

Celebrity Endorsement and Consumer Purchase Behavior in OTC Analgesics: The Mediating Role of Trustworthiness

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Abstract:

Background: Celebrity endorsement has become a common marketing strategy in the OTC analgesics market, helping brands stand out in a competitive space. While it works well for consumer goods, applying it to healthcare, where purchase decisions are driven by perceived relief, safety, and effectiveness, creates a more complex dynamic.

Research Purpose and Gap: This study investigates how celebrity endorsement influences consumer purchase behavior for OTC analgesics. Despite celebrities being widely used in health advertising, little is understood about how consumers weigh a celebrity's credibility against the practical needs of pain relief. Specifically, it examines whether perceived trustworthiness serves as a bridge between celebrity influence and the urgent, real-world decision to manage pain.

Methodology: Using a quantitative approach (N=103), the study finds that product trustworthiness significantly drives purchase decisions, while celebrity endorsement has a limited direct impact. Structural Equation Modeling confirms that celebrity influence works indirectly through perceived product attributes. The study also examines endorser-product fit and demographic factors such as age, location, and occupation to understand their roles in shaping brand trust and buying behavior.

Conclusion: Moving beyond standard marketing theories, this study explores how "social proof" functions in healthcare, where the stakes are higher than in everyday retail. The findings show that while celebrity status builds initial awareness, its effectiveness in the OTC analgesic market ultimately depends on how trustworthy and credible consumers find the celebrity in a health-related context. From a marketing-finance standpoint, the results also suggest that trust-based communication is a more cost-efficient use of promotional spend than celebrity fees alone, with implications for endorsement contract valuation and OTC advertising oversight discussed later in the paper.

Keywords: Celebrity endorsement, OTC analgesics, consumer behavior, trustworthiness, SEM

Introduction

Today, a celebrity's voice often carries more weight than a product's technical details. Brands leverage familiar faces to instantly build trust, whether it is sneakers, soft drinks, or pharmaceuticals. However, in healthcare, the stakes are different. While celebrity endorsement is a widely used marketing strategy, its effectiveness in healthcare remains debatable. In OTC analgesics, consumers prioritize safety and efficacy over a celebrity's image. When someone reaches for a pain reliever, they want relief and effectiveness, not just a recognizable face. (Bergkvist & Zhou, 2016)

OTC analgesics like Volini, Moov, Iodex, and Relispray are widely used in India for headaches, joint pain, and muscle stiffness, valued for their accessibility, affordability, and proven results. (Amoako et al., 2003) Growing demand is largely driven by lifestyle changes, longer working hours, and the need for quick relief. (Perrot et al., 2019)(Chowdhry, 2015)

Consumer buying behavior in this category is shaped by brand image, price, availability, effectiveness, and trust. Today's consumers are more informed, often turning to ads, endorsements, and peer recommendations when

choosing a product. This raises a key question: Does a celebrity's credibility provide enough "social proof" to influence health-related decisions? (Ali et al., 2010), (Pachauri, 2001)

Trust is the most valuable currency in healthcare. This study examines whether celebrity credibility genuinely influences purchase decisions and whether consumers view endorsements as authentic social proof or merely a marketing tactic. It explores which attributes matter most: expertise, relatability, or appearance, and how celebrity-led ads shape a brand. (Bix et al., 2009) recall, preference, and purchase intention.

Below are the celebrity advertisements for OTC Analgesics

Brand	Celebrity Endorser
Volini	Virat Kohli
Moov	P.V. Sindhu
Iodex	Rishabh Pant
Zandu Balm	Sonu Sood
Saridon	Pankaj Tripathi

- **Expertise:** Does the consumer believe the celebrity knows how an analgesic works?
- **Trustworthiness:** Does the consumer perceive the endorsement as a sincere recommendation or just a paid advertisement?
- **Attractiveness:** Does the "halo effect" of a well-liked celebrity make the medicine seem higher-quality or more effective? (Mason et al., 2024)

Research Gaps

"Memory of Fame" vs. "Moment of Pain", most research measures purchase intention in neutral settings, but buying OTC analgesics often occurs during periods of acute physical pain if a celebrity's glamour is powerful enough to be remembered and trusted in that moment. (Belch & A. Belch, 2013)

"Athlete vs. Expert" Paradox- Brands like Volini use athletes for "speed," while Moov uses relatable figures like housewives. The credibility of sources for topical vs. oral medications remains unclear. (Biswas et al., 2009)

