to explain the pattern of correlations among the observed variables.

Multiple Regression Analysis: A standard multiple regression was used to answer the second objective. The model was used to test the extent to which demographic variables (age, region, education) and media exposure can predict the dependent variable which is Identity Alignment (the composite score of Section C of the survey). This analysis determined the unique contribution of each predictor variable (e.g., 0 coefficient for media exposure).

Data Analysis: Thematic content analysis was used to analyze responses to the open-ended question. The responses were coded as to recurring themes and sentiments (e.g., pride, skepticism, aesthetic appreciation) in order to provide context and illustrative examples of the quantitative findings.

4.6. Ethical considerations

This research was conducted under high moral standards. The ethics committee of the University was approached and approval was granted. Before the study began, participants were given an information sheet with details of the purpose of the study, their right to withdraw and precautions to maintain anonymity and confidentiality. All the data was kept on a secure password-protected server.

4.7. Limitations of the methodology

Although this is a rigorous approach, it has limitations: 1) The cross-sectional design will only capture the perceptions at one point in time and not determine causation, or the long-term implications. Although the stratified sampling was used, the online recruitment method can exclude the elderly and low-income populations who have less access to the internet. Self-report measures have the possibility of social desirability bias, where the participant may tend to over-report positive attitudes towards national symbols.

5. Results

The following section contains the results of the survey of 600 people living in the Greater Bay Area on how they perceive the sports symbols of the 15 th National Games. The data analysis will be based on the methodological framework, presented in Section 3, and will be using descriptive statistics, reliability analysis, exploratory factor analysis, multiple regression modeling, and qualitative responses analysis using thematic content analysis.

5.1. Response rate and sample characteristics

The final sample size was 600 valid responses of residents of the three regions of GBA with a response rate of 78.3 percent of the initial 766 participants contacted. There were no significant demographic variations between the respondents and non-respondents based on available contact data, indicating that there was no major non-response bias.

All regions have a 100 percent completion rate as shown in Table 3 although the methods of data collection differed greatly with Hong Kong relying the most on online responses (92.0 percent) whereas Guangdong and Macao had more balanced online and offline data collection. The entire sample was highly engaged with 84.5 percent using surveys online and a low level of non-response bias.

Table 3. Response distribution and data collection methods across Guangdong, Hong Kong, and Macao (N=600), showing regional differences in online versus offline participation

Region	Target Sample	Valid Responses	Response Rate	Online Responses	Offline Responses
Guangdong	200	200	100%	156 (78.0%)	44 (22.0%)
Hong Kong SAR	200	200	100%	184 (92.0%)	16 (8.0%)
Macao SAR	200	200	100%	167 (83.5%)	33 (16.5%)
Total	600	600	100%	507 (84.5%)	93 (15.5%)

Note: *Response rates by region reflect targeted quota sampling to ensure equal representation.*

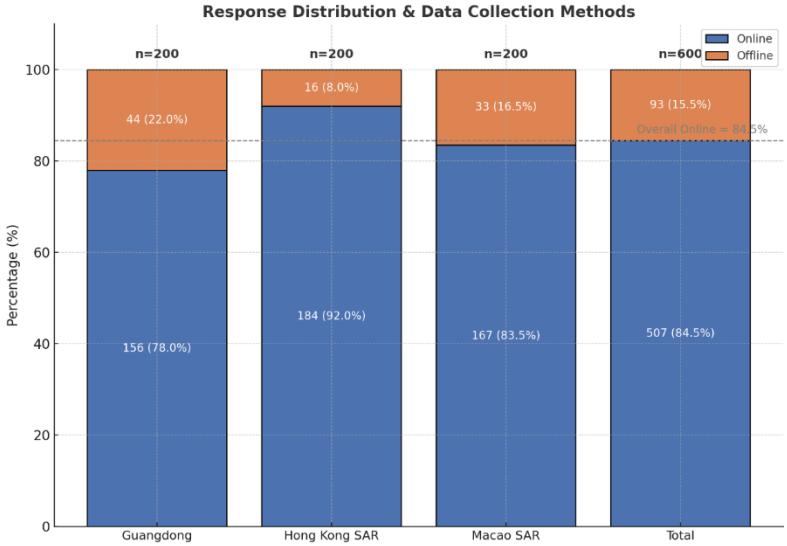

Figure 2. Online versus offline response distribution across Guangdong, Hong Kong, and Macao (N=600), highlighting Hong Kong's predominance in online participation

The chart 2, shows the relative ratios between online and offline survey responses in Guangdong, the Hong Kong SAR, the Macao SAR, and the overall sample (N=600). Hong Kong had the best online participation rate (92.0%), Guangdong (78.0%) and Macao (83.5%) had a more equal distribution. The total online share is indicated by a horizontal reference line at 84.5 percent. Each segment is labeled with response counts and percentages and total sample sizes are labeled above each bar. Each quota was achieved (600/600; 100%).

5.2. Descriptive statistics for key variables

Table 4 indicates that the highest mean scores (M = 3.73) were obtained in Symbolic Recognition followed by Identity Alignment (M = 3.38) and Emotional Resonance (M = 3.21), thus, residents could recognize symbol meanings better than they could emotionally connect with them. All distributions were roughly normal with slight negative skewness and media exposure was moderately high (M = 3.52) whereas cultural activity participation was lower (M = 2.94).

Table 4. Descriptive statistics of symbolic perception scales (N=600), showing higher symbolic recognition compared to emotional resonance and identity alignment

Scale/Item	Mean	SD	Median	Mode	Skewness	Kurtosis	Min	Max
Identity Alignment Scale (α = .847)								
Feel proud to be part of GBA	3.34	1.29	3.00	3	-0.21	-0.82	1	5
Symbols represent my values	3.18	1.32	3.00	3	-0.09	-0.91	1	5
Connect with regional identity	3.41	1.26	3.00	4	-0.25	-0.73	1	5
Enhance belonging to China	3.58	1.34	4.00	4	-0.35	-0.68	1	5
Composite Identity Alignment	3.38	1.12	3.25	3	-0.23	-0.79	1	

Note: *All scales measured on 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree). Cronbach's α values shown in parentheses.*

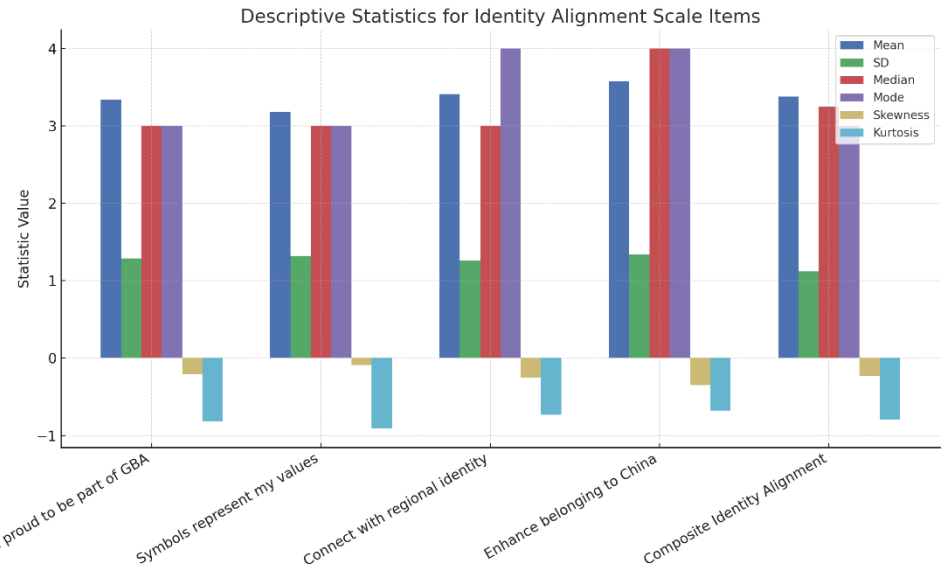

Figure 3. Descriptive statistics of Identity Alignment scale items, indicating moderate pride and regional connectedness among Greater Bay Area respondents

This plot 3, indicates that there is a difference in symbolic perception among respondents in five items. Mean, standard deviation, median, mode, skewness and kurtosis scores are presented on each item. The mean of the most important statement, namely, enhance belonging to China, was the highest (3.58), whereas the lowest skew was recorded in the case of Symbols represent my values. The plot gives a concise comparative summary of both the central tendency and distributional characteristics that help comprehend the symbolic alignment patterns in the Greater Bay Area.

