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How Culture Shapes Digital Sport Engagement: A Comparative Review of Youth in China and Malaysia

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ABSTRACT

Digital platforms have become a principal route into exercise for young people, yet access alone has not translated into commensurate activity, and the cultural conditions under which engagement forms remain poorly understood. This review examines how culture shapes digital sport engagement among university-aged youth through a comparison of China and Malaysia, two societies sharing Eastern philosophical heritage and collectivistic traditions while diverging on power distance, long-term orientation, and internal cultural composition. Drawing together the technology acceptance and behavioural prediction traditions with Hofstede's dimensional framework, the review compares the institutional and cultural environments in which Chinese and Malaysian students encounter exercise technology and derives the mechanisms through which engagement plausibly diverges: authority endorsement operating through distinct institutional channels, normative influence transmitted through differently structured referent groups, usefulness judged against differently weighted goals, and the translation of intention into behaviour disciplined by social accountability to different degrees. These mechanisms condense into an integrated framework and six propositions specifying how technology perceptions, participation motivations, and individual-level cultural orientation, measured directly rather than inferred from nationality, combine to shape engagement intention and behaviour. The review clarifies the boundary conditions of digital sport engagement theory, offers platform developers grounds for culturally adaptive design, and provides the national fitness strategies of both countries a culturally calibrated evidence base.

1. Introduction

Exercising amongst young people today takes place via the means of digital media. Fitness apps provide personalized workout programs; fitness gadgets provide real-time biofeedback; online video coaching provides instruction from afar; and virtual groups form around exercise, all of which together redefine how exercises, once practiced in gyms and parks, have been taken up and

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sustained [41]. However, the technology has not met the expectations that have been built up by its history. These technologies are readily available to university students, yet many students remain insufficiently active, and the reasons for this go well beyond whether the technology is available [5]. Availability, it seems, is the start of an explanation rather than its end: whether access leads to participation depends on how young people perceive the technology in their own lives, what motivates them to use it, and what kind of cultural environment has shaped these perceptions.

The population under examination needs to be defined at the outset. This paper studies university-aged youth, who are approximately 18-25 years old, because most empirical research in digital sports focuses on university students; where younger groups have been examined, as in qualitative studies on adolescents' acceptance of activity-promoting technology [8], their evidence has generally been supplementary rather than foundational. Engagement is limited to the bodily active use of digital platforms here, and this restriction will be fully explored in the following section.

The three deficiencies in the current research are: Research has been conducted on how people began to accept technology and why exercise culture developed into a distinct system; as a result, studies of digital sports have either borrowed a single term or the other. The link between the intention to exercise and actual exercise is a well-known weakness in behaviour prediction, but its cultural variations have seldom been studied. Culture, at all times, tends to be analysed coarsely; either it is presented as a contrast between the West and the East in too many ways simultaneously, or it is reduced to a national label that encompasses all orientations within that country; in both cases, the specific mechanism cannot be separated.

This review answers by means of a deliberately narrow comparison. China and Malaysia share the Eastern philosophical heritage and collective culture, keeping the general East-West dichotomy constant [28]; at the same time, they diverge on dimensions of theoretical significance, notably power distance and long-term orientation [31], as well as in the multi-ethnic composition of Malaysia. Pairing can lead to more precise inferences about which cultural mechanisms are relevant, and by treating these mechanisms as individual-level moderators instead of country descriptions, this review can be distinguished from cross-cultural work that only presents national averages. The system is narrative in character and has drawn on literature retrieved from Web of Science, Scopus, PubMed and Google Scholar, with a weight given to works published in the past five years while keeping the seminal contributions upon which current theory is based.

Fixing the construct of digital sport engagement and the theoretical system available to explain it, this paper compares the situations in China and Malaysia where young people use exercise technology, and then derives the cultural mechanisms through which acceptance, motivation and the transformation of intention into behaviour differ in the two contexts. The analysis culminates in an integrated framework and a set of propositions that can be tested. At the same time, it makes a theoretical contribution by establishing cultural orientation as a boundary condition for models of digital sport engagement, offers practical guidance on how to design platforms to weigh authority endorsement, social visibility and demonstrated utility for different users, and provides the national fitness strategies of the two countries with a culturally calibrated evidence base.

