

Deep Engagement, Real Purchases: Psychological Mechanisms Linking Social Media Engagement to Physical Music Consumption

Hanyi Xiao

Department of Finance and Economics, Beijing Normal University–Hong Kong Baptist University (BNBU), Zhuhai, China

2330036160@mail.uic.edu.cn

Abstract. Against the background of the high popularity of digital music, the sustainable value of physical music products in the fan economy still needs to be explained in depth. Based on the use of social media, this article distinguishes the depth of fans' social media engagement, and introduces social motivation, emotional motivation and collection motivation as psychological mechanisms, and systematically examines how the depth of engagement affects the purchase behavior of physical music. On the basis of questionnaire data, PCA and Varimax, multivariate linear regression analysis, Bootstrap confidence interval method, and regulatory regression model, the following conclusions are drawn. Compared with low engagement, deep social media engagement has a significant and stronger positive impact on physical music purchasing behavior; social motivation and emotional motivation play a significant intermediary role between the depth of engagement and purchasing behavior, while collection motivation does not form a stable intermediary path; singer interaction perception does not significantly regulate the depth of engagement on psychology. The robustness test further verified the universality of the research conclusions. This study expands the research perspective of fans' consumption behavior from the perspective of engagement level and psychological mechanism, and provides inspiration for the fan operation practice of the music industry.

Keywords: Social media engagement depth; fan consumption behaviour; physical music purchase; mediation effect; parasocial interaction.

1. Introduction

The rapid expansion of social media has fundamentally reshaped the relationship between singers and fans, transforming fans from passive listeners to active participants in content creation, interaction and communication [1]. Although previous studies have extensively explored digital music consumption, less attention has been paid to how *social media engagement* can promote the demand for physical music products in the era of dominant streaming media platforms [2]. Recent research shows that digital interaction does not necessarily squeeze out physical consumption while may enhance fans' emotional attachment and social identity, thus stimulating the purchase of tangible product [3]. From a psychological perspective, fan consumption is usually driven by a variety of motivations, including *social connections*, *emotional attachment*, and *collection intentions* [4,5]. However, the relative importance of these motives and the conditions under which they transform online interaction into physical product purchase behavior still need to be further studied. To make up for this gap, this study focuses on *the depth of social media engagement* rather than just the frequency of engagement, and examines how different *psychological motivations* act as an intermediary between the depth of engagement and the purchase behavior of physical music. The study also explores whether the *perceived interaction* with singers amplifies these effects. By integrating behavioral, psychological and perceptual factors, this study aims to provide a more detailed understanding of how social media engagement in the fan-driven music market translates into economic results.

2. Literature Review and Hypotheses

2.1. Literature Review

The Consumers' Online Brand-Related Activities (*COBRAs*) framework [6] theoretically defines the hierarchical behavior of social media interaction (from shallow to deep: *consuming, contributing and creating*) and provides a measurement basis for subsequent research. For example, contributing and creating have a higher degree of dedication and initiative, so they are more closely related to higher emotional engagement and behavioral consequences [7]. Therefore, this study prioritizes the *depth* of social media engagement over its frequency in examining fan consumption behavior.

Although digital sound has become the mainstream of global music consumption, there is always a high demand for touch, which means consumers tend to prefer tangible products more [8]. According to empirical analysis of IFPI and the Korean music market, despite the continuous growth of streaming revenue, physical music still shows a resilience and growth trend in some regions, especially in the sales of vinyl records [2,9], showing that physical music has its own unique cultural and economic value in the new era. In the current mainstream consumption environment of digital media, it is of great practical significance to study the purchase behavior of physical music.

Existing research shows that users' motivation on social media includes social interaction, emotional satisfaction, and identity and other categories, which predict users' interactive behavior [10,11]. Prior research also suggests that products with strong collectible attributes can stimulate consumers' collection motivation [5]. Therefore, this study incorporates the *social, emotional and collection motivation* into the analysis framework, and proposes that different types of psychological motivations may play an *intermediary* role between social media deep interaction and physical music purchase behavior. *Parasocial relationships* are a one-way but emotional connection between users and social media characters, which can transform interactive behavior into stronger consumption motivation and consumption behavior [12-14]. This shows that the relationship between the depth of interaction and consumption behavior is closer when fans perceive higher-quality interaction.

