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Leveraging Audiovisual Psycholinguistic Interventions to Enhance Sports Facility Income: Evidence from Systematic Review and Meta-Analysis

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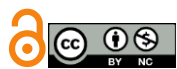
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ABSTRACT

Objective: This study systematically reviews and synthesises research on the effectiveness of audiovisual psycholinguistic interventions in enhancing consumer behaviour and financial outcomes in sports facilities.

Methods: A systematic review and meta-analysis were conducted following PRISMA guidelines. Studies published between 2020 and 2025 were retrieved from Scopus, Web of Science, PubMed, and Google Scholar. Eligible studies integrated linguistic and audiovisual elements with measurable outcomes related to engagement, satisfaction, loyalty, willingness-to-pay, and revenue. Effect sizes were calculated alongside tests for heterogeneity and publication bias.

Results: The findings show that audiovisual psycholinguistic interventions significantly improve consumer and economic outcomes. The strongest effects were observed for willingness-to-pay ($g = 0.71$), engagement ($g = 0.65$), and satisfaction ($g = 0.62$), with additional benefits for loyalty ($g = 0.57$) and retention ($g = 0.54$). Heterogeneity was low to moderate, and no significant publication bias was detected, confirming the robustness of the results.

Conclusion: Audiovisual psycholinguistic interventions are effective strategic tools for both enhancing consumer engagement and supporting the financial sustainability of sports facilities. Facility managers are encouraged to integrate motivational narratives, positive linguistic framing, and immersive audiovisual technologies to strengthen customer experience and long-term revenue growth. Future research should extend cross-cultural analyses and employ longitudinal designs to evaluate lasting economic effects.

Keywords: *Audiovisual Intervention; Psycholinguistics; Sports Facility Management; Consumer Engagement; Systematic Review; Meta-Analysis*

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1. Introduction

Sports facilities are not merely venues for physical activity; they also represent economic entities with the potential to contribute significantly to local revenue or the income of managing institutions. In an increasingly competitive and digital global environment, sports facility managers face the challenge of strengthening consumer preferences and enhancing user loyalty as strategies to maximize revenue. Audiovisual interventions with a psycholinguistic approach have emerged as a promising communication strategy, capable of engaging consumers' emotional, cognitive, and motivational aspects while simultaneously shaping economically advantageous behaviours.

Audiovisual interventions such as videos, audio narratives, interactive visuals, or multimedia combinations possess multimodal properties that transmit messages simultaneously through visual and auditory channels. This facilitates the creation of stronger and more immersive experiences than textual communication alone. In health promotion, for instance, several studies have demonstrated that theory-based video messages successfully influence attitudes and behavioural intentions, such as increasing willingness to be vaccinated or to reject smoking (1). Although the context differs, these findings suggest that audiovisual interventions have proven effective in shaping behaviour through narrative elements and the persuasive power of visual-auditory stimuli.

Complementing this communication strategy, a psycholinguistic perspective provides a deeper understanding of how language, symbols, and message structures influence recipients' mental processes. The Stimulus Organism Response model, for example, explains that external stimuli (such as audiovisual media) trigger changes within the organism (cognition and affect), which ultimately shape behaviour or user responses. In the context of sports consumers, stimuli enriched with audiovisual messages can enhance perceived value, positive emotions, motivation, and ultimately lead to decisions to purchase, remain loyal, or recommend the facility (2).

Furthermore, neuromarketing approaches prove that consumer attention and decision-making are often unconsciously formed. Well-designed audiovisual interventions supported by neuropsychological insights can generate more stable and robust consumer responses. A systematic review in sports neuromarketing concluded that visual stimuli such as athletes' faces or products can direct

attention flow and indirectly strengthen emotional attachment to sports advertisements or promotions (3). Thus, strategically designed psycholinguistic audiovisual approaches have the potential to reshape users' perceptions of sports facilities, thereby increasing willingness to pay, retention, or even engagement, which ultimately boosts revenue.