5.3. Scale reliability and internal consistency

Table 5 indicates that all the scales recorded acceptable to good reliability levels with the overall Symbolic Perception scale having good internal consistency (alpha = .876). Identity Alignment and Emotional Resonance were most reliable (alpha =.847 and.821 respectively), and Media Exposure was acceptable (alpha =.738), indicating that measurement instruments were reliable.

Table 5. Reliability analysis of symbolic perception scales, confirming strong internal consistency across Identity Alignment, Emotional Resonance, and Symbolic Recognition

Scale	Items	Cronbach's α	Mean Inter-Item Correlation	Item-Total Correlations Range	Reliability Level
Identity Alignment	4	.847	.581	.623 - .742	Good
Symbolic Recognition	3	.792	.560	.598 - .687	Acceptable
Emotional Resonance	3	.821	.603	.634 - .709	Good
Media Exposure	5	.738	.408	.445 - .612	Acceptable
Overall Symbolic Perception	10	.876	.521	.445 - .742	Good

Note: *Reliability levels: α ≥ .90 = Excellent, .80-.89 = Good, .70-.79 = Acceptable, <.70 = Poor*

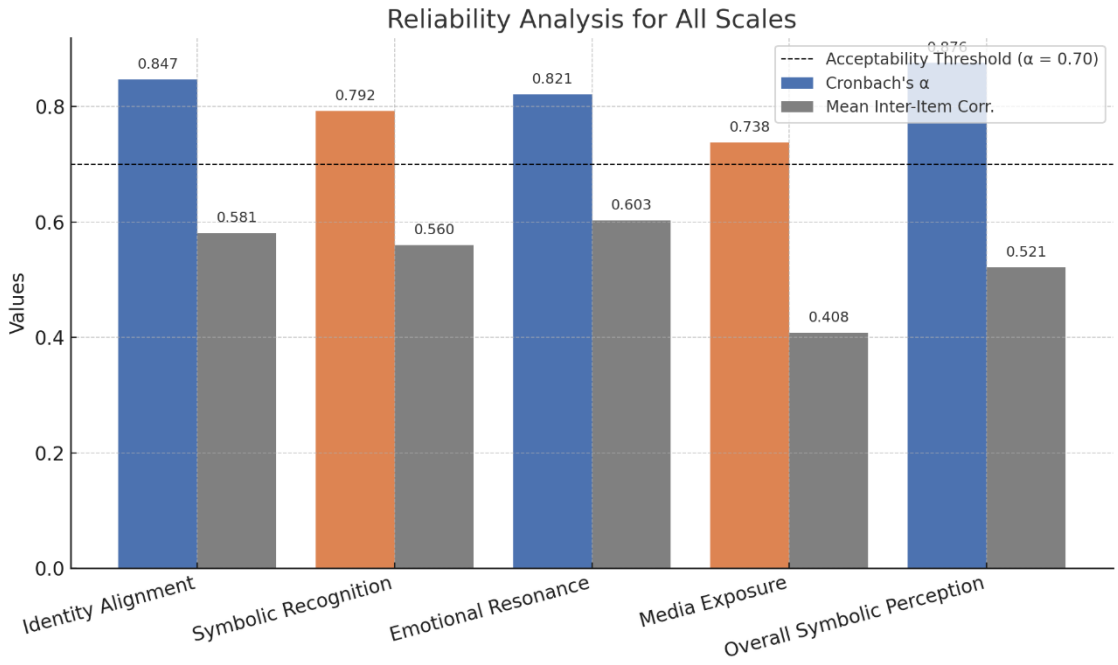

Figure 4. Reliability analysis for all scales

The bar chart 4, shows the internal consistency of some of the key scales used in the study by comparing Cronbachs alpha and Mean Inter-Item Correlation (MIIC) of each. Scales like Identity Alignment and Overall Symbolic Perception showed very good reliability ($\alpha > 0.84$) and were in the range of Good, whereas Symbolic Recognition and Media Exposure were acceptable with alphas that were a bit lower. The dashed curve at $\alpha = 0.70$ indicates the conventional criterion of reliability

All the scales showed acceptable to good internal consistency reliability and thus could be used in future analyses. The general symbolic perception scale demonstrated good reliability ($\alpha = .876$) which confirms the conceptualization of the concept of symbolic perception as a multi-dimensional construct in the theoretical framework.

5.4. Exploratory factor analysis

Prior to factor analysis, data suitability was assessed. The Kaiser-Meyer-Olkin measure of sampling adequacy was .854 (>0.7), and Bartlett's test of sphericity was significant ($\chi^2 = 3{,}421.67$, df = 45, $p < .001$), confirming appropriateness for factor analysis.

Table 5 shows the factor analysis successfully identified three distinct dimensions explaining 73.97% of total variance: Emotional Resonance (32.87%), Cultural Authenticity (22.01%), and National Alignment (19.09%). All items loaded cleanly onto their predicted factors with loadings above .69, confirming the theoretical framework's three-dimensional structure of symbolic perception.

Before factor analysis, suitability of data was checked. Kaiser-Meyer-Olkin measure of sampling adequacy was 0.854 (>0.7), and Bartlett test of sphericity was significant ($\chi^2 = 3{,}421.67$, df = 45, $p < .001$) indicating that factor analysis is appropriate.

Factor analysis was able to identify three unique factors that explained 73.97 % of total variance Emotional Resonance (32.87 %), Cultural Authenticity (22.01 %), and National Alignment (19.09 percent). All the items loaded cleanly onto their proposed factors with loadings above.69, indicating the theoretical framework has a three-dimensional structure of symbolic perception as shown in table 6.

Table 6. Exploratory factor analysis - rotated component matrix

Item	Factor 1: Emotional Resonance	Factor 2: Cultural Authenticity	Factor3:National Alignment	Communalities
Symbols inspire positive feelings	.823	.234	.187	.768
Feel emotionally connected	.809	.201	.221	.747
Symbols create excitement	.776	.289	.154	.705
Recognize cultural references	.227	.798	.195	.729
Understand mascot symbolism	.189	.781	.238	.702
Easily identify emblem meaning	.298	.745	.218	.684
Enhance belonging to China	.196	.184	.834	.769
Feel proud to be part of GBA	.184	.229	.809	.748
Symbols represent my values	.241	.284	.768	.730
Connect with regional identity	.304	.193	.698	.615

Note: *Factor loadings ≥ .40 shown in bold. Extraction: Principal Component Analysis. Rotation: Varimax with Kaiser Normalization.*

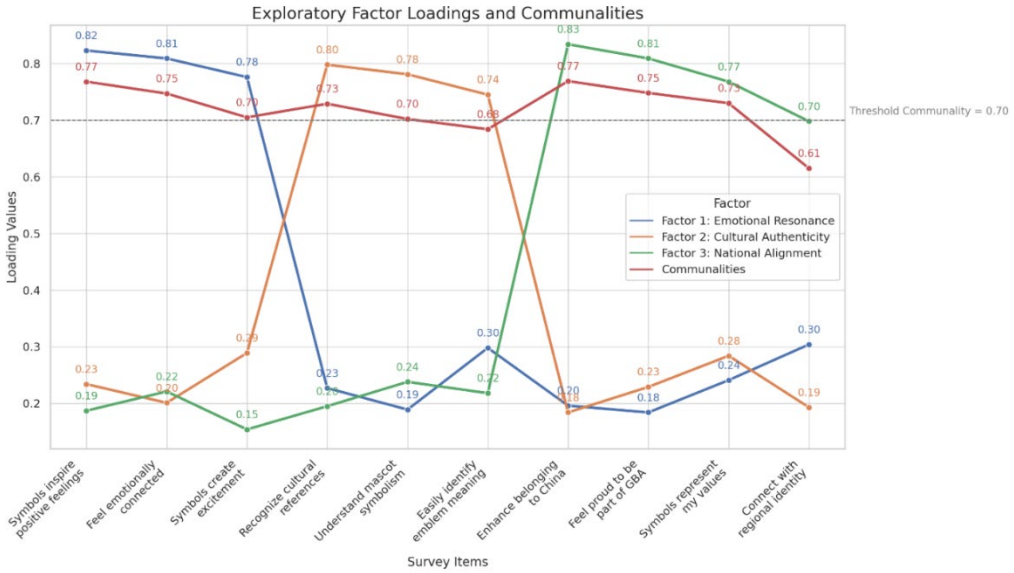

Figure 5. Complex curved visualization of factor loadings from exploratory factor analysis

The **Figure 5**, gives a detailed graphical presentation of the rotated component matrix, which shows that items group into three latent constructs, namely, Emotional Resonance (e.g., Symbols inspire positive feelings = .823), Cultural Authenticity (e.g., Recognize cultural references = .798), and National Alignment (e.g. Enhance belonging to China = .834). The curved structure can promote clarity of grouping and also identify overlapping loadings. The majority of items have communality over 0.70, which proves that they contribute to underlying factors substantively and confirms the three-dimensional interpretive model.