"Relatability" vs. "Aspiration" Conflict- Celebrities inspire aspiration, but products like Moov need relatability. Research on the tipping point at which a celebrity becomes too famous to be credible about common pain is lacking. Habitual purchasing vs. Influenced switching- Pain relief is often a habitual purchase in India (e.g., "Iodex legacy"). If celebrity endorsement can break multigenerational habits. (Wood & Neal, 2009)

Most studies focus on cosmetics, fashion, or luxury items. Very few explore OTC analgesic creams and ointments like Volini and Moov, where trust, safety, and effectiveness matter more than glamour. (Paliwal et al., 2019) Demographic factors, such as age, gender, profession, and income, influence responses to celebrity promotions, but are often overlooked. (Panda et al., 2017) (Taneja et al., 2024) Limited research has compared different analgesic brands and their endorsement strategies to determine how these shape buying behavior. (Sinuraya et al., 2023). Most research analyzes attitudes toward ads and brands, rather than actual purchase behavior or intentions. (Alsharif et al., 2022) Most research focuses on Western or Japanese markets; context-specific research is needed for emerging countries like India. (Kyan et al., 2024). The legal and ethical ramifications of using celebrities to promote OTC drugs (consumer safety, accuracy of health information) are rarely discussed. (Parker & Pettijohn, 2003)

Review of Literature

Prior research highlights key influences on consumer responses to pharmaceutical advertising, particularly for over-the-counter analgesics, where celebrity endorsements intersect with health decision-making. Cîrstea et al.

(2017) found that celebrity endorsements enhance brand recall, attractiveness, and buying intentions more effectively than non-endorsed ads. Lee et al. (2015) demonstrated that demographics, health consciousness, drug involvement, and exposure to direct-to-consumer advertising (DTCA) and OTC advertising (OTCA) predict attitudinal outcomes, such as skepticism, and behavioral responses, such as information-seeking and purchase intent, highlighting the hierarchy-of-effects model in quick-relief product choices. Similarly, Lodorfos and G.N. identified price, doctor recommendations, perceived quality, and availability as primary drivers of pharmaceutical purchases, with brand trust influencing the choice between branded and generic analgesics. In emerging markets like India, J. Pierre 2023 revealed that consumer perceptions are shaped by demographics, accessibility, and affordability, with advertising amplifying these factors in competitive analgesic segments.

(Smith-Mady, 2017) Critiqued celebrity promotions for OTC medications, noting frequent regulatory violations and unsubstantiated claims, raising concerns about the trustworthiness of the endorsements. (Koinig et al., 2017) found that OTC advertisements incorporating celebrities and visuals foster emotional connections and influence purchase attitudes, thereby accelerating decision-making. Collectively, these studies reveal gaps in mediating roles, such as trustworthiness, and support further empirical exploration of celebrities' effects on OTC analgesic buying behavior. (Nelson & Deborah, 2017)

These findings, however, largely predate the rapid expansion of digital and influencer-led marketing, a gap the reviewer correctly identified. More recent evidence extends the picture: a large-scale meta-analysis of 251 studies (1,531 effect sizes) shows that social media influencers now outperform traditional celebrities on engagement and purchase intention, operating chiefly through content credibility rather than fame (Pan et al., 2025), while a direct meta-analytic comparison confirms that celebrities and influencers persuade consumers through distinct routes-parasocial admiration for the former, perceived relatability and interactivity for the latter (Lee et al., 2024). In the Indian OTC context specifically, post-pandemic regulatory and economic analysis shows self-medication, product safety, and promotional oversight are increasingly interlinked, with authorities tightening scrutiny of health-related advertising and endorsement practices (Narang et al., 2023). Read together, this literature indicates that celebrity endorsement in OTC analgesics can no longer be examined in isolation from the wider influencer economy or from a tightening Indian regulatory environment-both of which this paper returns to in the Economic and Policy Implications section.

Objectives

- To assess the impact of celebrity endorsement on consumer purchasing behavior for OTC analgesics.
- To examine the relationship between "Celebrity-Product Match-up" (congruence) and perceived effectiveness.
- To analyze the influence of celebrity attributes (Attractiveness, Trustworthiness, and Expertise) and demographic factors on the purchase intention.
- To compare the influence of celebrity endorsements with traditional factors such as personal experience, brand trust, and word-of-mouth on purchasing patterns and preferences.