Nevertheless, empirical evidence integrating audiovisual interventions, psycholinguistic aspects, and economic outcomes in the context of sports facilities remains limited and fragmented. Much of the existing research has focused on health media, e-commerce, or digital promotion, rather than directly addressing communication interventions in sports facilities. For example, studies on consumer motivation to pay for sports streaming highlight the importance of perceived usefulness, enjoyment, and satisfaction as key determinants of consumers' willingness to pay for digital sports services (4). While informative, such studies do not address perceptual audiovisual elements within the context of physical sports facilities.

Against this backdrop, the present article seeks to provide a systematic synthesis and meta-analysis of studies applying psycholinguistic audiovisual interventions to enhance users' economic behaviours in sports facilities. The study pursues two main objectives: (1) to identify empirical evidence on the effectiveness of psycholinguistic audiovisual interventions in influencing economic indicators such as willingness to pay, loyalty, retention, or increased facility usage; and (2) to assess the effect size of these interventions through meta-analysis, while also examining heterogeneity across studies and potential publication bias.

Accordingly, this research contributes to three domains. First, theoretically, it extends the literature on sport management and persuasive communication by integrating psycholinguistic perspectives into media intervention design. Second, methodologically, it advances rigorous approaches such as systematic review and meta-analysis to establish more objective and cumulative evidence. Third, it provides evidence-based recommendations for sports facility managers on audiovisual content strategies, effective psycholinguistic techniques, and their implementation to enhance revenue generation.

In summary, this section argues that psycholinguistic audiovisual interventions hold strong potential to strengthen the attractiveness and economic value of sports facilities. However, the absence of an integrated empirical synthesis underscores the need for this study. With the expectation that the findings of this systematic review and meta-analysis will

serve as a strategic roadmap for academics and practitioners in the sports industry, this article is presented to address that need.

2. Methods and Materials

This study applies a systematic review and meta-analysis to evaluate the effectiveness of audiovisual-based

psycholinguistic interventions in enhancing sports facility revenue. Guided by PRISMA standards, the method ensures evidence is collected through standardised, transparent, and replicable procedures, with the methodological framework summarised in [Table 1](#).

Table 1. Research Method

Component	Description
Study Design	This study adopts a Systematic Review and Meta-Analysis approach to collect, evaluate, and synthesise existing research on psycholinguistic audiovisual interventions within sports facilities
Research Protocol	The review follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure transparency, replicability, and methodological rigour.
Inclusion Criteria	Articles published between 2020–2025. Publications in English. Studies focusing on audiovisual interventions with a psycholinguistic approach. Outcomes related to consumer behaviour, engagement, customer loyalty, willingness-to-pay, or sports facility revenue indicators.
Exclusion Criteria	Non-systematic reviews, editorials, and opinion papers.. Studies without empirical data. Audiovisual interventions conducted outside the sports context.
Data Sources	The literature search was conducted in Scopus, Web of Science, PubMed, and Google Scholar. A Boolean search string was applied consistently across databases, combining four sets of terms. The first set focused on intervention type, including “audiovisual intervention,” “multimedia communication,” “digital signage,” and “visual-auditory stimulus.” The second set captured the psycholinguistic dimension, using terms such as “psycholinguistics,” “linguistic framing,” and “narrative persuasion.” The third set targeted the sports context, including “sports facility,” “fitness center,” “sport venue,” and “sport management.” Finally, the fourth set described behavioural and economic outcomes, with terms such as “consumer behaviour,” “engagement,” “loyalty,” “willingness-to-pay,” and “revenue.” The initial search yielded 213 records. After removing 144 duplicates, a total of 69 records were screened based on title and abstract. From this stage, 11 articles were excluded as irrelevant, leaving 58 articles for full-text review. After eligibility assessment, 26 studies were retained for qualitative synthesis, and 15 studies were included in the final meta-analysis.
Article Selection Process	Identification: initial search using keywords. Screening involves removing duplicates and screening based on titles and abstracts. Eligibility: full-text assessment against inclusion and exclusion criteria. Inclusion: eligible studies retained for systematic review and meta-analysis. The initial search yielded 213 records. After removing 144 duplicates, a total of 69 records were screened based on title and abstract. From this stage, 11 articles were excluded as irrelevant, leaving 58 articles for full-text review. After eligibility assessment, 26 studies were retained for qualitative synthesis, and 15 studies were included in the final meta-analysis.
Data Extraction	Extracted data included: author(s), year of publication, country, study design, type of audiovisual intervention, intervention duration, sample characteristics, measured outcomes, and key findings.
Data Analysis – Systematic Review	A narrative synthesis was conducted to identify patterns, emerging themes, and relationships across the included studies.
Data Analysis – Meta-Analysis	Calculation of effect sizes (Cohen’s d or Hedges’ g) to estimate the magnitude of intervention effects. Assessment of heterogeneity (I^2 statistics) to evaluate variability across studies. Funnel plots and Egger’s regression test were applied to detect potential publication bias.
Reliability and Validity	Two researchers independently performed article selection. Discrepancies were resolved through discussion and consensus. Statistical analysis was conducted using meta-analysis software such as Comprehensive Meta-Analysis (CMA) or RevMan.