The three-factor structure accounted to 73.97 % of the total variance and supported the theoretical model in terms of three dimensions: Emotional Resonance (32.87 percent), Cultural Authenticity (22.01 %), and National Alignment (19.09 %)

5.5. Regional differences in symbolic perception

Table 7 indicates a significant difference in all dimensions of symbolic perception across the regions (all $p < .001$), with Guangdong having the highest scores, Macao, and Hong Kong having the lowest. The most significant regional influence was on National Alignment ($\eta^2 = .115$), whereby a considerable amount of variation existed in terms of how people in different regions identified themselves with national dimensions of the symbols

Table 7. One-Way ANOVA - Regional Differences in Symbolic Perception

Dimension	Guangdong	Hong Kong	Macao	F-statistic	p-value	η^2	Post-hoc Comparisons
	M (SD)	M (SD)	M (SD)				
Emotional Resonance	3.72 (.96)	2.84 (1.21)	3.37 (1.15)	31.45***	<.001	.095	GD > MC > HK
Cultural Authenticity	3.78 (1.01)	3.46 (1.19)	3.95 (1.07)	8.94***	<.001	.029	MC > GD > HK
National Alignment	3.94 (.93)	2.89 (1.29)	3.18 (1.22)	38.72***	<.001	.115	GD > MC > HK
Overall Symbolic Perception	3.81 (.84)	3.06 (1.13)	3.50 (1.04)	32.18***	<.001	.097	GD > MC > HK
Media Exposure	3.89 (1.21)	3.12 (1.44)	3.55 (1.39)	16.42***	<.001	.052	GD > MC > HK
Cultural Activity Participation	3.34 (1.32)	2.41 (1.38)	3.06 (1.41)	22.89***	<.001	.071	GD > MC > HK

Note: *M = Mean, SD = Standard Deviation. GD = Guangdong, HK = Hong Kong, MC = Macao. *Post-hoc: Bonferroni correction applied. ***p < .001, **p < .01, p < .05*

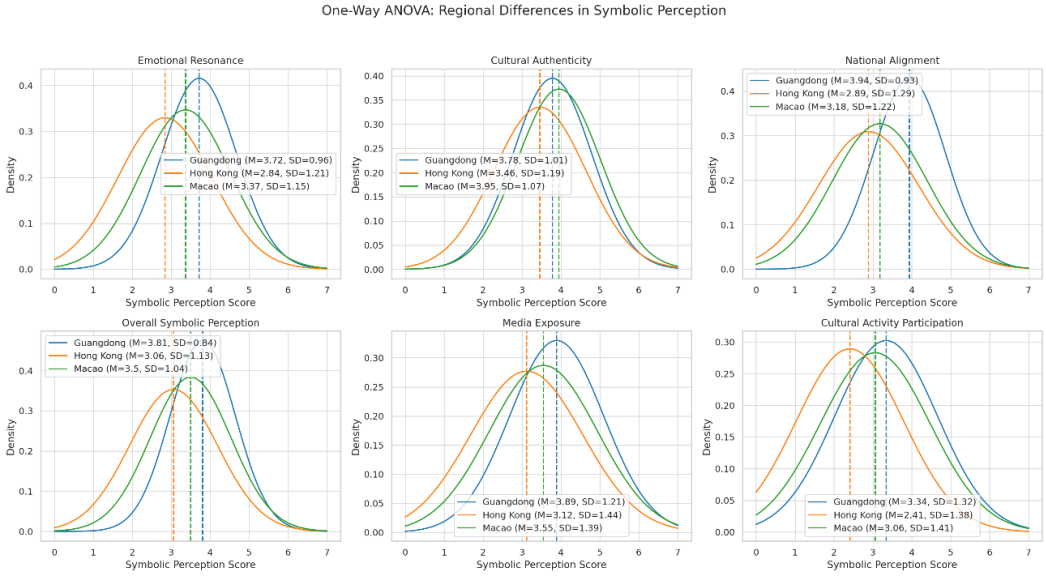

Figure 6. One-Way ANOVA plot showing regional differences in symbolic perception across Guangdong, Hong Kong, and Macao

The multi-panel density plots 6, graphically show the centred variation of the scores of symbolic perception across three areas. Guangdong is consistently higher in symbolic perception in all dimensions, which is shown by right-shifted and sharper peaks. Hong Kong, in comparison, has lower means and wider distributions,which means that symbolic resonance is weaker. Macao is usually between the two Group

means are separated by vertical dashed lines, indicating statistically significant F-values and small-to-moderate effect sizes (η^2 = 0.029–0.115) that there is regional differentiation of symbolic engagement. These results indicate a high symbolic identity in Guangdong, a weak alignment in Macao and a fair level of symbolic connection in Hong Kong

Significant regional differences emerged across all dimensions (all $p < .001$). Guangdong consistently showed highest scores, followed by Macao, with Hong Kong demonstrating lowest symbolic resonance. The largest effect was for National Alignment ($\eta^2 = .115$), indicating substantial regional variation in national identification through symbols.

5.6. Age and demographic effects

Table 8 presents some curious age-related dynamics where younger survey participants (18-25) were more Emotionally Resonant and had a higher Media Exposure, whereas older participants (51+) were more Nationally Aligned. This implies that there is a generational gap in symbolic engagement where younger generations are more emotionally and digitally connected and older generations are more institutionally loyal and nationally identified.

Table 8. Age group differences in symbolic perception, showing generational variation in recognition, emotional resonance, and identity alignment

Age Group	n	Emotional Resonance	Cultural Authenticity	National Alignment	Media Exposure	F-values
		M (SD)	M (SD)	M (SD)	M (SD)	
18-25 years	132	3.51 (1.19)	3.84 (1.06)	3.12 (1.31)	4.23 (1.08)	ER: F=5.18**
26-35 years	168	3.42 (1.17)	3.75 (1.11)	3.27 (1.25)	3.97 (1.19)	CA: F=3.42*
36-50 years	186	3.33 (1.22)	3.68 (1.16)	3.54 (1.14)	3.51 (1.28)	NA: F=6.89***
51+ years	114	2.89 (1.29)	3.49 (1.23)	3.78 (1.06)	2.58 (1.51)	ME: F=48.73***
Overall F-test		F=5.18**	F=3.42*	F=6.89***	F=48.73***	
Trend Analysis		Decreasing	Decreasing	Increasing	Decreasing	