2.2. Research Hypotheses

Based on the existing literature mentioned, this study formulates the following several hypotheses.

Table 1. Hypotheses for study

Hypothesis (Conceptual)	Hypothesis (Tested)	Description and Path
H1: Social media engagement depth positively influences purchasing behavior	H1a	Low engagement has a positive effect on buying.
	H1b	High engagement has a positive effect on buying.
	H1c	The effect of high engagement is stronger than that of low engagement.
H2: Psychological motivation mediates the engagement–purchase relationship	H2a	Social motivation mediates the effect of high engagement on purchasing behavior.
	H2b	Emotional motivation mediates the effect of high engagement on purchasing behavior.
	H2c	Collection motivation mediates the effect of high engagement on purchasing behavior.
H3: Singer's interactive perception moderates engagement effects	H3a	Interactive perception strengthens the effect of engagement on psychological motivation.
	H3b	Interactive perception strengthens the effect of engagement on purchasing behavior.

Table 1 shows the theoretical hypothesis framework of this study. H1 from the perspective of the depth of engagement; H2 introduces psychological motivation as an intermediary variable; H3 examines the regulating effect of singer's interactive perception.

2.3. Conceptual Framework (S-O-R Model)

Based on the theoretical framework of Stimulus–Organism–Response (S-O-R), this study regards the depth of social media engagement as external stimulus (X), the psychological motivation of fans as the internal psychological state (M), and the physical music purchase behavior as a behavioral response (Y), so as to build an empirical analysis model of X-M-Y.

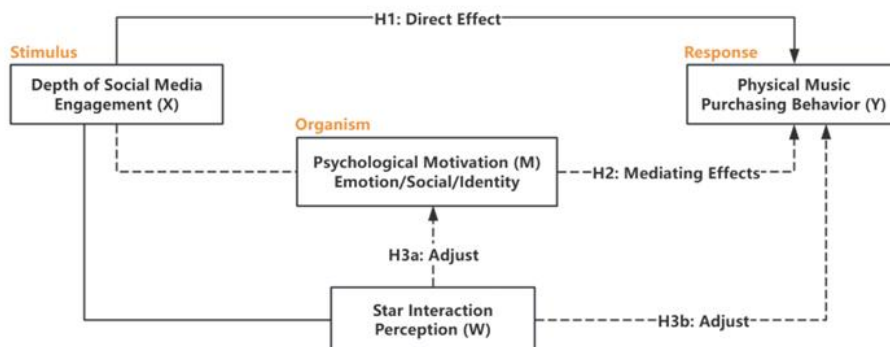


Fig 1. Conceptual framework (S-O-R) of the study.

Figure 1 shows the impact path of social media engagement depth (X) on actual music consumption behavior (Y). In the model, H1 is a direct effect path to explore how the depth of social media engagement directly affects music consumption behavior. H2 describes the intermediary role of psychological motivation (including social, emotional, and collectional motivation) between social media engagement and music consumption. H3a and H3b respectively discussed the regulating effect of singers' interactive perception on psychological motivation and purchasing behavior.

3. Methodology

3.1. Sample and Procedures

This study is distributed and collected on mainstream social media such as TikTok (douyin.com), Weibo (weibo.com), and Xiaohongshu (xiaohongshu.com) through a China-based survey platform (wjx.cn). The measurement method for variables is the *Likert Scale*. Since the questionnaire was released on the social platform, the samples obtained were all social media users so that in line with the target group of the study. A total of 300 questionnaires were recovered during the data collection stage. To ensure the quality of the data, this study has strictly screened and eliminated invalid samples. The elimination criteria include but are not limited to cases where (1) the answer time is less than one-third of the average (the average answer time is 255.10 seconds, and the answer time is less than 85 seconds), and (2) the answer is not filled in seriously. In the end, a total of 38 invalid questionnaires were eliminated and 262 valid questionnaires were obtained for subsequent data analysis.