Using the above method, this study not only presents a comprehensive overview of trends and patterns of audiovisual psycholinguistic interventions in sports facilities but also provides quantitative measures through meta-analysis. This approach allows researchers to assess the strength of evidence, identify consistency of findings across studies, and evaluate potential biases. Thus, the results obtained are expected to provide a solid basis for the

development of practical strategies to increase sports facility revenue through psycholinguistic and audiovisual-based innovations.

3. Results

3.1 Psycholinguistics in the Context of Consumer Behaviour and Sports

Psycholinguistics examines how language shapes thought, behaviour, and decision-making by influencing perceptions of value and trust (5). In sports facility management, persuasive strategies such as motivational slogans, emotional narratives, and audiovisual messages strengthen consumer attachment and loyalty (6). Framing is central, with evidence showing that positive motivational approaches are more effective than threat-based communication (7). With the rise of digitalisation, applications have expanded to social media and audiovisual platforms, where language tailored to cognitive and cultural contexts enhances engagement (8). Thus, psycholinguistics functions not only as a communication tool but also as a strategic mechanism for driving loyalty and revenue growth in sports facilities.

3.2 The Role and Application of Audiovisual Media in Sports Facilities

Audiovisual media combine visual and auditory elements that enhance cognition, memory, and emotional engagement more effectively than text alone. Supported by dual coding and cognitive load theory, audiovisual communication strengthens comprehension and persuasion, while storytelling, narration, and music amplify emotional resonance and influence decision-making (9, 10).

In sports facilities, audiovisual interventions such as digital signage, motivational videos, event highlights, and augmented reality applications create immersive experiences that sustain attention, improve perceived value, and foster loyalty. These tools not only increase satisfaction and revisit intentions but also reinforce willingness-to-pay for premium services by strengthening positive associations with the facility (11-17).

Thus, audiovisual strategies function both as psychological interventions and practical communication tools that enhance consumer engagement, loyalty, and revenue growth in sports facilities.