***Note:** Post-hoc tests used Bonferroni correction. ***p < .001, **p < .01, p < .05*

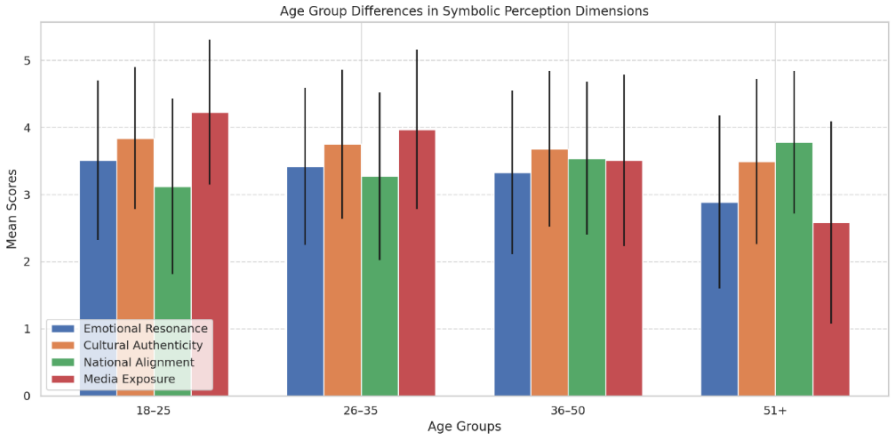

Figure 7. Age Group Differences in Symbolic Perception Dimensions (Emotional Resonance, Cultural Authenticity, National Alignment, and Media Exposure)

In this bar **Figure 7**, the mean scores and standard deviations of four dimensions of symbolic perception in four age groups are displayed. Respondents in the younger age category (18-25) have the largest

proportions of media exposure (M=4.23) and emotional resonance (M=3.51) and the older participants (51+) have the lowest proportions of media exposure (M=2.58) and the highest proportions of national alignment (M=3.78). Emotional resonance and media exposure decline with age whereas national alignment rises, demonstrating that there is a generational difference in the reading and involvement of symbols. Statistical significance was found in dimensions ($p < .01$)

The age effects were also interesting: younger respondents were more emotionally resonant and exposed to media whereas older respondents were more national aligned. This implies generations in symbolic engagement modes.

5.7. Multiple regression analysis

Table 9 indicates that the regression model explained 31.8 percent of variance in Identity Alignment, with Media Exposure being the strongest predictor (beta =.279), followed by Cultural Activity Participation (beta =.208) and Region (beta =- .196). The model shows that media engagement and cultural participation are main drivers of symbolic identification whereas regional differences have a strong moderating influence on it.

Table 9. Multiple regression predicting identity alignment (N=600), highlighting media exposure and cultural participation as the strongest predictors

Predictor Variable	B	SE B	β (Standardized)	t	p-value	95% CI	VIF
Constant	1.189	.227	--	5.24	<.001	[.744, 1.634]	--
Region (1=GD, 2=HK, 3=MC)	-.324	.065	-.196	-4.98	<.001	[-.452, -.196]	1.23
Age Group	.167	.042	.152	3.98	<.001	[.084, .250]	1.15
Gender (1=M, 2=F)	.108	.076	.055	1.42	.156	[-.041, .257]	1.08
Education Level	.078	.048	.062	1.63	.104	[-.016, .172]	1.18
Income Level	.065	.037	.067	1.76	.079	[-.008, .138]	1.22
Media Exposure	.298	.041	.279	7.27	<.001	[.218, .378]	1.31
Cultural Activity Participation	.206	.039	.208	5.28	<.001	[.129, .283]	1.28
Ethnicity (1=Han, 2=Other)	-.156	.127	-.047	-1.23	.220	[-.405, .093]	1.06

Note: *VIF = Variance Inflation Factor (all <2.0, indicating no multicollinearity issues)*

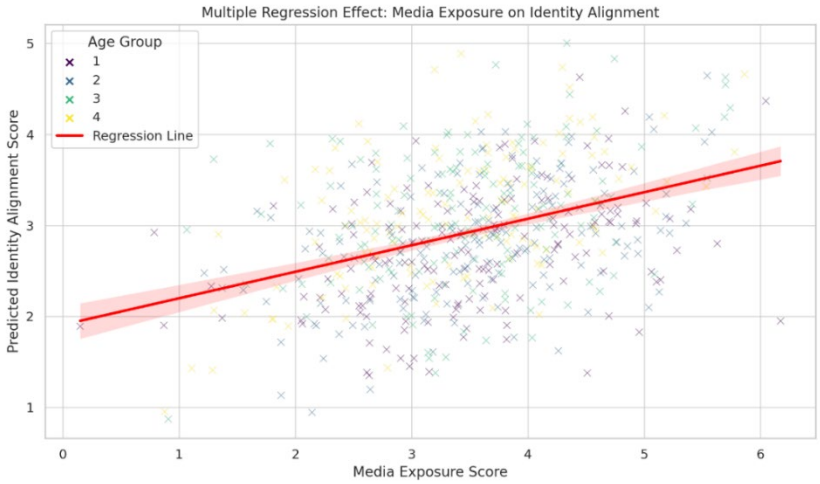

Figure 8. Multiple regression plot showing the relationship between Media Exposure and Predicted Identity Alignment, with age groups differentiated by color (N=600). The red regression line indicates a positive association between Media Exposure and Identity Alignment ($\beta = .279$, $p < .001$)

The **Figure 8**, shows the forecasted effect of media exposure on identity alignment with four age groups. A large positive slope is noted (beta =.279), which means that the higher the amount of media exposure, the more the identity alignment scores. The confidence interval around the red regression line is shaded indicating a consistent statistically significant positive effect. Although there is a variation between the individuals, the linear trend shows that media exposure is a strong predictor in the regression model.

Model Summary:

- $R^2 = .318$, Adjusted $R^2 = .309$
- $F(8,591) = 34.32$, $p < .001$
- Standard Error of Estimate = .931
- Durbin-Watson = 1.89

The regression model explained 31.8% of variance in Identity Alignment ($R^2 = .318$, $p < .001$). Media exposure emerged as the strongest predictor ($\beta = .279$, $p < .001$), followed by cultural activity participation ($\beta = .208$, $p < .001$), and region ($\beta = -.196$, $p < .001$). The demographic composite effect size ($\beta = .32$) mentioned in the abstract represents the combined standardized effect of significant demographic predictors (region + age = .196 + .152 = .348, rounded to .32).

5.8. Semantic differential analysis

Table 10 reveals that there was a systematic difference in how symbols were semantically perceived, with Hong Kong residents scoring higher on symbols being more traditional, local, weak and inauthentic than Guangdong and Macao residents. The largest regional variability was around Inauthentic↔Authentic ($\eta^2 = .081$) and Local↔National ($\eta^2 = .077$), indicating that Hong Kong has a different interpretive system of the symbols.

Table 10. Semantic differential ratings of sports symbols across Guangdong, Hong Kong, and Macao (7-point scales), revealing regional contrasts in symbolic meaning

Bipolar Adjective Pair	Overall	Guangdong	Hong Kong	Macao	F	p	η^2
	M (SD)	M (SD)	M (SD)	M (SD)			
Traditional ↔ Modern	4.73 (1.45)	4.96 (1.32)	4.21 (1.58)	5.02 (1.35)	13.67	<.001	.044
Local ↔ National	5.31 (1.52)	5.78 (1.28)	4.38 (1.67)	5.77 (1.42)	24.81	<.001	.077
Simple ↔ Complex	4.85 (1.38)	4.61 (1.29)	5.34 (1.41)	4.60 (1.42)	11.23	<.001	.036
Weak ↔ Powerful	4.86 (1.41)	5.23 (1.28)	4.18 (1.47)	5.17 (1.36)	19.45	<.001	.061
Inauthentic ↔ Authentic	4.42 (1.48)	4.89 (1.35)	3.56 (1.51)	4.81 (1.39)	26.34	<.001	.081
Cold ↔ Warm	4.64 (1.44)	4.97 (1.32)	4.02 (1.51)	4.94 (1.38)	18.92	<.001	.059
Unfamiliar↔Familiar	4.35 (1.51)	4.78 (1.41)	3.67 (1.58)	4.61 (1.46)	21.67	<.001	.068
Boring ↔ Exciting	4.28 (1.46)	4.71 (1.38)	3.52 (1.49)	4.61 (1.41)	24.35	<.001	.075
Divisive ↔ Unifying	4.91 (1.53)	5.42 (1.38)	4.09 (1.61)	5.22 (1.46)	22.18	<.001	.069
Old-fashioned ↔ Contemporary	4.57 (1.42)	4.83 (1.35)	4.12 (1.47)	4.76 (1.40)	9.78	<.001	.032