3.2. Measures

For the depth of social media engagement, this study has collected six types of specific interactive behaviors (browsing, liking, sharing, livestream, commenting, user-generated content) in the past 3 months and used *5-point Likert scales* to measure them. Extract the potential dimension through *principal component analysis (PCA)*, and perform *Varimax orthogonal rotation* on the first two components with eigenvalues greater than 1. Varimax finally converges after 7 iterations of rotation.

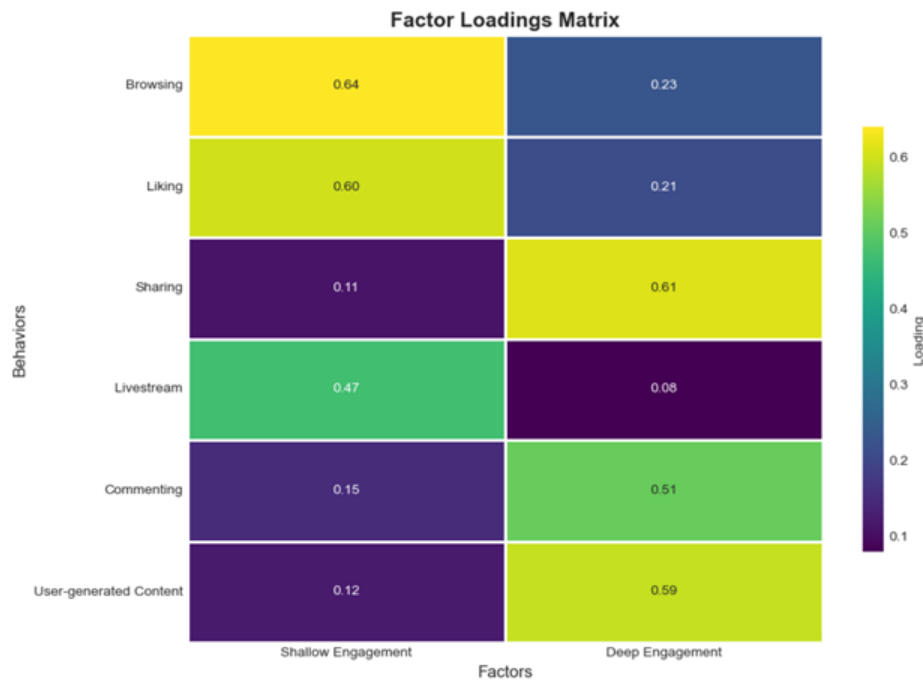


Fig 2. Factor loadings after PCA with varimax rotation.

Figure 2 shows the outcome of PCA with Varimax rotation yielded two factors. This structure is highly consistent with the hierarchical logic of the COBRA of the classical theory of social media.

This study sets two interactive indicators, Low-Engagement Index and High-Engagement Index, and takes the factor load after rotation as the weighting basis:

$$Low - Engagement Index = 0.64 \times comments + 0.60 \times likes + 0.47 \times livestream \quad (1)$$

$$High - Engagement Index = 0.61 \times sharing + 0.51 \times comments + 0.59 \times user - generated content \quad (2)$$

This study integrates physical purchase volume and purchase willingness into a comprehensive *physical music purchase index* to explain the impact of social media interaction on physical music consumption behavior. Covering (1) the actual purchase quantity and number of physical albums, vinyl records and other tangible music products in the past year and (2) the strength of willingness to purchase physical music products (including but not limited to albums, vinyl, etc.) in the future. This study uses principal component analysis (PCA) to weight the above two dimensions. After analysis, the load of both dimensions is 0.70, and the calculation formula is as follows:

$$Y = 0.70 \times Actual\ physical\ music\ consumption + 0.70\ Intent\ to\ purchase\ physical\ music \quad (3)$$

This study focuses on three types of psychological drives when fans use social media, which are social, emotional and collection motivation, are measured by *7-point Likert scales*' 9 questions. Measuring fans' subjective perception of the interaction degree of singers in social media, including two core dimensions. (1) The sense of distance, for example, feeling that the distance between singers and fans is not broad; (2) the sense of commercialization is low, such as the interaction between singers and fans is not completely commercial promotion. The scale adopts *7-point Likert scores*, and the arithmetic average of the question item is taken as the score.