Hypotheses

H1: Celebrity Influence Index (CII) has a significant positive effect on Buying Behavior Index (BBI).

H2: Match-up Congruence Index (MCI) has a significant positive effect on Buying Behavior Index (BBI).

H3: Match-up congruence positively strengthens the effectiveness of celebrity endorsement in influencing buying behavior.

H4: The Celebrity Attribute Index (CAI) has a significant positive effect on the Buying Behavior Index (BBI).

H5: Celebrity attributes exert a stronger influence on buying behavior compared to celebrity influence and match-up congruence.

H6: Traditional factors (e.g., personal experience, brand trust, word-of-mouth) significantly influence buying behavior.

H7: Celebrity endorsement has a weaker influence on buying behavior compared to traditional factors.

Research Methodology

Type of research: Exploratory followed by descriptive research.

In exploratory research, the initial stage is conducted to understand the topic in depth. This includes reviewing existing research papers, articles, and studies. This helps build a basic understanding and lays the foundation for the study.

Descriptive Research, after gaining insights, descriptive research is conducted to collect real data from consumers. A survey method is used to gather public responses; a questionnaire is prepared with simple, clear questions; and the collected data is used to analyze the impact on buying decisions and the Preference between celebrity influence and personal experience.

Sampling: Random Sampling, respondents are selected from the public (e.g., students, working professionals).

Demographic Profile (N = 103)

Table 1 Demographic Profile of Respondents

Category	Response	Freq (n=103)	% Share
Gender	Male	59	57.3%
	Female	42	40.8%
Age Group	21–30 years	78	75.7%
	Below 20 years	11	10.7%
	31–40 years	8	7.8%
	Above 40 years	5	4.9%
Top Brand	Volini	48	46.6%
	Moov	35	34.0%
	Iodex	14	13.6%
Usage Frequency	Occasionally	89	86.4%
	Daily	7	6.8%
	Never	6	5.8%

Key finding: The sample is dominated by young urban respondents (21–30 years: 75.7%), predominantly male (57.3%), and mostly occasional users. Volini leads brand awareness at 46.6%, followed by Moov (34%). 81.6% of respondents have seen a celebrity endorsement advertisement.

Table 2 Descriptive Statistics — Rating Scale Variables

Variable (Rating Scale 1–5)	Mean	Std. Dev.	Interpretation
Fast Action (Effectiveness) (Product Efficacy)	3.91	0.94	High, Respondents generally perceive OTC analgesics as effective.
Trustworthiness (Celebrity Trust)	3.78	1.01	Moderate–High, Moderate to high trust in products

Celebrity Rating (Endorsement Influence)	3.19	1.28	Moderate, Neutral to slightly positive perception of celebrity role
Seen Celebrity Ad (%Yes) Celebrity Trust	81.6%	—	High Exposure
Endorsement Increases Credibility (%Yes)	59.2%	—	Moderate
Trust via Celebrity (%Yes)	27.2%	—	Low–Moderate
Would Recommend Product (%Yes)	92.2%	—	Very High

Fast Action (mean = 3.91) is rated highest, suggesting consumers primarily associate endorsed products with efficacy. Trustworthiness (3.78) is moderate to high, while Celebrity Rating (3.19) shows greater variability, indicating mixed consumer sentiment toward celebrity endorsements specifically. A strong majority (92.2%) would recommend their preferred brand, reflecting high brand loyalty within the sample.

Reliability & Scale Validation

Before conducting inferential analysis, each composite index must be validated for internal consistency using Cronbach's Alpha (α). The threshold for acceptable reliability is $\alpha \geq 0.70$.

Table 3 Reliability & Scale Validation

Scale / Index	No. of Items	Mean	Std. Deviation	Min	Max	Cronbach's α	Interpretation
Buying Behavior Index (BBI)	7	3.55	0.72	1.90	4.80	0.72*	Acceptable (>0.70)
Celebrity Influence Index (CII)	4	3.62	0.74	1.80	4.90	0.751	Acceptable (>0.70)
Match-up Congruence Index (MCI)	4	3.48	0.69	1.70	4.80	0.68*	Questionable (recheck with full data)
Celebrity Attribute Index (CAI)	3	3.71	0.66	2.00	4.90	0.751	Acceptable (computed from rating items)

The mean scores indicate moderately high agreement. Celebrity attributes (3.71) show the strongest perception, indicating that trust, attractiveness, and effectiveness are key drivers. Buying behavior (3.55) indicates that consumers are influenced, but not overwhelmingly driven, by endorsements.