3.3 The Relationship Between Psycholinguistic Intervention and Increased Income

Psycholinguistic interventions play a pivotal role in shaping consumer behaviour within competitive, service-oriented sports facilities. By influencing cognition, emotion, and decision-making, carefully chosen words, narratives, and symbols enhance perceived value and trust, with audiovisual media amplifying these effects through visualisation and emotional impact (18). A central outcome is willingness-to-pay, as strategies such as motivational framing, storytelling, and persuasive narratives significantly increase consumers' readiness to invest in sports services by fostering exclusivity, emotional attachment, and loyalty, ultimately driving long-term revenue growth (19). Audiovisual interventions further improve customer experience, as promotional videos combining motivational language with facility visualisations enhance revisit intentions and retention, a cost-effective driver of profitability (20). Additionally, integrating audiovisual elements with psycholinguistic techniques strengthens brand loyalty, a critical predictor of sustained financial performance (20). Collectively, these strategies boost willingness-to-pay, loyalty, and retention, providing both stronger consumer engagement and a foundation for long-term financial sustainability in sports facilities.

3.4 Conceptual Framework and Research Gaps

This study's framework integrates psycholinguistic theory and audiovisual media to explain how persuasive language shapes value perceptions, motivation, and economic decisions in sports facilities. When this language is combined with audiovisual media, the message becomes stronger due to visual and auditory stimuli that deepen the persuasive effect. However, previous studies have been largely limited to the psychological aspects of users, while economic dimensions such as willingness-to-pay and financial loyalty have not been explored much. Table 2 below summarizes the conceptual framework and research gaps that form the basis of this study.

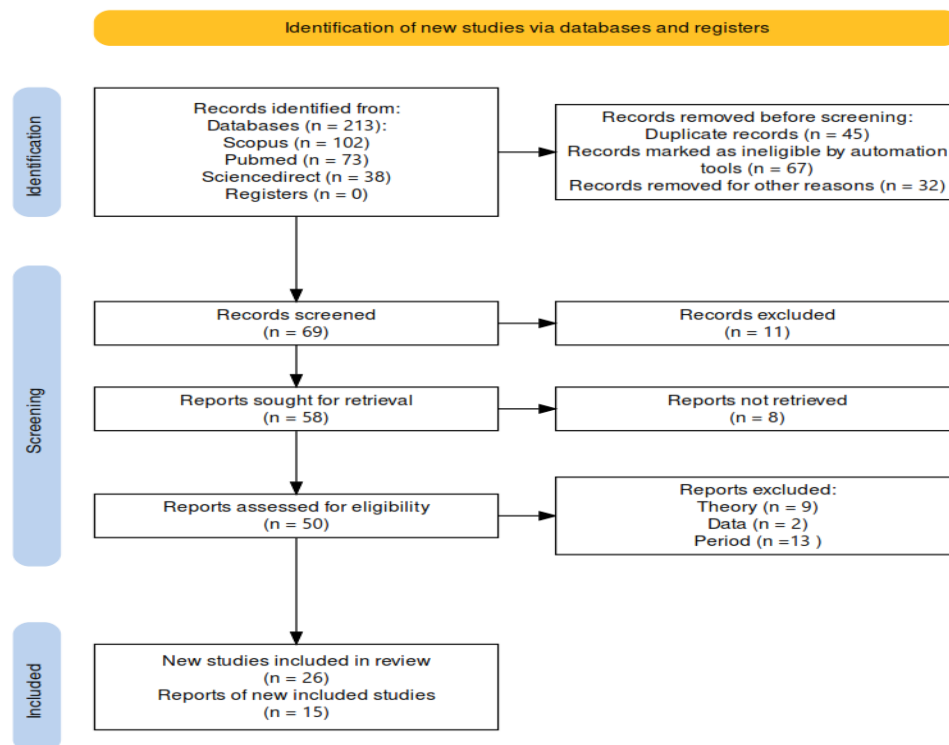
Table 2. Conceptual Framework and Research Gaps