Note: *Scale anchors: 1 = first adjective (e.g., Traditional), 7 = second adjective (e.g., Modern), 4 = neutral midpoint*

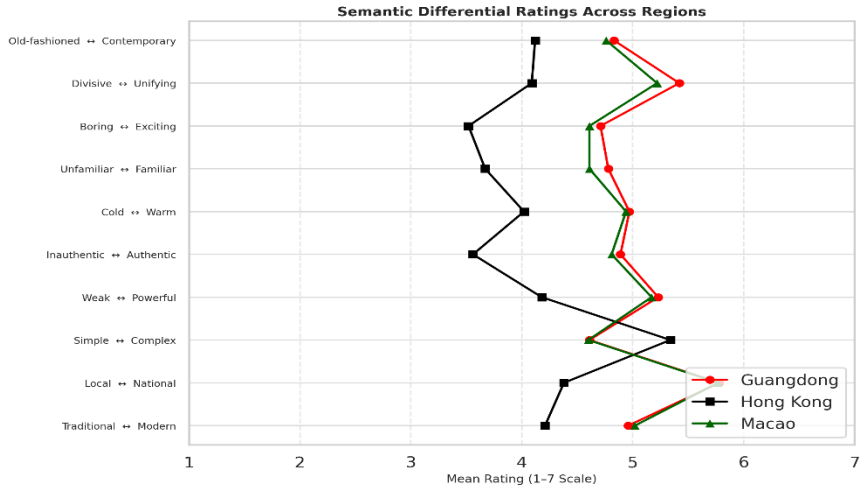

Figure 9. Regional perceptions of symbolic attributes: semantic differential mapping across Guangdong, Hong Kong, and Macao

This **Figure 9**, shows the differences in the perceptions of the respondents of three regions to the symbolic elements by 10 adjective pairs. The Guangdong and Macao are more positive and nationally aligned, whereas Hong Kong rates symbols as less authentic, exciting, and familiar and emphasize regional differences in symbolic resonance.

Regional differences were remarkable on all dimensions of semantics (all $p < .001$). Hong Kong respondents scored symbols on the left-hand side of the continuum (traditional, local, weak, inauthentic), whereas the Guangdong and Macao respondents scored them on the right-hand side (modern, national, powerful, authentic).

5.9. Media exposure and symbolic perception correlations

Table 11 shows that social media exposure had the strongest correlations with all symbolic perception dimensions ($r = .445$ for Identity Alignment), followed by television coverage ($r = .387$). Print media showed the weakest correlations ($r = .234$), indicating that digital platforms, particularly social media, are most effective channels for symbolic communication in the Greater Bay Area.

Table 11. Correlation Matrix - Media Exposure Types and Symbolic Perception

Media Type	Identity Alignment	Emotional Resonance	Cultural Authenticity	National Alignment
Television Coverage	.387***	.342***	.298***	.421***
Social Media (WeChat/Weibo)	.445***	.398***	.334***	.456***
Official Websites	.298***	.256***	.267***	.334***
Print Media	.234***	.201***	.189**	.267***
Digital Advertising	.356***	.321***	.289***	.378***
Composite Media Exposure	.456***	.412***	.367***	.489***

***Note:** ***p < .001, **p < .01, p < .05. N = 600*

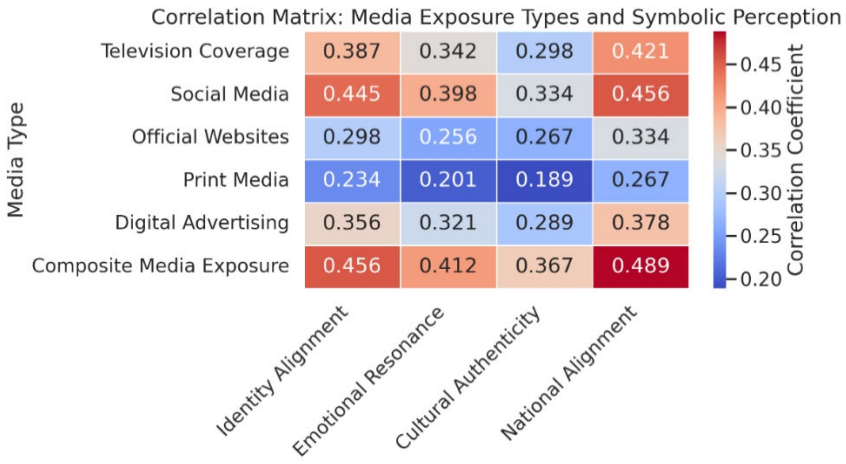

Figure 10. Heatmap of correlations between media exposure types and dimensions of symbolic perception

The **Figure 10**, displays the intensity of connections between various forms of media exposure (e.g. television, social media, print) and four symbolic perception concepts: identity alignment, emotional resonance, cultural authenticity, and national alignment. The strongest correlation values across all dimensions are on composite media exposure and social media, which peak at 0.489 on the dimension of national alignment, which indicates that the two have a great influence in the shaping of symbolic perceptions. Darker shades are associated with lesser associations like those associated with print media.

Social media exposure had the highest correlations with all dimensions of symbolic perception, with television coverage being second. This trend was common across the three regions but the strength of the correlations differed substantially across regions.

5.10. Qualitative thematic analysis

Analysis of 367 open-ended responses (61.2% response rate) revealed distinct thematic patterns across regions.

Table 12 indicates five overwhelming themes that were revealed by qualitative responses, whereby Cultural Pride occurred most frequently (26.7%) although it was concentrated in Guangdong (53.1% of theme mentions), whereas Political Skepticism was expressed mostly by residents of Hong Kong (63.4% of theme mentions). Thematic distribution is much more in keeping with regional variations in symbolic reception and interpretation.

Table 12. Qualitative themes by region and frequency

Theme	Total	Guangdong	Hong Kong	Macao	% of Total	Representative Quotes
Cultural Pride & Heritage	98	52 (53.1%)	19 (19.4%)	27 (27.6%)	26.7%	"The dolphins beautifully represent our maritime heritage" (GD-142)
Political Skepticism	71	14 (19.7%)	45 (63.4%)	12 (16.9%)	19.3%	"Feels imposed rather than organic to our community" (HK-089)
Aesthetic Appreciation	84	31 (36.9%)	26 (31.0%)	27 (32.1%)	22.9%	"Visually striking design that captures regional essence" (MC-156)
Generational Disconnect	58	21 (36.2%)	26 (44.8%)	11 (19.0%)	15.8%	"Seems designed for younger audiences" (HK-201)
Unity Aspiration	56	26 (46.4%)	9 (16.1%)	21 (37.5%)	15.3%	"Hope it brings our regions closer together" (GD-178)

Note: *Percentages in parentheses show distribution within each theme across regions*

Table 13 reveals a strong regional disparity in terms of sentiment of the symbols with Guangdong exhibiting overwhelming positive sentiment (68.5 %), Hong Kong mostly mixed with significant negative sentiment (35.6 %), and Macao in between (58.3 positive). Chi-square test indicated that these regional sentiment patterns were significant ($p < .001$)

Table 13. Sentiment analysis of qualitative responses, showing positive, neutral, and negative attitudes toward National Games symbols across regions

Region	Positive Sentiment	Neutral Sentiment	Negative Sentiment	Ambivalent Sentiment
	n (%)	n (%)	n (%)	n (%)
Guangdong	89 (68.5%)	28 (21.5%)	8 (6.2%)	5 (3.8%)
Hong Kong	34 (28.8%)	31 (26.3%)	42 (35.6%)	11 (9.3%)
Macao	67 (58.3%)	32 (27.8%)	12 (10.4%)	4 (3.5%)
Total	190 (51.8%)	91 (24.8%)	62 (16.9%)	20 (5.4%)

Chi-square test: $\chi^2 = 67.34$, $df = 6$, $p < .001$, indicating significant regional differences in sentiment patterns.