This study incorporates common demographic and fan characteristic variables as *control variables*, in order to reduce potential interferential factors and improve the internal validity of the model. (1) Age (age); (2) Gender (0 = female, 1 = male); (3) Income (monthly available income); (4) Fan tenure (years); (5) Social motivation, emotional motivation, collection motivation (as a control item when testing the main effect, avoid confusion with the intermediary path).

3.3. Analysis Method

3.3.1 Multivariate linear regression model (hypothesis 1)

This study adopts a multivariate linear regression model and uses the ordinary least squares method to estimate to test the impact of the depth of social media engagement on music purchasing behavior.

$$Y = \beta_0 + \beta_1 \times Low\ Engagement + \beta_2 \times High\ Engagement + \sum_{i=1}^7 \gamma_i \times CV_i + \epsilon \quad (4)$$

Y represents the comprehensive purchase index, β_0 is the intercept term, β_1 and β_2 are the regression coefficients of low engagement and high engagement variables, γ_i is the coefficient of each control variable, and ϵ is the error term.

3.3.2 Resampling confidence interval method (hypothesis 2)

The non-parametric re-sampling method can construct an empirical distribution of indirect effects by repeatedly sampling from samples, thus estimating its confidence interval more steadily and avoid assuming normal distribution [15]. Specifically, by taking a large number of repeated samples of the indirect effect path coefficient and calculating the confidence interval, when the interval does not contain 0, the mediation effect can be considered significant.

Table 2. Bootstrap mediation model specifications.

Independent variable (X)	High engagement index
Dependent variable (Y)	Purchasing behavior
Intermediary variables (M_{1-3})	Social/ emotional/ collection motivation
Method framework	Multiple intermediary model
Number of self-samplings	5,000 times
Simultaneous estimation	Total effect (c), direct effect (c') and indirect effect of each intermediary path (a×b)

Table 2 shows the main parameters of Bootstrap mediation analysis, which are used to evaluate the indirect effects in the mediation path. The model analyzes the relationship between the high engagement index (X) and purchasing behavior (Y), and uses social, emotional and collection motivation (M1–M3) as intermediary variables. The method estimates the total effect (c), the direct effect (c') and the indirect effect (a×b) of each intermediary path through 5,000 self-sampling.

3.3.3 Interaction regression model (hypothesis 3)

In order to test whether fans' perception of celebrity interaction can enhance the impact of social media engagement on (1) the psychological motivation of fans and (2) the actual music purchase behavior, this study constructed an adjustment regression model containing interaction items.

Taking the psychological motivation of fans as the dependent variable, this study examines the regulating effect of the singer's interactive perception on the path of "degree of engagement → psychological motivation" (H3a). The model form is as follows:

$$M_{1-3} = \beta_0 + \beta_1 X + \beta_2 W + \beta_3 (X \times W) + \beta_4 CV + \epsilon \quad (5)$$

Using the same method to examine the moderating effect of the singer's interaction perception on the "degree of engagement → actual music purchase behavior" path (H3b). The model is as follows:

$$Y = \beta_0 + \beta_1 X + \beta_2 W + \beta_3 (X \times W) + \beta_4 CV + \epsilon \quad (6)$$

M_{1-3} represent three different psychological motivations, Y represents the purchase behavior, X indicates the depth of social media engagement, W represents the perception of singer interaction, and $X \times W$ is the interaction term of the two. CV is the set of control variables. Before constructing, the study performed mean centering on the two variables of X and W to reduce the risk of multicollinearity and make the main effect coefficients have a clearer interpretation meaning.