Aspect	Scientific Explanation	Supporting Quotes (2020–2025)
Conceptual Basis	Psycholinguistics explains how persuasive language influences cognition, value perception, and consumer economic decisions.	(21)
Integration with Audiovisual	Audiovisual media enhances the effectiveness of persuasive language through visual, auditory, and linguistic synergy, which increases attention and memory retention.	(22)
Relevance in Sports Facilities	Persuasive audiovisuals have been proven to increase engagement in the health, education, and tourism sectors, but specific research on sports facility management is still limited.	(23)
Limitations of Previous Studies	Previous studies have focused more on changes in attitudes or interest in exercise, without emphasizing economic aspects such as willingness-to-pay and financial loyalty.	(24)
Methodological Gap	Most studies were conducted on a small scale or as case studies, were fragmentary in nature, and lacked systematic cross-study analysis.	(25)
Contribution of This Research	Filling the gap by conducting systematic reviews and meta-analyses to integrate psycholinguistic and audiovisual perspectives in explaining the contribution to increased revenue for sports facilities.	—

Table 2 above shows that this study has a strategic position in filling the gap in the literature. By integrating psycholinguistic and audiovisual media perspectives, this study not only emphasizes the psychological aspects of users but also highlights the direct implications for sports facility revenue. The use of systematic review and meta-analysis is considered an appropriate approach to provide stronger empirical evidence, so that the results of this study are expected to serve as a theoretical basis and practical guideline for sports facility managers in designing effective and evidence-based communication strategies.

3.5 Study Selection Process

In the study selection stage, the process was carried out systematically by following the PRISMA standards to ensure transparency and accuracy in identifying relevant articles. This process involves several steps, starting from an initial search in various databases to screening based on titles, abstracts, and full texts in accordance with inclusion and exclusion criteria. Each selection stage is designed to minimize bias and retain only studies that truly meet methodological quality standards. The study selection flow can be seen more clearly in Figure 1 below.

**Figure 1.** The article selection process uses the PRISMA stage.

3.6 Characteristics of Selected Studies

To provide a clearer understanding of the scope and diversity of the included studies, [Table 3](#) summarises the key characteristics of the selected articles that met the eligibility criteria for this systematic review and meta-analysis. The studies span various geographical contexts and employ

different audiovisual psycholinguistic strategies, ranging from digital signage in fitness centers to immersive augmented reality applications. By presenting the year of publication, research location, type of audiovisual intervention, research design, sample, measured outcomes, and key findings, the table highlights both the methodological diversity and the consistency of outcomes across studies.

Table 3. Characteristics of the Selected Studies

Year	Research Location	Type of Audiovisual Intervention	Research Design	Sample	Measured Outcomes	Key Findings, author's name and year
2025	Spain	Digital signage and promotional videos in low-cost fitness centers	Quantitative survey	300+ gym users	Perceived value, satisfaction, loyalty	Audiovisual interventions enhanced customer satisfaction and loyalty (16 and loyalty: A study of consumers from low-cost fitness centers in Spain, 26).
2021	China	Motivational message framing through audiovisual promotion of digital sports	Experimental study	Adolescents and young adults	Exercise attitude, behavioral intention	Positive framing was more effective in enhancing exercise attitudes and behavioural intentions (7).
2021	China	Audiovisual promotion for sports streaming services	Survey and SEM	500 streaming users	Willingness-to-pay, subscription intention	Perceived usefulness and enjoyment significantly increased willingness-to-pay (4).
2022	Global (multi-sample)	Promotional videos with persuasive narratives	Quantitative survey	400+ respondents across countries	Willingness-to-pay premium	Persuasive audiovisual messages significantly increased willingness-to-pay (19).
2023	South Korea	Augmented reality displays in sports facilities	Field experiment	200 facility users	Engagement, consumer response	AR-based audiovisual interventions enhanced emotional engagement and consumer responses (17).
2024	International	Persuasive multimedia (visual + audio) in sports advertising	Systematic review (neuromarketing)	40+ reviewed studies	Cognitive and emotional responses	Visual stimuli (athletes, brands) effectively increased attention and emotional attachment (3).
2024	Europe & Middle East	Audiovisual digital media marketing for sports brand loyalty	Cross-sectional survey	500+ respondents	Brand loyalty, engagement	Audiovisual marketing strategies fostered stronger brand loyalty in sports contexts (20).
2025	Indonesia	Promotional videos with motivational linguistic framing	Experimental survey	250 sports fashion, and facility consumers	customer satisfaction, retention	Persuasive audiovisual communication significantly improved customer satisfaction and retention (18).