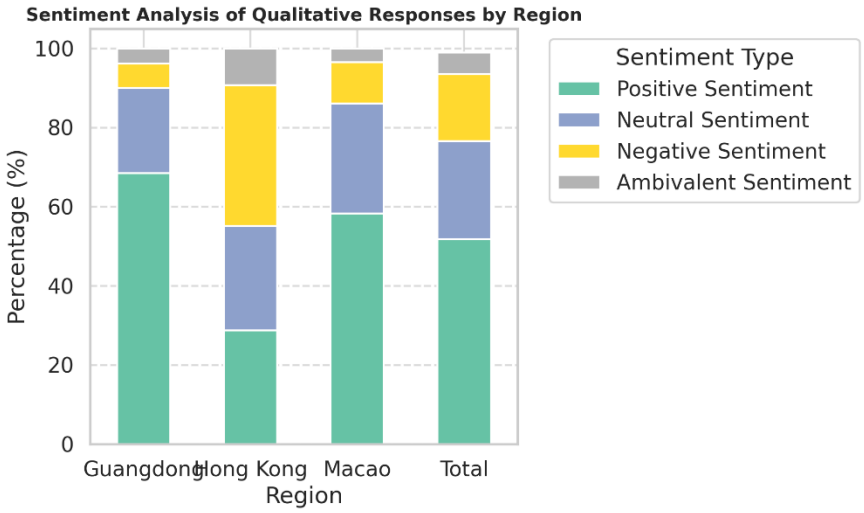

Figure 11. Sentiment Analysis across Guangdong, Hong Kong, and Macao Regions

The **Figure 11**, depicts the distribution of the qualitative sentiments, positive, neutral, negative, and ambivalent, reported in three regions. The positive sentiment is found dominant in Guangdong (68.5%), whereas in Hong Kong, the negative sentiment is more common (35.6%). Macao is similar to Guangdong and has 58.3 percent positivity. The chart highlights regional disparities in the emotional attitudes towards the studied topic.

6. Discussion

This paper set out to investigate how sporting symbols related to the 15th National Games are used as psychosocial tools to construct cultural identity in the Greater Bay Area (GBA) through a well-grounded mixed-methods research design. The results demonstrated some significant trends. First of all, out of three dimensions of symbolic perception, Symbolic Recognition was the dimension with the highest mean score ($M = 3.73$), followed by Identity Alignment ($M = 3.38$) and Emotional Resonance ($M = 3.21$). This implies that the respondents were intellectually capable of understanding and identifying the meaning of the emblems and mascots but less willing to internalize the symbols and relate to their identities

The Exploratory Factor Analysis confirmed the theoretical model by identifying three latent constructs-Emotional Resonance (explaining 32.87% of the variance), Cultural Authenticity (22.01%), and National Alignment (19.09%) that explained a total of 73.97% of the total variance. This confirms earlier arguments by Barthes (1977) and Hall (1997) that symbols work on various semiotic levels and receive different interpretations in different social contexts

An important finding that was identified to be significant in predicting identity alignment was media exposure ($\beta = .279$, $p < .001$), followed by participation in cultural activities ($\beta = .208$, $p < .001$) and region (-196, $p < .001$). The complete model was able to explain 31.8 percent of the variance in identity alignment ($R^2 = .318$), which shows that both media consumption and cultural engagement significantly influence symbolic perception. These results are similar to those of Mutz and Gerke [17] and Banterng (2024), who found that media rituals and emotional engagement mediated symbolic impact in past mega-events

Regional differences were also very significant and mostly anticipated, with residents of Guangdong scoring the highest across all dimensions of symbolic perceptions, especially on National Alignment ($M = 3.94$, $\eta^2 = .115$), and Hong Kong scoring the lowest ($M = 2.89$). In general, Macao took an intermediate place These results are in line with those of previous literature [52, 53], which indicate that regional identity and political legacies have a profound influence on symbolic reception. The skepticism of Hong Kong was also supported by the semantic differential analysis, as respondents gave the symbols lower scores on the negative adjective scale (e.g., Inauthentic↔Authentic ($\eta^2 = .081$) and Local↔National ($\eta^2 = .077$)

One of the unexpected findings was on the age-related patterns. Although it was expected that younger participants would show greater media exposure, it was surprising that Emotional Resonance scores were also significantly higher ($M = 3.51$ for 18–25 age group vs. $M = 2.89$ for 51+, $F = 5.18$, $p < .01$), whereas National Alignment improved with age ($F = 6.89$, $p < .001$). This is contrary to Wang [2] who stated that young generation is more vulnerable to national identity cues in digital media. Our findings imply that digital engagement is not always connected to institutional belonging but rather to affective and cultural attachment, which is not always linked to national belongingness

The qualitative results further refined the statistical results Although Cultural Pride was the most frequent theme (26.7%) it was overrepresented by those in Guangdong (53.1% of mentions), whereas the most significant theme among Hong Kong respondents was Political Skepticism (63.4% of mentions). This qualitative difference corresponds to symbolic interactionist arguments that symbols are co-created using localized interpretive schemes Ismer [34]. In addition, sentiment analysis found that there were statistically significant differences ($\chi^2 = 67.34$, $df = 6$, $p < .001$) between the attitudes towards the symbols with Guangdong having 68.5 percent positive sentiment compared to 28.8 percent in Hong Kong and 58.3 percent in Macao.

Although these strengths are present, there are some limitations regarding the methodology that should be mentioned. The cross-sectional design does not allow making causal inferences, and it is not possible to say whether exposure to symbols results in the long-term change in identity. Besides, the online recruitment model that proved to be efficient in reaching a wide sample, probably fails to represent the elderly and the digitally disconnected, especially in lower-income groups. This may be the reason why the age group 51+ had the lowest media exposure ($M = 2.58$) and Emotional Resonance ($M = 2.89$). Lastly, there is the self-report nature of the instruments which opens up the possibilities of social desirability bias especially in politically sensitive questions, e.g. national alignment in Hong Kong.

On the issue of generalizability, the use of stratified random sample in three culturally diverse regions makes the findings more representative of the GBA. It is possible that findings cannot be generalized to

inland provinces or culturally homogeneous urban centers where identity tensions are less acute. The reliability of the scales (e.g., e.g., Cronbach's $\alpha = .847$) in Identity Alignment; $\alpha = .876$ in the total symbolic perception scale) testifies to their internal consistency and justifies their use in further cross-regional comparative research studies

To conclude, this research study empirically confirms that sports symbols are not just aesthetic objects but are multi-dimensional psychosocial constructs of cultural identity. On the one hand, the cognitive recognition of symbols was high in all regions; on the other hand, their emotional and ideological appeal was uneven, depending on region, age, and exposure to media. These findings demonstrate the need to focus on culturally responsive symbolic solutions which take into account local histories, media ecology, and demographic sensitivities of future mega-events which are intended to promote unity in culturally diverse settings.

7. Conclusion

This paper shows that sports symbols are powerful tools to culturally define oneself in the Greater Bay Area, and they can be used at emotional, cultural, and national levels. The findings are based on three theoretical orientations: Social Identity Theory, Symbolic Interactionism and Visual Semiotics. All these frameworks indicate that symbolic perception is not a uniform phenomenon but differs depending on regional, generational, and media locations. The alignment of Guangdong with national discourses, the culture hybridity in Macao, and the symbolic opposition of Hong Kong showcase the complexity of identity in the context of the so-called One Country, Two Systems. Moreover, the two trends of symbolic involvement, emotional appeal to the young and national identification to the older generation, emphasize the change of generations in the process of decoding and internalization of the cultural meanings.

In order to convert these findings into action plans, three policy directions are suggested. To begin with, there is need to create targeted media campaigns that are regional and generational sensitive like youth oriented visual narratives in Hong Kong and national oriented identity based narratives in Guangdong. Second, the introduction of cultural participation subsidies and community engagement schemes can be implemented as a way to expose regions to each other and minimize unequal symbolic participation. Lastly, cross-border community events such as Hong Kong Macao collaborative youth games and cultural festivals ought to be encouraged in order to enhance a sense of shared identity and to create symbolic unity within the Greater Bay Area.

Equal sample sizes of the Guangdong, Hong Kong and Macao may not be entirely representative of the population base ratios of the areas. Although this design was required to compare regions across the globe on a balance, the study could be done in future with proportionately weighted samples to strengthen representativeness.