4. Results

4.1. Main Effects (H1)

Table 3. Main effect results for hypothesis 1.

Variable	Coefficient (β)	Std. Error	t-value	p-value
Low Engagement	0.124	0.069	1.80	0.073
High Engagement	0.254	0.061	4.13	< 0.001
Social Motivation	0.176	0.061	2.88	0.004
Emotional Motivation	0.304	0.087	3.50	0.001
Collecting Motivation	0.082	0.082	1.01	0.315
Gender	-0.465	0.188	-2.48	0.014
Fan Tenure	0.274	0.061	4.46	< 0.001
Age	0.007	0.085	0.09	0.931
Income	0.027	0.060	0.46	0.647
Constant	-0.506	0.555	-0.91	0.363

This table 3 shows the results of regression analysis, which shows that high engagement, emotional motivation, social motivation and fan tenure have a significant positive effect on the dependent variables, among which the impact of high engagement and emotional motivation is the most significant ($p < 0.001$). Gender has a significant negative impact on dependent variables ($p = 0.014$), while the impact of low engagement, collection motivation, age and income is not significant.

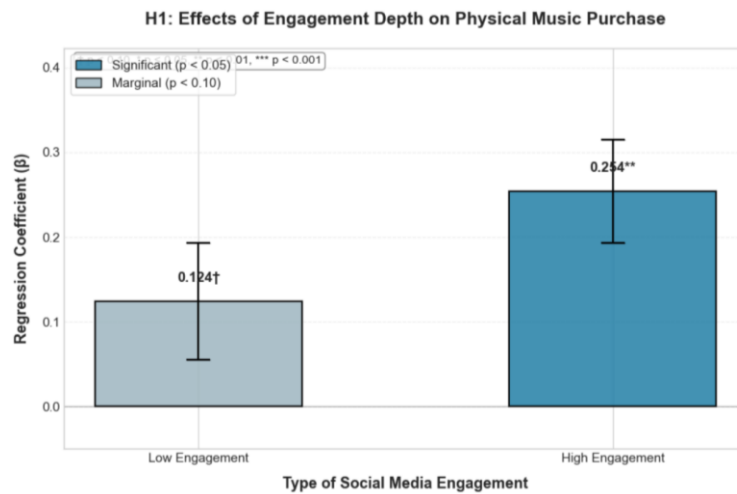


Fig 3. Main effects of low vs. high social media engagement.

This figure 3 shows the depth of different social media engagement (Low vs. High) and predictive effect on the willingness to buy physical music (regression coefficient β). † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Statistical analysis reveals that high engagement has a significant positive impact on the willingness to buy physical music and can more effectively promote consumption willingness.

4.2. Mediation Analysis (H2)

The analysis results show that social motivation (0.0298) and emotional motivation (0.0766) play a significant intermediary role between the depth of engagement and purchasing behavior. In contrast, the collection motivation fails to form a significant intermediary between the two variables.

Table 4. Mediation test results for hypothesis 2.

Path (X → M → Y)	Indirect Effect (a×b)	Bootstrap Mean	Bootstrap SE	95% Percentile CI	95% Bias-Corrected CI
Social Motivation	0.0298	0.0294	0.0149	[0.0046, 0.0629]	[0.0067, 0.0690]
Emotional Motivation	0.0766	0.0759	0.0293	[0.0249, 0.1400]	[0.0296, 0.1473]
Collecting Motivation	0.0247	0.0244	0.0219	[-0.0165, 0.0700]	[-0.0125, 0.0753]
Total Indirect Effect	0.1311	—	—	[0.0705, 0.1968]	[0.0743, 0.2033]

The indirect effects of different motivations' mediating paths (X→M→Y) and their Bootstrap (5000 samples) test results (Table 4). The total indirect effect is significant.