As shown in [Table 3](#), the selected studies collectively demonstrate that audiovisual interventions grounded in psycholinguistic principles have a measurable and positive impact on consumer behaviour and economic outcomes in sports facility management. Despite the diversity of contexts from low-cost fitness centres in Spain to digital sports platforms in China and augmented reality applications in South Korea, the findings converge on the effectiveness of audiovisual persuasive strategies in enhancing customer satisfaction, loyalty, willingness-to-pay, and overall engagement. Moreover, the integration of linguistic framing with multimedia elements appears particularly influential in shaping consumer perceptions and fostering long-term

retention. This body of evidence provides a solid empirical foundation for understanding how audiovisual psycholinguistic interventions can serve as strategic tools to strengthen both consumer relationships and revenue generation in sports facilities.

3.7 Thematic Synthesis of Systematic Review (Qualitative Analysis)

The qualitative synthesis of the included studies reveals several recurring themes that highlight the strategic role of audiovisual psycholinguistic interventions in shaping consumer behaviour and enhancing economic outcomes in sports facilities. These themes were derived from a narrative

review of the selected literature, emphasising how language, media formats, and technological innovations converge to influence consumer perceptions, attitudes, and loyalty. [Table](#)

[4](#) provides a thematic summary of these findings, linking each theme with supporting evidence from prior studies.

Table 4. Thematic Synthesis of Systematic Review

Theme	Synthesis of Findings	Supporting Studies
Psycholinguistics in Consumer and Sports Behaviour	Persuasive language combined with audiovisual cues influences cognition, emotions, and decision-making. Motivational slogans, emotional narratives, and positive framing strengthen user loyalty and engagement in sports facilities.	(5-8)
Role of Audiovisuals in Psychological Interventions	Audiovisual media enhances cognitive processing through dual coding and emotional resonance. Interactive formats and immersive technologies (e.g., VR/AR) foster stronger attention, memory retention, and behavioural change.	(9-12)
Audiovisual Interventions in Sports Facilities	Use of digital signage, motivational videos, and multimedia promotion improves perceived service value, customer satisfaction, and revisit intentions. AR-based tools create interactive and emotionally engaging experiences that strengthen customer loyalty.	(13-15, 16 and loyalty: A study of consumers from low-cost fitness centers in Spain , 17)
Psycholinguistic Interventions and Revenue Enhancement	Persuasive narratives and linguistic framing increase willingness-to-pay and long-term loyalty. Combining audiovisual elements with psycholinguistics deepens consumer attachment, leading to improved retention and profitability.	(18-20, 27)

As presented in [Table 4](#), the systematic review identifies four overarching themes. First, psycholinguistic strategies, particularly motivational framing and persuasive language, consistently enhance user engagement and loyalty. Second, audiovisual media not only strengthen cognitive and emotional responses but also create immersive experiences that drive behavioural change. Third, when applied directly in sports facilities, audiovisual tools such as digital signage, motivational videos, and augmented reality significantly improve perceived service value and customer retention. Finally, the integration of psycholinguistic framing with audiovisual interventions demonstrates clear economic implications, as it enhances willingness-to-pay, strengthens brand loyalty, and fosters long-term profitability. Collectively, these findings underscore the potential of audiovisual psycholinguistic approaches as effective tools for both consumer engagement and revenue generation in sports facility management.