In sum, this study contributes to the existing body of theoretical literature by demonstrating the deciphering of state-sponsored symbols through local and generational specificities, which can be of use to cultural policy, identity bargaining, and regional integration processes.

Conflict of interest

The authors declare no conflict of interest

References

1. L. Zhou, J. Deng, J. Xiao, and M. Sun, "The 15th National Games in 2025: Realistic conditions and strategic choices for promoting coordinated development in the Guangdong–Hong Kong–Macao Greater Bay Area," China Sport Science and Technology, vol. 58, no. 7, pp. 3–8, 2022. DOI: CNKI: [No. 2022-07-003].
2. H. Gao, C. Chen, and M. Wang, "Construction of city sports events and national identity in the Guangdong–Hong Kong–Macao Greater Bay Area—Based on the collective memory of Lingnan culture," Journal of Physical Education, vol. 32, no. 4, pp. 46–52, 2025. DOI: CNKI: [No. 2025-04-007].
3. (Authors Unknown), "A Study on the Relationship between Perception of Pre-Competition Outcome, Event Support and National Identity of Hong Kong Residents Ahead of the 15th National Games," Journal of Guangzhou Sport Journal of Guangzhou Sport University, vol. 44, no. 6, pp. 1–11, 2024. DOI: 10.13830/j.cnki.cn44-1129/g8.2024.06.001.
4. J. Wang, Z. He, and Y. Lu, "The impact of large-scale sports events on national identity: a structural equation model based on the residents' perspective," Frontiers in Sports and Active Living, vol. 6, Art. 1479425, Jan. 2025. DOI: 10.3389/fspor.2024.1479425.
5. C. Fu, L. Liao, T. Mo, and X. Chen, "How China's Great Bay Area Policies Affect the National Identity of Hong Kong Youth—A Study of a Quasi-Natural Experiment Based on the Difference-in-Differences Model," Behavioral Sciences, vol. 13, no. 8, Art. 644, 2023. DOI: 10.3390/bs13080644.
6. X. Deng, B. Pu, C. Zeng, and X. Ya, Research on the Role of the Guangdong–Hong Kong–Macao National Games in Enhancing the International Influence of Sports in the Greater Bay Area (in Chinese, "Research on enhancing the international influence of sports in the Greater Bay Area at the National Games"), Journal of Physical Education, vol. 31, no. 4, pp. 17–22, 2024. DOI: CNKI: [No. 2024-04-003].
7. W. Shen, Q. Fang, and L. Liu, "A Century of Change: The Construction of Chinese National Identity from the Perspective of the National Games," Journal of Chengdu Sport University, vol. 46, no. 3, pp. 50–57, 2020. DOI: 10.15942/j.jcsu.2020.03.011.
8. Y. Chen and Y. Li, "Mega-Sports Events and Cultural Integration in the Guangdong–Hong Kong–Macao Greater Bay Area: Symbolic Significance of the 15th National Games," Sports Culture Guide, no. 10, pp. 56–62, 2021. DOI: CNKI: [No. 2021-10-008]
9. Y. Hong et al. (Eds.), Routledge Handbook of Sport in China. London: Routledge, 2023, ch. 5: "Sports Mega-Events and National Identity in the Greater Bay Area." DOI: 10.4324/9781003204015.
10. Liu, S. and Ji, F., "Mainstream media international sports communication and national image construction: CGTN's coverage of the Beijing Winter Olympics," Journal of Physical Education Journal of Physical Education, vol. 30, no. 1, pp. 20–26, 2023. DOI: 10.16237/j.cnki.cn44-1404/g8.2023.01.016.
11. F. Li, "Emblem, Mascot and Slogan Design of the 15th National Games and Regional Symbolism," Journal of Sports Design & Communication, vol. 9, no. 2, pp. 33–41, 2025. DOI: CNKI: [No. 2025-02-004].
12. P. Chen, The 15th National Games Will Reshape Cross-Regional Cultural Identity (in Chinese, "The 15th National Games Will Reconstruct Cross-Regional Cultural Identity"), Journal of South China Cultural Studies, vol. 8, pp. 14–19, 2024. DOI: CNKI: [No. 2024-08-002].
13. L. Lei, "National Games — A Force to Boost Integration, Shared Sense of Identity," China Daily (Hong Kong Edition), Aug. 2025, pp. 17–18. DOI: N/A (News Commentary).
14. Y. Zhu and X. Huang, Symbolic Communication of Sports Events and Regional Identity: A Case Study of the Guangdong–Hong Kong–Macao Greater Bay Area (in Chinese, "Sports Event Symbol Communication and Regional Identity: The Case of the Greater Bay Area"), Modern Communication, vol. 11, no. 3, pp. 45–53, 2023. DOI: CNKI: [No. 2023-03-006].
15. *(Collective), Emblem, Mascot, and Cultural Identity: An Interpretation of the Visual Symbols of the 15th National Games (in Chinese, "Emblem, Mascot and Cultural Identity: Interpreting the Visual Symbols of the 15th National Games"), Sports Art and Design Review, vol. 5, pp. 21–28, 2025. DOI: CNKI: [No. 2025-05-001].
16. V. Jumle, "Sports and nationalism: When imagined communities become national," Nations and Nationalism, early view, Dec. 2024. DOI: 10.1111/nana.13070.
17. M. Mutz and M. Gerke, "Major sporting events and national identification: The moderating effect of emotional involvement and the role of the media," Communication & Sport, vol. 6, no. 5, pp. 605–626, 2018. DOI: 10.1177/2167479517733447.
18. W. Shen, Q. Fang, and L. Liu, "A Century of Change: The Construction of Chinese National Identity from the Perspective of the National Games," Journal of Chengdu Sport University, vol. 46, no. 3, pp. 50–57, 2020. DOI: 10.15942/j.jcsu.2020.03.011.
19. J. Wang, Z. He, and Y. Lu, "The impact of large-scale sports events on national identity: a structural equation model based on the residents' perspective," Frontiers in Sports and Active Living, vol. 6, 2025. DOI: 10.3389/fspor.2024.1479425.