2. Digital Sport Engagement and Theoretical Foundations

2.1 The construct and its evidence base

Digital sport engagement refers to bodily exercise in a sport through digital means, as used in this paper. Four families of platforms fall under this category: mobile fitness applications that provide guidance and track exercise data, wearable devices for collecting physiological indicators during exercise, online platforms hosting structured or coached classes, and virtual communities organising

social activities centered on exercise. Electronic sports and the passive viewing of sports content do not meet the definition; although researchers have documented genuine psychosocial benefits of e-sports for specific groups [22], the behaviour under study here is exercise itself rather than mediated consumption of sports.

Evidence that such platforms change behaviour is genuine yet conditional. Meta-analysis of smartphone application interventions shows that measurable gains in objectively measured activity occur early in the use period, and then these gains diminish [32]. Wearable devices for consumers have also increased daily steps and weekly minutes of moderate-to-vigorous physical activity [4]. What makes the continuous improvement worthwhile is based on the conceptual work that links sports participation to psychological well-being and social functions [10], and later syntheses have identified competence, autonomous motivation and social support as conditions that support sustained participation [9]. Access alone will not do. Exposure to digital media is likely to affect students' participation indirectly by enhancing their sports cognition, and the strength of this path is moderated by self-efficacy [41]. Therefore, to explain engagement, we need to provide theoretical support for two areas simultaneously: how users evaluate the platform they are facing, and why they exercise in the first place.

2.2 Two evaluative traditions and their complementarity

The technology acceptance tradition supplies the tools for evaluating the platform. The founding model proposed by Davis [7] holds that perceived usefulness and perceived ease of use are cognitive judgments that determine how a system's characteristics affect a person's behaviour; after meta-analysis across dozens of applications, King and He [20] confirmed that the model predicts behaviour reasonably well and consistently ranks usefulness above ease of use in explanatory power. Later refinements have added social influence and instrumental considerations to the model without changing the original two perceptions [34], and applications of this model to current learning platforms still show that the two perceptions explain considerable variations in adoption intention, with socially connective features being particularly prominent for younger users [18].

Behaviour prediction theory provides the rationale for behaviour. Among these, intention is relatively close to behaviour and is formed by attitude, subjective norms and perceived behavioural control [1]. Its record in physical activity is strong but not symmetrical: the constructs predict intention well yet predict behaviour far less successfully. Evidence from university students illustrates the gap from the other side: post-intention regulation processes account for the activity variance that intention alone fails to explain [30], and the transition from intention to behaviour is highly sensitive to situational cues such as invitations, the environment, and the availability of time, none of which are included in deliberation models [36].

Each tradition is silent where the other is speaking. A pure acceptance account does not have a normative pressure or a sense of control over exercise; a pure planned-behaviour account takes no notice of the properties of the platform. In digital sports, the object of adoption is both technology and exercise; therefore, both sets of judgments influence the same decision through channels that neither system can cover alone, and thus, complementarity will be formally proposed later in the discussion.

2.3 Integration and the mechanisms between evaluation and action

Precedent for combining the traditions is well established. The unified theory of technology acceptance showed that combining overlapping models increased the explained variance beyond

what any component achieved alone [35]; however, its synthesis remained within the adoption tradition and did not reach the volitional phase of exercise behaviour, and integrated behaviour change models have also connected motivational quality to intention formation by integrating planned-behaviour constructs with self-determination theory [13]. Integration at the level of frameworks does not, by itself, close the distance between intention and action that the above evidence exposes; therefore, attention shifts to the mechanisms that lie between evaluation and sustained behaviour. Three of them appear repeatedly in the exercise literature. Self-efficacy is based on the theory of behaviour change [3], and as such, has long been associated with physical exercise in recent studies of Chinese students [40]. Intrinsic motivation maintains adherence in the absence of external rewards; intervention research based on self-determination theory demonstrates this effect [26], and autonomy-supportive instruction is one condition that fosters it [16]. Habit formation is the result of repeatedly performing behaviour; thus, it can be done without conscious thought [12]. These are the mediating paths that the framework in the discussion carries forward.