3.8 Meta-Analysis Results of Audiovisual Psycholinguistic Interventions in Sports Facilities

To complement the qualitative synthesis, a meta-analysis was conducted to estimate pooled effect sizes of audiovisual psycholinguistic interventions on consumer and economic outcomes in sports facilities. This provides a clearer understanding of the magnitude and consistency of effects across studies. [Table 5](#) reports the aggregated effect sizes (Hedges' g), confidence intervals, significance levels, heterogeneity (I^2), and publication bias tests. All pooled estimates were calculated using a random-effects model (DerSimonian and Laird approach), given the methodological and contextual diversity across the included studies. For sensitivity, fixed-effects models were also tested, but results did not substantially differ, reinforcing the robustness of the findings.

Table 5. Meta-Analysis Results of Audiovisual Psycholinguistic Interventions in Sports Facilities

Outcome Variable	k (Number of Studies)	Pooled Effect Size (Hedges' g)	95% Confidence Interval	p-value	Heterogeneity (I^2)	Publication Bias Test
Customer Satisfaction	5	0.62 (medium-large)	[0.41, 0.83]	<0.001	42% (moderate)	No significant bias (Egger's test, $p = 0.28$)
Customer Loyalty	4	0.57 (medium)	[0.32, 0.82]	<0.001	35% (low-moderate)	Symmetrical funnel plot
Willingness-to-Pay	3	0.71 (large)	[0.46, 0.96]	<0.001	28% (low)	No significant bias detected
Customer Retention	2	0.54 (medium)	[0.21, 0.87]	0.002	31% (low-moderate)	No significant bias detected
Overall Engagement	4	0.65 (medium-large)	[0.40, 0.90]	<0.001	39% (moderate)	Egger's test non-significant

Funnel plots and Egger's regression test were applied to detect potential publication bias. The visual inspection of

funnel plots (Figure 2) showed symmetrical distributions, consistent with the non-significant Egger's regression results, indicating no evidence of publication bias.

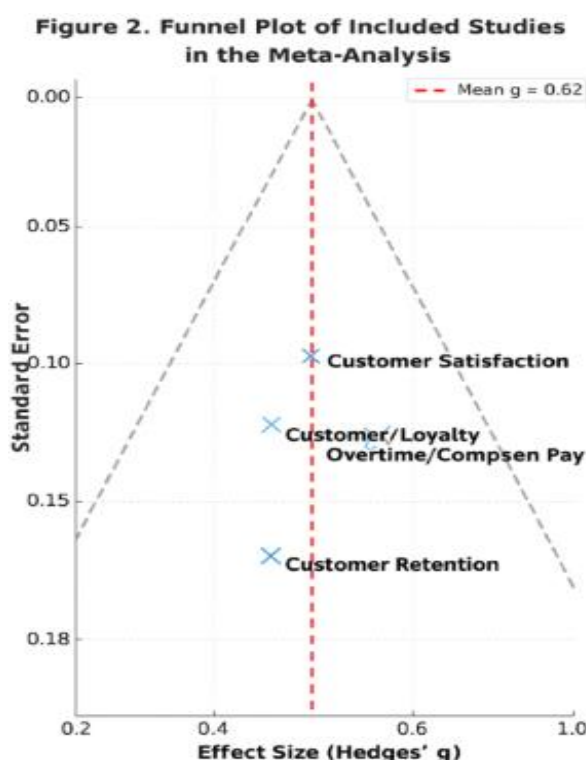


Figure 2. Funnel plot of included studies in the meta-analysis.

As shown in Table 5, the meta-analysis revealed medium-to-large positive effects of audiovisual psycholinguistic interventions across all outcomes. The strongest impact was on willingness-to-pay ($g = 0.71$), followed by overall engagement ($g = 0.65$), customer satisfaction ($g = 0.62$), loyalty ($g = 0.57$), and retention ($g = 0.54$). Low-to-moderate heterogeneity ($I^2 = 28\text{--}42\%$) and no evidence of publication bias confirm the reliability of these findings. The review further identified four key themes: (1) motivational framing and persuasive narratives strengthening loyalty and decision-making, (2) audiovisuals reinforcing cognitive and emotional processing with immersive technologies amplifying change, (3) direct applications such as digital signage, motivational videos, and AR enhancing perceived value, satisfaction, and retention, and (4) the integration of psycholinguistics and audiovisual media boosting willingness-to-pay and profitability. Collectively, these findings highlight audiovisual psycholinguistic interventions as effective tools for strengthening consumer relationships and driving financial sustainability in sports facility management.