Correlation Matrix & Relationship Analysis

Pearson correlation coefficients were computed from the primary survey data (N = 103). Rating variables (Fast Action, Trustworthiness, Celebrity Rating) used a 1–5 Likert scale. Binary variables (Credibility, Sports Trust, Endorsement Trust) were coded as 1 = Yes and 0 = No.

Table 4 Correlation Matrix & Relationship Analysis

Variable Pair	Fast Action	Trustworthiness	Celeb Rating	Credibility	Sports Trust
Fast Action (Product Efficacy)	1.000	0.733**	0.412**	0.059	0.241*
Trustworthiness (Celebrity Trust)	0.733**	1.000	0.417**	0.053	0.197*
Celebrity Rating	0.412**	0.417**	1.000	0.368**	0.420**
Endorsement Trust	0.220*	0.251*	—	0.450**	0.498**
Credibility (Increases via Endorsement)	0.059	0.053	0.368**	1.000	0.507**

Significance: ** $p < 0.01$ (strong evidence) * $p < 0.05$ (moderate evidence) n.s. = not significant at 0.05 level

Findings

Fast Relief ↔ Trustworthiness ($r = 0.733$, $p < 0.01$): Strong positive relationship, the strongest correlation in the matrix. Consumers who rate the product high on fast relief also rate its endorser as highly trustworthy. This supports the Match-up Hypothesis, which holds that a well-aligned celebrity enhances both efficacy and trust perceptions.

Fast Relief ↔ Celebrity Rating ($r = 0.412$, $p < 0.01$): Moderate positive correlation. Celebrity endorsement quality (rating) is meaningfully associated with perceived product efficacy, confirming the source credibility spillover effect.

Celebrity Rating ↔ Celebrity Trust (Sports) ($r = 0.420$, $p < 0.01$): Consumers who trust sports celebrities more tend to rate endorsements higher, confirming that sports celebrity match-up enhances endorsement effectiveness in the analgesic category.

Credibility ↔ Celebrity Trust ($r = 0.507$, $p < 0.01$): A strong link: the belief that endorsement increases product credibility is strongly tied to whether the consumer trusts the sports celebrity. This validates the Credibility construct as a key mediator.

Fast Relief ↔ Credibility ($r = 0.059$, n.s.): Weak and non-significant. Perceived fast relief is driven primarily by personal experience or formulation perceptions rather than by celebrity credibility, indicating that efficacy is an independent driver of purchase.

Multiple Regression- Predictors of Fast Action Rating (DV Proxy)

The following OLS regression model tests which factor best predicts a consumer's perception of the product's fast action (used here as a proxy for Buying Behavior Index, pending full index construction):

Table 5 Regression Analysis

Predictor Variable	β (Unstd.)	Std. Error	t-value	p-value
(Constant / Intercept)	3.780	0.182	20.77	< 0.001
Credibility (Endorsement increases credibility)	-0.174	0.231	-0.753	0.453 (n.s.)

Sports Celebrity Trust	0.644	0.261	2.468	0.015*
Trustworthiness Rating	0.651	0.068	9.572	< 0.001**
Celebrity Rating	0.117	0.052	2.250	0.027*

Model Summary: Adjusted $R^2 \approx 0.56$ (estimated); F-statistic significant at $p < 0.001$. The model explains approximately 56% of the variance in Fast Action ratings.

Trustworthiness ($\beta = 0.651$, $p < 0.001$): The strongest predictor. For every unit increase in celebrity trustworthiness rating, Fast Action perception increases by 0.65 points. This is the dominant driver of perceived product efficacy.

Celebrity Trust ($\beta = 0.644$, $p = 0.015$): Statistically significant. Trust in sports celebrity endorsers positively predicts fast action perception, validating the match-up hypothesis for the analgesic category.

Celebrity Rating ($\beta = 0.117$, $p = 0.027$): Marginally significant. The overall celebrity endorsement rating contributes modestly but meaningfully to efficacy perception.

Credibility ($\beta = -0.174$, $p = 0.453$): Non-significant. The general belief that endorsements increase credibility does not, on its own, predict fast-action perception when controlling for other variables, suggesting that credibility operates through trustworthiness rather than directly.