2.4 Culture as a moderating lens

None of the above constructs operate in a cultural vacuum. Hofstede's dimensions of power distance, individualism-collectivism, uncertainty avoidance and long-term orientation are still widely used vocabularies to describe differences in values among different societies [14], and meta-analytic studies have shown that the strength of acceptance relationships varies systematically according to these orientations [17]. If culture is viewed this way, then the question that the theory seeks to answer is not whether different populations have different average levels of perceived utility or normative pressure, but rather whether the path itself is different; that is to say, whether the same judgment leads to a greater intention in one culture than in another. The system draws some well-known criticisms: the national scores are from a particular survey time, and reading them on individuals constitutes an ecological fallacy. This review accepts the objection and converts it into a design constraint. Throughout what follows, cultural orientation is treated as an individual-level variable whose distribution varies by country, rather than as the essence of a nation, and the comparative analysis that the review now undertakes examines two contexts selected precisely because their distributions differ in theoretically significant ways.

3. Cultural Contexts and Mechanisms: Comparing China and Malaysia

3.1 Digital sport engagement in China

Few places have promoted technology-assisted exercise as intentionally as China. Physical activity has gained the attention of national public health policies; successive nationwide fitness campaigns have extended this focus to higher education, and universities have invested considerable funds in smart sports facilities and systems for tracking student exercise and intelligent physical education platforms, which have drawn the attention of scholars [23]. Chinese students rarely come across exercise technology through private consumption; it is generally already endorsed by their schools and incorporated into formal classes. What this machinery delivers is also far from uniform. Studies on the level of sport participation for Chinese children and adolescents show considerable differences among provinces, which can be traced back to uneven implementation quality, unequal facility distribution and different local priorities for exercise [38], and there is little reason to believe that these disparities will be corrected by the time students enter university. The device that runs most of the digital sports platforms also has a problem. Smartphone addiction among Chinese university students is negatively correlated with exercise; motivational displacement explains this by

reducing the internal drive to exercise and extending periods of sedentary screen use [24]. Therefore, China has shown that generous infrastructure and determined policies alone cannot guarantee public participation, and that smartphones may either support exercise or take its place depending on how they are used.

3.2 Digital sport engagement in Malaysia

Malaysia's configuration differs. Although the National Strategic Plan for Active Living 2017-2025 clearly states its goals of participation for all people, achieving these aims in a very diverse society has proven difficult, and assessments of the country's promotion efforts show that there is still a significant gap between the strategy and implementation; many sections of the population have not reached the recommended level of activity [19]. Surveillance data on Malaysian adults provide a type of dimension lacking in China: exercise patterns differ by ethnicity among the Malay, Chinese and Indian communities, thus the national figures average over ethnically patterned differences in activity habits [29]. These observations relate to adults rather than students, but a university population recruited from the same communities can be expected to reproduce much of this pattern. Few studies have investigated the motivations of young Malaysians for participating in activities; although the existing measurement work has given relatively more weight to social reasons and peer relationships in their choice to participate [21], this area is still lacking. Digital sport engagement in Malaysia is thus organised under weaker institutional support compared with China, has a culturally diverse user base, and revolves around the concept of social connection in all forms of participation.

As shown in Table 1, the two settings diverge along lines that correspond to distinct cultural mechanisms rather than simply to stages of technological development. The table condenses the comparison on which the rest of this section builds.