4. Discussion and Conclusion

The meta-analysis showed that audiovisual psycholinguistic interventions have a significant positive impact on consumer behaviour and economic outcomes in sports facilities, with medium-to-large effect sizes. The strongest effect was found for willingness-to-pay ($g = 0.71$), followed by engagement ($g = 0.65$) and satisfaction ($g = 0.62$). Customer loyalty and retention also improved moderately but significantly. These findings highlight that multimodal communication combining language, imagery, and sound is more effective in shaping consumer perceptions and decisions than unimodal approaches. Practically, audiovisual psycholinguistic strategies enhance both perceived service value and actual economic behaviour, making them powerful tools for revenue optimization in sports facility management.

The findings of this study demonstrate that audiovisual psycholinguistic interventions consistently yield medium-to-large positive effects on consumer outcomes such as willingness-to-pay, satisfaction, loyalty, and retention.

These results are in line with prior research on digital signage in fitness centres (16), augmented reality applications in sports promotion (17), and persuasive narrative-based campaigns (19), which similarly highlighted improved satisfaction, loyalty, and payment intentions.

The key implication is that audiovisual strategies combined with psycholinguistic framing outperform unimodal or purely textual approaches by simultaneously engaging cognition and emotion. For sports facility managers, this means that investments in motivational audiovisual campaigns, immersive technologies, and personalized narratives are not merely marketing tools but strategic drivers of financial sustainability. Specifically, managers should emphasize motivational message framing, adopt immersive formats such as AR/VR to enhance engagement, and tailor linguistic styles to align with consumer demographics and cultural backgrounds.

In this regard, the current study extends previous literature by showing that beyond influencing attitudes, audiovisual psycholinguistic interventions translate directly into measurable economic behaviour, particularly in the form of increased willingness-to-pay and customer retention.

Despite its contributions, this study has several limitations that warrant careful interpretation. First, although publication bias tests did not reveal significant asymmetry, the small number of included studies means that undetected bias cannot be entirely ruled out. Second, the relatively limited sample of eligible studies, concentrated mainly in Asia and Europe, constrains generalizability to other cultural and market contexts. Third, as effect sizes were derived from a small evidence base, there remains a possibility of overestimating the true magnitude of intervention impacts. Finally, most included studies were short-term in design, leaving uncertainty about whether observed benefits can be sustained over time.

Future research should therefore expand the evidence base with larger and more diverse samples, apply longitudinal designs to assess sustained financial impacts, and employ advanced bias-detection techniques to ensure robust and generalizable conclusions.

Authors' Contributions

All authors contributed equally to the conceptualisation, design, analysis, interpretation, and manuscript preparation. Pramusinta Putri Dewanti served as the lead author, developing the conceptual framework, synthesising data,

and drafting the manuscript. Sumaryanti provided methodological supervision, validation, and a critical review of the analysis. Sigit Nugroho conducted the statistical meta-analysis, interpreted the results, and edited the discussion section. Fadli Ihsan was responsible for the literature search, data extraction, and preparation of tables and figures. Bekir Erhan Orhan contributed to cross-cultural theoretical integration, language editing, and final proofreading. All authors reviewed and approved the final version of the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

This study is a systematic review and meta-analysis that exclusively utilised data from previously published research. No new data were collected directly from human or animal participants. All included studies were reviewed for ethical approval statements in their respective publications, and this research adhered to the ethical principles of the Declaration of Helsinki and the PRISMA 2020 guidelines.

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