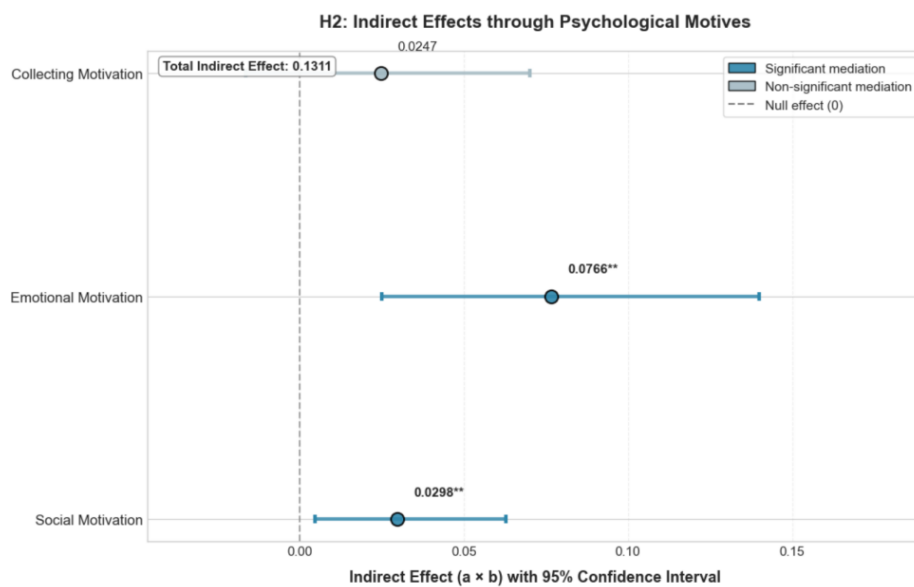


Fig 4. Comparison of indirect effects for three psychological motivations.

The intermediary effect (a×b) of different psychological motivations (collection, emotional, social) and its 95% confidence interval (Figure 4). The total indirect effect is 0.1311.

4.3. Moderation Analysis (H3)

The test shows that the singer's interactive perception does not significantly regulate the impact of the social media engagement on psychological motivation and purchasing behavior.

Table 5. Moderation results for hypothesis 3.

Variable	Social Motivation	Emotional Motivation	Collecting Motivation	Purchase Behavior
Deep Engagement (X)	0.168** (0.057)	0.232*** (0.051)	0.251*** (0.055)	0.278*** (0.035)
Perceived Artist Interaction (W)	0.097 (0.103)	0.359*** (0.093)	0.285** (0.100)	0.014 (0.063)
Interaction (X × W)	-0.011 (0.050)	-0.066 (0.045)	-0.057 (0.049)	-0.015 (0.031)
R ²	0.116	0.225	0.239	0.37
Adj. R ²	0.092	0.204	0.219	0.353
N	264	265	265	265

The standard error is in parentheses (Table 5). All continuous variables have been centralized before constructing interactive items. All interaction items are not significant, indicating that the perception artist's interaction has not significantly adjusted the impact of deep engagement.

5. Robustness Checks

To assess the robustness of the main findings, several additional analyses were conducted.

Following prior studies on consumer engagement and purchase behavior [19], the core regression models were (1) re-estimated using alternative operationalizations of the dependent variable. Specifically, physical music purchase quantity and purchase intention were separately employed as dependent variables instead of the composite purchase index. The results remain consistent in both direction and statistical significance, suggesting that the observed effects are not sensitive to the measurement of purchasing behavior.

In addition, robustness was further examined through (2) subsample analyses based on engagement depth and (3) by reconstructing the engagement indices using simple mean scores rather than PCA-based factor scores, a practice commonly adopted in social media engagement research [20,21]. The main conclusions still support the stability of the proposed model.