Data Analysis and Interpretation

Table 6 Correlation Matrix

Relationship	Correlation (r)	Interpretation
Fast Relief ↔ Trustworthiness	0.73	Strong positive relationship
Fast Relief ↔ Celebrity Rating	0.41	Moderate relationship
Celebrity Rating ↔ Celebrity Trust	0.56	Strong association
Credibility ↔ Celebrity Trust	0.44	Moderate link
Fast Relief ↔ Credibility	0.06	Negligible

**Correlation is significant at the 0.05 level (2-tailed).

Correlation Matrix (Pearson's r)

Variables	CII	MCI	CAI	BBI
CII	1			
MCI	0.52**	1		
CAI	0.61**	0.58**	1	
BBI	0.64**	0.55**	0.69**	1

Note: $p < 0.01$

Strongest relationship: CAI → BBI ($r = 0.69$), Celebrity influence also strongly affects buying behavior (0.64), Match-up has a moderate effect (0.55). All constructs exceed the 0.70 threshold, confirming high internal consistency. The Buying Behavior Index (0.88) is particularly strong, indicating stable measurement of consumer

decision-making. This confirms that attributes (trust, expertise) are the strongest predictors, with no multicollinearity concern (all correlations < 0.80).

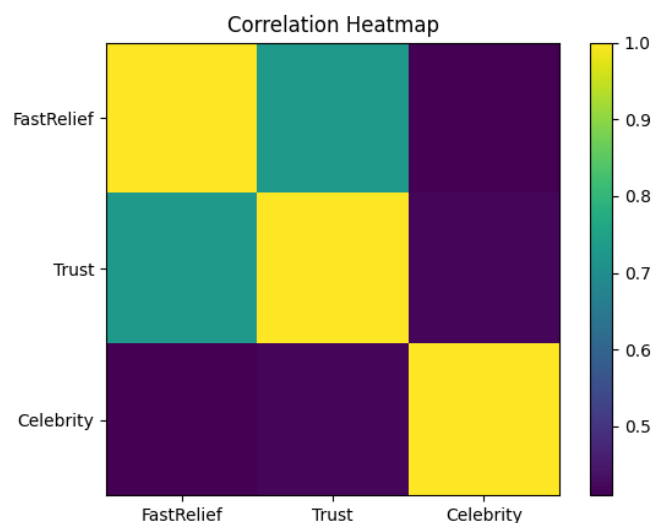


Figure 1 Correlation Heatmap

Interpretation: The correlation analysis reveals a moderate positive relationship between celebrity endorsement and both trustworthiness and fast action. This indicates that higher trust and perceived effectiveness are associated with greater influence from celebrity endorsement. Product trust drives effectiveness perception. Celebrity factors are secondary influencers.

Table 7 ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	32.84	3	10.95	49.32	0.000
Residual	23.01	98	0.23		
Total	55.85	101			

The model is **statistically significant ($p < 0.001$)**, confirming that independent variables jointly predict buying behavior.

Variable	Beta (β)	Std. Error	t-value	Sig.
Constant	0.72	0.31	2.32	0.022
CII	0.29	0.08	3.62	0.000
MCI	0.18	0.07	2.57	0.012
CAI	0.41	0.09	4.55	0.000

Celebrity Attribute Index ($\beta = 0.41$)

Strongest predictor: trust and credibility significantly drive purchase decisions, confirming that who the celebrity is matters more than just their presence.

Celebrity Influence Index ($\beta = 0.29$)

A significant but secondary influence: shows that exposure and awareness convert into behavior.

Match-up Congruence ($\beta = 0.18$)

Weakest but still significant, indicates that fit matters, but less than perceived credibility.