Table 1

Contextual conditions for youth digital sport engagement in China and Malaysia

Dimension	China	Malaysia
Policy framework	Centrally coordinated nationwide fitness campaigns	National Strategic Plan for Active Living 2017-2025, devolved and unevenly delivered
Digital infrastructure and implementation	Heavy investment in smart sports; intelligent physical education embedded in university teaching; pronounced regional variation	Maturing commercial platform market; little institutional integration; documented gaps between strategy and delivery
Cultural profile	Comparatively homogeneous student populations; collectivistic; high power distance; markedly higher long-term orientation	Multicultural (Malay, Chinese, Indian); collectivistic; power distance higher than China's; layered authority referents
Evidence base	Expanding student-focused literature on platform adoption and smartphone use	Thin; mostly adult surveillance, with scarce youth-specific digital sport research

3.3 Cultural dimensions as engagement mechanisms

Whether the authority to issue exercise technology is felt to reside in a particular place is a question of power distance. Research on educational technology in Malaysia has found that students' willingness to use new platforms is influenced by endorsements from teachers and institutions, and

top-down expectations generally determine whether these platforms are accepted [37]; earlier studies of e-learning implementation have also shown a similar phenomenon, where institutional judgments exceeded independent evaluations [33]. Transferred to digital sport, these findings make it reasonable to expect, though not yet to demonstrate, that authority endorsement will also motivate platform use in both countries. Chinese endorsements generally fall into formal structures; platforms are often linked to courseware and carry the implicit approval of the university and, by extension, the state. Malaysian power distance scores are even higher; endorsement there can plausibly be spread through a wide network of authority figures, family elders, and community leaders, and their approval extends far beyond the campus gate. Therefore, in both cases, authority endorsement operates via the channel of the construct of subjective norms: perceived expectations of referents whose judgments are relevant.

Both societies are collectivist and therefore place more importance on the behaviour of others. According to the meta-analysis by Jan et al. [17], subjective norms have a stronger impact on the intention to use new technologies in collectivist cultures than in individualistic cultures; thus, the heavy social weighting of Malaysian youths' exercise motivation observed earlier fits this pattern. The two countries will differ not in the extent to which the reference group is considered, but in its composition. The normative world of Chinese students is centered on peers and teachers in relatively uniform institutions, whereas Malaysian students are subject to a multi-layered system of reference points that include family, peers and ethnic communities, and these expectations may not be in agreement. Features that make participation socially visible, such as shared workout logs, group challenges and community leaderboards, should be relevant in both contexts; however, the audiences they reach and how consistently those audiences speak remain unknown to this day.

Uncertainty avoidance refers to the extent of people's fear of the unknown. A preference for an organised environment will likely lead users to choose pre-packaged materials, such as scheduled classes, standardised training plans and obvious progress indicators; on the other hand, comfort with uncertainty will motivate people to explore the free-form functions and algorithmic recommendations. No direct digital sports evidence is available for either country, and the two societies are closer to each other in this regard than in terms of power distance; thus, this review treats uncertainty avoidance as a candidate moderator whose operation within and between the two contexts remains an open empirical question.

Chinese culture has a relatively high score for long-term orientation, and this orientation is likely to affect how usefulness itself is judged. Comparative scholarship on learning cultures has documented differences in this regard in how Chinese and Malaysian students participate in educational activities, as well as similarities due to their shared Eastern heritage [28]. In digital sports, perceived usefulness refers to tangible fitness benefits, performance data and an organised path to achieve specific goals; thus, it is reasonable to believe that such usefulness will have a stronger impact on the attitudes of Chinese students toward the platform than enjoyment and social interaction do for Malaysian students. This is suitable for direct testing, and the discussion restates it as a proposition.

3.4 Culture and the translation of intention into behaviour

The reach of culture does not stop at the point where intentions form; it extends into whether those intentions are acted upon. The distance between exercise intention and actual behaviour in the physical activity literature is unlikely to be the same everywhere. Collectivistic environments have woven stated intentions into a web of relationships with peers and training partners, and formed within groups; thus, leaving them entails a social cost. High power distance provides a second

mechanism: the commitment made in front of an authority figure makes follow-through a question of consistency with acknowledged obligations rather than private will. Research on the persistence of exercise among Chinese students, which links efficacy beliefs to sustained behaviour [15], aligns with the above view; however, such findings cannot separate the cultural component from individual psychological differences. For Malaysia the argument must remain more tentative at present, as no prior research has explored the intention-behaviour path in digital sports there. The layers of reference can operate in both directions: overlapping audiences may increase the demand for accountability and ensure follow-up, or conflicting expectations from family, peers and the community may reduce the effectiveness of any single commitment. Rather than answering that question beforehand, this review treats the passage from intention to behaviour as itself culturally moderated, and the integrated framework presented in the discussion elaborates on this claim.