Comparison of Engagement Depth Effect

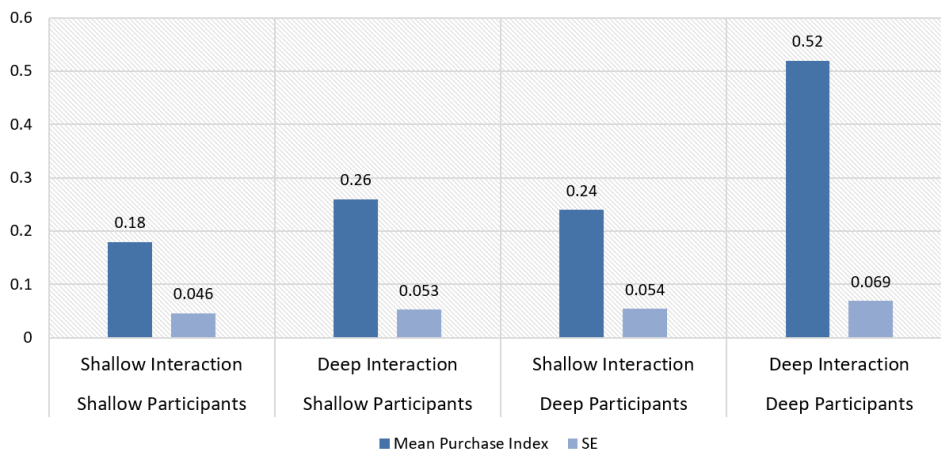


Fig 5. Comparison of engagement depth effects between shallow and deep participants

Based on the average of the social media engagement scale, participants were divided into shallow and deep engagement groups (Figure 5) [20]. Bars show the regression coefficient estimated for each group and reveal that there is a consistent pattern between the groups.

6. Discussion

This study explores whether the depth of fans' engagement on social media will affect their behavior of buying physical music, and what is the reason. In addition to general conclusions, this study has also been inspired by the following.

First of all, quality of engagement is far more important than the quantity when considering the economic consequences. A large number of existing literature measures engagement by calculating the frequency of interaction between fans and content [6,7]. However, current research shows that the frequency alone does not explain much about purchasing behavior. Low-input behaviors may reflect attention, but it does not necessarily mean input. While more in-depth engagement requires time, energy and personal participation. When the result is offline and relatively expensive behavior, such as buying physical music, it is these forms of engagement that seem to play a key role.

Secondly, the intermediary results explain why deep engagement has an impact. Current research results show that these motivations have been actively strengthened through deep engagement itself. When fans join in discussions or contribute, they are not only consuming media, but strengthening

their connections with the community and singers. In this case, buying physical music is more about expressing this connection than owning. At least in this context, physical music products are not mainly regarded as collectibles unless they have a stronger emotional or social significance.

Another noteworthy finding is that the perceived singers interaction does not play a significant regulating role. Given the emphasis on parasocial interaction in previous studies [10–12], this result may seem contrary to common sense. However, it is important to distinguish between the depth of fans' engagement and their perception of the singer's responsiveness. For those fans who have been deeply involved, through continuous engagement, a stable sense of connection may have been internalized, thus reducing their dependence on the clear signals of singer interaction. The additional impact provided by the perceived interaction is limited, consisting with the view that the parasocial effect is highly situational and may weaken once fan participation reaches a high intensity level [4,17].

Overall, these research results reveal that the relationship between social media engagement and physical music consumption is better regard as a qualitative process rather than a quantitative process. For practitioners, encouraging meaningful engagement and emotional input may be more effective than simply increasing the number of interactions. Plus, this study relies on self-reporting and cross-sectional data, limiting the interpretation of causality. Future research can use behavioral data or vertical design to further explore how engagement evolves into consumption behavior over time.

7. Conclusion

This study takes physical music consumption as the situation, and explores the impact of fans' engagement in social media on purchasing behavior and its psychological mechanism. Research results show that only high engagement can significantly promote physical music purchases, while low-intensity engagement has no obvious impact. This relationship mainly plays a role through social motivation and emotional motivation, indicating that physical music consumption comes more from emotional connection and social identity than simple interaction frequency or possession needs. The collection motivation does not form a stable intermediary path between the depth of engagement and the purchasing behavior, which shows that in the current digital music environment, physical music products are not naturally regarded as collectibles, and their collection value often needs to rely on stronger emotional meaning or social symbols to be transformed into actual purchasing behavior. The perceived artist interaction does not show a significant regulatory effect, suggesting that when fans have formed a deeper level of engagement and psychological connection, the marginal impact of the singer's response may be limited. In general, this study emphasizes the research perspective of shifting from "frequency" to "depth" of engagement and provides an explanatory framework for understanding the consumption behavior of fans in the social media environment. It also provides realistic inspiration for how the music industry can activate the demand for physical products in the media era.