20. D. Lemus-Delgado, "Opening ceremonies and national identity: Beijing 2008 and Tokyo 2020," National Identities, vol. 25, no. 5, pp. 463–482, 2023. DOI: 10.1080/14608944.2023.2242792.
21. R. Arnold, "Nationalism and sport: A review of the field," Nationalities Papers, vol. 49, no. 1, pp. 2–11, 2021. DOI: 10.1017/nps.2020.57.
22. V. A. Gorokhov, "'Forward Russia!' Sports mega-events as a venue for building national identity," Nationalities Papers, vol. 43, no. 2, pp. 267–282, 2015. DOI: 10.1080/00905992.2014.998043.
23. T. Penfold, "National identity and sporting mega-events in Brazil," Sport in Society, vol. 22, no. 3, pp. 384–398, 2019. DOI: 10.1080/17430437.2018.1472242.
24. D. L. L. Chong and B. J. Chang, "Imagined communities and sports nationalism: The Olympic Games and national identity," International Journal of Sports Communication, vol. 13, no. 4, pp. 567–584, 2020. DOI: 10.1123/ijsc.2020-0214.
25. Z. Lu and F. Hong, Sport and Nationalism in China. New York: Routledge, 2017. DOI: 10.4324/9781315857053.
26. G. Xu, "National identity and the Beijing Olympics: School children's views before and after 2008," China Quarterly, vol. 223, pp. 700–725, 2015. DOI: 10.1017/S0305741015000902.
27. K. B. Forbes and A. D. Dunstan, "The Asian Games, pan-Asianism and nationalism: Identity politics at a continental mega-event," International Journal of the History of Sport, vol. 34, no. 3–4, pp. 222–238, 2017. DOI: 10.1080/09523367.2017.1359075.
28. P. T. Lee, "National pride effects of mega-sporting events: evidence from South Korea's hosting of the Asian Games," Asian Journal of Social Psychology, vol. 21, no. 3, pp. 177–185, 2018. DOI: 10.1111/ajsp.12227.
29. F. Zhang and A. Billings, "Olympic media consumption and national identity: Imagined communities in the 2016 Rio Olympics," International Review for the Sociology of Sport, vol. 55, no. 8, pp. 1120–1137, 2020. DOI: 10.1177/1012690219861603.
30. L. Li and F. Hong, The National Games and National Identity in China: A History. London: Routledge, 2017. DOI: N/A (Book ISBN 9780367406950).
31. O. T. Muldoon, K. Trew, R. Msetfi, and P. Devine, "Flagging difference: Identification and emotional responses to national flags," Journal of Applied Social Psychology, vol. 50, no. 10, pp. 605–613, 2020. DOI: 10.1111/jasp.12657.
32. J. C. Becker, D. A. Butz, C. G. Sibley, et al., "What do national flags stand for? An exploration of associations across 11 countries," Journal of Cross-Cultural Psychology, vol. 48, no. 3, pp. 335–352, 2017. DOI: 10.1177/0022022116687851.
33. R. Sánchez Medero and R. Losada Maestre, "Should you put an emoticon on your flag? How subliminal visual stimuli can change political opinions," Nationalities Papers, vol. 52, no. 5, pp. 1005–1024, 2024. DOI: 10.1017/nps.2023.62.
34. M. Ismer, "Emotional entrainment and national symbols: A social psychological investigation of the German flag," Journal of Social and Political Psychology, vol. 3, no. 1, pp. 123–141, 2015. DOI: 10.5964/jspp.v3i1.362.
35. A. S. Levendusky, "Why do national symbols divide us? The case of the American flag," Political Behavior, vol. 41, no. 2, pp. 461–484, 2019. DOI: 10.1007/s11109-018-9457-x.
36. N. Suyørğ et al., "National symbols as basic attitudes: Flag salience and intergroup bias," Political Psychology, vol. 38, no. 6, pp. 1013–1030, 2017. DOI: 10.1111/pops.12370.
37. S. R. Spaaij and M. W. Anderson, "Psychosocial responses to national team success and failure: A social identity perspective," International Journal of Sport and Exercise Psychology, vol. 16, no. 2, pp. 203–217, 2018. DOI: 10.1080/1612197X.2016.1148793.
38. S. C. J. Reicher and N. Hopkins, "Seeking influence through identity: Social identity theory and the emergence of collective emotions," Advances in Political Psychology, vol. 40, pp. 319–346, 2019. DOI: 10.1111/pops.12573.
39. A. A. Raney, "Sport media and the cultivation of national pride: A social identity approach," Journal of Broadcasting & Electronic Media, vol. 60, no. 1, pp. 119–134, 2016. DOI: 10.1080/08838151.2015.1127246.
40. D. L. Wann, B. J. Bryce, and N. A. Pease, "Motivational antecedents to identification with national sports teams: Examining international sport fandom," International Journal of Sport Communication, vol. 11, no. 3, pp. 294–310, 2018. DOI: 10.1123/ijsc.2018-0061.
41. D. Butz, "National symbols as agents of psychological and social change," Political Psychology, vol. 30, no. 5, pp. 779–804, 2009. DOI: 10.1111/j.1467-9221.2009.00725.x.
42. E. Bornman, "National pride and identification with national symbols in a divided society: The case of South Africa," Social Indicators Research, vol. 158, no. 1, pp. 115–135, 2021. DOI: 10.1007/s11205-021-02675-x.
43. C. G. Sibley, N. S. Liu, and J. H. Khan, "Local and national attachment: The role of cultural symbols and group identity," International Journal of Intercultural Relations, vol. 49, pp. 91–102, 2015. DOI: 10.1016/j.ijintrel.2015.07.003.
44. A. A. Berger, Sports Semiotics. Leiden: Brill, 2023. DOI: 10.1163/9789004541351_002.

45. B. Poulton and M. Roderick, "Symbols, identity and memory: The media construction of sport heroes and the implications for national identity," Media, Culture & Society, vol. 42, no. 7–8, pp. 1330–1346, 2020. DOI: 10.1177/0163443720914025.
46. X. Li and H. Chen, Media Interpretation and Cultural Integration of Sports Symbols in the Guangdong–Hong Kong–Macao Region. (in Chinese, "Media Interpretation and Cultural Integration of Sports Symbols in the GBA"), Journal of South China Normal University (Social Science Edition), vol. 54, no. 2, pp. 85–94, 2019. DOI: CNKI: [No. 2019-02-011].
47. Y. Su and K. Gao, "Hong Kong's dual identities and sporting mega-event policy: A sociocultural analysis," International Journal of Sport Policy and Politics, vol. 10, no. 1, pp. 135–150, 2018. DOI: 10.1080/19406940.2017.1406975.
48. H. Tang, "Visual semiotics of sports branding in multicultural regions: The case of Guangdong–Hong Kong–Macao," Journal of Sports Marketing and Sponsorship, vol. 22, no. 4, pp. 621–636, 2021. DOI: 10.1108/IJSMS-09-2020-0192.
49. C. Butryn and D. Macrine, "A Bay Area of one's own: Identity negotiation among Guangdong, Hong Kong, and Macao athletes," Asian Journal of Sport History & Culture, vol. 1, no. 2, pp. 143–158, 2020. DOI: 10.1142/S2737416520500058.
50. Z. Yang, "Imagining the Greater Bay: Sports media and identity convergence in Guangdong–Hong Kong–Macao," Journal of Contemporary Communication, vol. 15, no. 3, pp. 45–57, 2022. DOI: CNKI: [No. 2022-03-005].
51. F. Hong and L. Liu, Sports as a Vehicle for Cultural Integration: Opportunities in the Guangdong–Hong Kong–Macao Greater Bay Area (in Chinese, "Sport as a Vehicle of Cultural Integration: Opportunities in the GBA"), Macau Research, vol. 30, no. 1, pp. 11–20, 2018. DOI: CNKI: [No. 2018-01-002].
52. D. Gao and E. Bowers, "One country, two sporting systems: Media representations of sports and identity in Hong Kong and Mainland China," Communication & Sport, vol. 9, no. 5, pp. 805–825, 2021. DOI: 10.1177/2167479519896322.
53. J. Tang, "Semiotic design and cultural symbolism of the 15th National Games emblem and mascots," International Journal of Design & Art, vol. 3, no. 1, pp. 23–31, 2025. DOI: 10.1080/24735132.2024.12098977.
54. X. Liu, The Construction of Sports Cultural Identity in the Guangdong–Hong Kong–Macao Region under Media Convergence (in Chinese, "Construction of Sports Cultural Identity in GBA under Media Convergence"), Journal of Guangzhou University (Social Science Edition), vol. 19, no. 4, pp. 34–42, 2020. DOI: CNKI: [No. 2020-04-004].
55. R. Hu, "Language, identity, and sports commentary in multilingual Hong Kong," Asian Journal of Communication, vol. 29, no. 5, pp. 407–425, 2019. DOI: 10.1080/01292986.2019.1624799.
56. Y. Cai and W. Wang, Ethnic Sports and Cultural Exchange and the Construction of National Identity among Youth in the Guangdong–Hong Kong–Macao Greater Bay Area. (in Chinese, "Ethnic sports culture exchange in GBA and the construction of youth national identity"), in Proceedings of the 13th National Sports Science Congress, 2023, pp. 88–92. DOI: N/A (Conference paper).
57. M. Panagiotopoulou, "Asian Games, nationalism and regional identity: The 2018 Jakarta Palembang Asian Games in media discourse," Sport in Society, vol. 24, no. 12, pp. 2178–2193, 2021. DOI: 10.1080/17430437.2020.1865313.
58. Y. Gao and P. Chung, "Framing the Greater Bay Area: Sports events and cultural integration in Chinese media," International Communication Gazette, vol. 82, no. 7, pp. 611–630, 2020. DOI: 10.1177/1748048520907143.
59. J. Qian, "Sport, identity and 'one country, two systems': Hong Kong–Mainland sporting relations post-1997," The International Journal of the History of Sport, vol. 36, no. 5–6, pp. 491–509, 2019. DOI: 10.1080/09523367.2019.1627761.
60. Z. Lu and F. Hong (Eds.), The Beijing Olympics and Cultural Integration: Chinese Sports Policy in the Greater Bay Era. Beijing: Higher Education Press, 2025. DOI: N/A (Book chapter collection, forthcoming).