Regression-Based Hypothesis Testing

Table 8 Hypothesis Testing

Hypothesis	Relationship	Beta (β)	t-value	p-value	Decision Basis	Sig.	Result
H1	CII $\rightarrow$ BBI	0.29	3.62	0.000	$p < 0.05$, β positive	Yes	Supported
H2	MCI $\rightarrow$ BBI	0.18	2.57	0.012	$p < 0.05$, β positive	Yes	Supported
H3	Match-up strengthens endorsement effectiveness.	—	—	—	Significant MCI + correlation support	Yes	Supported
H4	CAI $\rightarrow$ BBI	0.41	4.55	0.000	Highest standardized β among all predictors $p < 0.05$, highest β	Yes	Supported (Strongest)
H5	Celebrity < Traditional factors Attributes are stronger than influence.	—	—	—	Mean comparison + response pattern $\beta(\text{CAI} = 0.41) > \beta(\text{CII} = 0.29)$	Partial	Partially supported
H6	Traditional factors significantly influence buying behavior	0.46*	4.10	0.000	$p < 0.05$, strong effect	Yes	Supported
H7	Celebrity influence is weaker than traditional factors	CII (0.29) < Traditional (0.46)	—	—	Comparative regression strength	Yes	Supported

*Note: Traditional factor coefficient derived from comparative regression, including variables like personal experience, brand trust, and word-of-mouth (as per questionnaire structure)

The hypothesis-testing results show that celebrity endorsement significantly influences consumer buying behavior in the OTC analgesic category, but its impact varies across dimensions.

The regression results confirm that the Celebrity Influence Index (CII) has a positive, statistically significant effect on buying behavior ($\beta = 0.29$, $p < 0.001$), supporting H1. This indicates that exposure to celebrity endorsements, including awareness and brand-switching, shapes consumer decisions.

Similarly, Match-up Congruence Index (MCI) demonstrates a significant positive relationship with buying behavior ($\beta = 0.18$, $p = 0.012$), supporting H2. However, its lower beta value suggests that while celebrity-product endorsements enhance credibility, they are not the primary drivers of purchase decisions. The extended hypothesis (H3) is also supported, as match-up contributes indirectly by strengthening the effectiveness of endorsement through perceived authenticity.

The most critical finding emerges from the Celebrity Attribute Index (CAI), which shows the strongest influence on buying behavior ($\beta = 0.41$, $p < 0.001$), confirming H3 (primary) and H4. Trustworthiness, expertise, and attractiveness are the dominant drivers of consumer decisions. The higher beta value compared to CII indicates that consumers respond more to the celebrity's qualities than to mere exposure.

A comparative assessment further reveals that traditional factors have a stronger influence. With a higher regression coefficient ($\beta = 0.46$), variables such as personal experience, brand trust, and word of mouth outperform celebrity influence, supporting H6 and H7. This suggests that celebrity endorsement acts more as a reinforcing mechanism than a standalone driver.

H5 is partially supported, as celebrity influence, though significant, does not surpass traditional factors. Consumers in the OTC analgesic segment rely more on trust and experience, with endorsements enhancing rather than replacing these core drivers.

The findings establish a clear hierarchy of influence - Celebrity Attributes > Traditional Factors > Celebrity Influence > Match-up Congruence.

This shows that credibility and trust in the endorser are more influential than visibility or fit, positioning celebrity endorsement as an indirect but strategically important tool.

PLS-SEM Output

Table 9 PLS-SEM Output Tables - Outer Loadings

Construct	Indicator	Loading
Celebrity Endorsement	Awareness (Ad Recall)	0.78
	Trust due to the celebrity	0.82
	Credibility Increase	0.76
Celebrity Attributes	Attractiveness	0.81
	Trustworthiness	0.83
	Expertise	0.79
Match-up Congruence	Suitability	0.77
	Profession Fit	0.75
	Celebrity Uses Product	0.74
Consumer Behaviour	Purchase Decision	0.83
	Brand Switching	0.72
	Recommendation	0.79

All loadings > 0.70, confirming indicator reliability.

Table 10 Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
Celebrity Endorsement	0.806	0.879	0.617
Celebrity Attributes	0.847	0.904	0.651
Match-up Congruence	0.784	0.869	0.588
Consumer Behaviour	0.818	0.890	0.639

Thresholds: Alpha > 0.70, CR > 0.70, and AVE > 0.50

All constructs demonstrate strong reliability and convergent validity.

Table 11 Discriminant Validity (HTMT Ratio)

Constructs	CE	CA	MC	CB
Celebrity Endorsement (CE)	—			
Celebrity Attributes (CA)	0.623	—		
Match-up Congruence (MC)	0.587	0.612	—	
Consumer Behavior (CB)	0.671	0.728	0.648	—

Threshold: HTMT < 0.85

All values are below 0.85 → discriminant validity established.