4. Discussion

4.1 An integrated framework of culturally moderated engagement

Based on the above comparison, the framework presented in Figure 1 is adopted; it consists of two simultaneous evaluation paths through which digital sport engagement among university students occurs. Perceptions of the technology itself, its usefulness and ease of use, combine with the motivational constructs of attitude, subjective norm, and perceived behavioural control to form engagement intention; intention leads to behaviour through volitional mechanisms; and individual-level cultural orientations moderate the specified links in the chain rather than surrounding the model as an unexamined context.

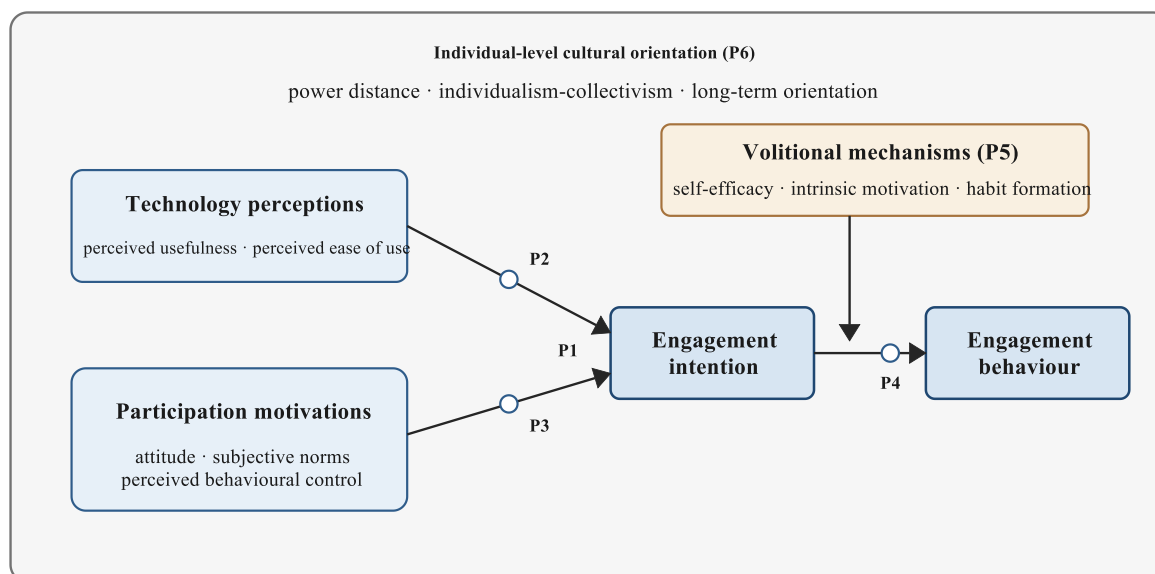


Fig. 1. The integrated framework of culturally moderated digital sport engagement

Note. Solid arrows denote structural paths; circles mark the paths moderated by individual-level cultural orientation (P2 to P4).

The above framework is not the same as previous studies. Unified models of technology acceptance have integrated several theories into a single predictive system, but they have not systematically considered culture [35]. Later, meta-analysis indicated that cultural values strengthen or weaken acceptance relationships, but the operationalised culture in the study used national scores and failed to capture within-country variation [17]. Scholarly work on the will-to-do stage of exercise has established mechanisms to convert intention into action, but it has rarely explored whether these

processes differ across cultures [30]. The three strands are connected in this review: culture is not presented as the background description or a country label, but rather as a moderating layer integrated into the model's architecture, and in line with recent research that digital platforms foster participation only when their design is culturally tailored, not solely technically excellent [39].