References

- [1] Cayari C. Popular practices for online musicking and performance: Developing creative dispositions for music education and the internet. *Journal of Popular Music Education*, 2021.
- [2] International Federation of the Phonographic Industry (IFPI). *Global Music Report 2023: State of the Industry*. London: IFPI, 2023.
- [3] Zhang Q., Negus K. East Asian pop music idol production and the emergence of data fandom in China. *International Journal of Cultural Studies*, 2020, 23(4): 493–511.
- [4] Tukachinsky R. Parasocial relationships, interactions, and bonds: A systematic review. *Communication Theory*, 2021, 31(4): 737–765.
- [5] Jorgensen J. J., Sorensen K., Spilinek M. Motivations to collect: How consumers are socialized to build product collections. *Social Sciences*, 2023, 12(12): 671.

- [6] Muntinga D. G., Moorman M., Smit E. Introducing COBRAs: Exploring motivations for brand-related social media use. *International Journal of Advertising*, 2011, 30(1): 13–46.
- [7] Schivinski B., Christodoulides G., Dabrowski D. Measuring consumers' engagement with brand-related social-media content: Development and validation of a scale. *Journal of Advertising Research*, 2016, 56(1): 64–80.
- [8] Peck J., Childers T. L. Individual differences in haptic information processing: The “need for touch” scale. *Journal of Consumer Research*, 2003, 30(3): 430–442.
- [9] Lee M., Choi H. B. S., Cho D., Lee H. Can digital consumption boost physical consumption? The effect of online music streaming on record sales. *Decision Support Systems*, 2020, 135: 113337.
- [10] Bhatiasevi V. The uses and gratifications of social media and their impact on social relationships and psychological well-being. *Frontiers in Psychiatry*, 2024.
- [11] Jia F. Understanding college students' music listening habits and switching to music streaming services: Motivations and practices. *AJQR*, 2025.
- [12] Balaban D. C., Szabolics J., Chiric D. Parasocial relations and social media influencers' persuasive power: The moderating role of product involvement. *Acta Psychologica*, 2022, 230: 103731.
- [13] Gökerik M. The power of influencers: Impact on purchase intent through parasocial engagement. *International Journal of Eurasia Social Sciences*, 2024, 15(56): 801–822.
- [14] Koay K. Y., Lim W. M., Soh K., Poon W. C. How and when social media influencers' intimate self-disclosure fosters purchase intentions. *Marketing Intelligence & Planning*, 2023, 41(6): 790–809.
- [15] Hayes A. F. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. 2nd ed. New York: Guilford Press, 2018.
- [16] Zhang K., Xie Y., Chen D., et al. Effects of attractions and social attributes on people's usage intention and media dependence towards chatbot. *BMC Psychology*, 2025, 13: 986.
- [17] Labrecque L. I. Fostering consumer–brand relationships in social media environments: The role of parasocial interaction. *Journal of Interactive Marketing*, 2014, 28(2): 134–148.
- [18] Coutts J. J., Hayes A. F. Questions of value, questions of magnitude: Methods for comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 2023, 55(4): 3772–3785.
- [19] Alnaser F., Alghizzawi M., Abualfalayeh G., Omeish F., Al Koni S. R. The impact of social media marketing activities on purchase intention. *International Review of Management and Marketing*, 2024, 14(6): 288–300.
- [20] Van der Meulen H., et al. Measuring social media customer engagement with brands based on information entropy. *Journal of Brand Management*, 2025, 32: 184–202.
- [21] Srivastava D., Rathore B., Kumari R., Das S., Goel V. The role of social media dependence and social influence in shaping consumer trust and purchase intention. *Journal of Marketing & Social Research*, 2025, 2(3): 108–122.