The above analysis reduces to six propositions. P1: Technology perception and motivational constructs work together to promote the intention of engagement, with neither pathway reducible to the other. P2: A stronger long-term orientation increases the weight of perceived usefulness in attitude formation, as shown by the Chinese context. P3: A relatively high power distance and layered reference systems can enhance the impact of subjective norms on intention, as shown in Malaysia. P4: Collectivistic and high power-distance orientations strengthen the connection between intention and behaviour through social pressure and commitment consistency, and the alignment of reference group expectations acts as a boundary condition that is more pronounced in the Malaysian context. P5: Self-efficacy, intrinsic motivation and habit formation mediate the transition from evaluative constructs to sustained participation, and extend the volitional role documented by habit research in general for physical activity into digital sports. P6: The cultural foundation of a person should be judged based on that individual, not by their country of origin. The final proposition is no longer a problem of method. Malaysia is a multi-ethnic country; therefore, nationality may be too broad a measure of culture and not suitable for identifying a "country", and configurational evidence shows that different combinations of perceptions and circumstances can lead to the same adoption results, so individual-level data are more appropriate than national data [11]. No proposition has been put forward for uncertainty avoidance: the earlier reviewed evidence has not separated the two contexts in terms of this dimension, and whether it differentiates the form of engagement remains an empirical question.

4.2 Limitations of this review

The conclusions carry qualifications. As a narrative rather than systematic synthesis, the review followed no exhaustive retrieval protocol, and selective coverage cannot be excluded. The evidence bases it compares are asymmetric: Chinese scholarship provides student-focused studies of platform adoption, while the Malaysian material consists mainly of adult surveillance and requires age-related extrapolation that has been flagged where it occurs. Several of the moderation arguments were adapted from educational technology and rely on correlational designs, so their application to digital sports remains inferential; the propositions are thus theoretical assertions awaiting verification, not confirmed results. Reliance on the Hofstede tradition also imports its familiar criticisms; most notably, there is the ecological fallacy of reading national scores onto individuals, and objection P6 has been designed to address this problem rather than avoid it.

4.3 Future research directions

Empirical verification of the propositions requires individual-level measurement of cultural orientation with cross-linguistic and cross-cultural consistency; thus, the foundation of cross-cultural methodology is now considered indispensable rather than optional [27]. Self-reported participation should be supplemented with objective traces of use, such as application logs and wearable-device records, and these are gradually becoming the subject of fitness-tracker research [2]. Given that the predictive weight of individual constructs changes at different stages of behaviour modification, a longitudinal design following students for a whole school year could observe whether their intentions led to behaviour changes [6]. Systematic comparison of Malay, Chinese and Indian students in

Malaysia would create a natural test case for P6 of the country's internal diversity, and qualitative research on how students actually experience layered and potentially conflicting reference expectations would provide the interpretation for the normative propositions that survey instruments cannot offer. Design-oriented experimentation is another way: culturally adapted interventions of the type now emerging in digital health coaching [25] can be designed to determine whether weighting authority endorsement, social visibility or demonstrable usefulness according to users' cultural profiles enhances sustained engagement; this provides empirical evidence for platform developers and for the national fitness strategies that both governments continue to promote.

5. Conclusion

This paper set out to explore how culture influences the engagement of university students in digital sport, and its answer runs through all levels of this behaviour rather than a single link. The comparison of China and Malaysia points to cultural orientations that act as conditioning for where the authority to recommend exercise technology is believed to reside, how strongly normative expectations influence the decision to participate, what kind of usefulness a platform needs to demonstrate in order to gain a favourable attitude, and whether stated intentions can be realised in practice. Although both societies are based on collectivism, the conditions for participation differ: one is centrally managed and targets a relatively homogenous student body, while the other is distributed among various authorities in an ethnically diverse area. It is precisely because of this contrast that the combination is instructive; thus, cultural influence can be traced to specific, testable mechanisms rather than through a general East-West division. The framework and propositions presented here treat cultural orientation as an individual-level moderator of the paths for acceptance and motivation; although not yet empirically verified, it holds some potential value. It can guide researchers on where to focus their measurement and design efforts, advise platform developers not to export a single engagement formula for different cultural groups, and suggest that the institutions responsible for the fitness strategies of both countries should make digital investments most likely to yield participation by aligning them with the cultural context in which young people actually decide to be active. Culture, in this reading, is not the background of digital sport engagement but part of its mechanism.

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