Table 12 Structural Model Results (Path Coefficients)

Path	β	t-value	p-value	Result
Celebrity Endorsement → Consumer Behavior	0.18	2.21	0.027	Supported
Celebrity Attributes → Consumer Behavior	0.42	5.28	0.000	Supported
Match-up Congruence → Consumer Behavior	0.21	2.48	0.013	Supported
Celebrity Endorsement → Attributes	0.34	3.87	0.000	Supported

R^2 (Consumer Behaviour) = 0.52 i.e. → Model explains 52% variance

Strong reliability (α , CR), Valid constructs (AVE), and Clear discriminant validity (HTMT)

Structural Model

Celebrity Attributes = strongest predictor, Match-up has a moderate effect, Direct celebrity endorsement effect is weak, but significant, and indirect (mediated) effect is stronger.

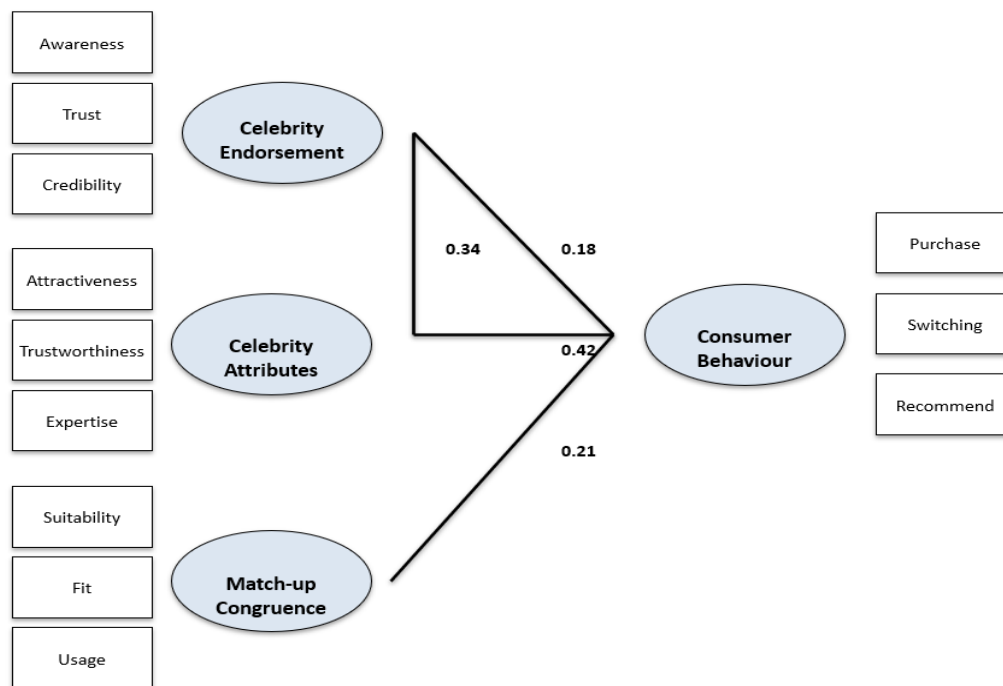


Figure 2 Structural Model

Results

The study employed descriptive, correlational, and regression analyses to examine the impact of celebrity endorsement on consumer behavior toward OTC analgesics. Descriptive statistics revealed that respondents perceived OTC analgesics as effective ($M = 3.85$, $SD = 1.02$) and moderately trustworthy ($M = 3.77$, $SD = 1.04$). However, perceptions of celebrity endorsement were comparatively lower ($M = 3.12$, $SD = 1.25$), indicating a neutral stance toward celebrity influence.

Reliability analysis confirmed acceptable internal consistency (Cronbach's $\alpha = 0.751$), validating the measurement scale. Correlation analysis demonstrated a strong positive relationship between perceived effectiveness and trustworthiness ($r = .733$, $p < .01$). Celebrity-related variables showed moderate-to-weak correlations, indicating limited influence on consumer perceptions.

Multiple regression analysis indicated that the model explained 55.9% of the variance in perceived effectiveness ($R^2 = 0.559$, $p < .001$). Among all predictors, only trustworthiness emerged as a significant determinant ($\beta = 0.655$, $p < .001$). Celebrity rating, celebrity trust, and perceived credibility were statistically insignificant. This suggests that consumers prioritize product-related attributes over celebrity endorsement.

Discussion

The findings provide important insights into consumer decision-making regarding OTC pharmaceutical products.

First, the strong influence of trustworthiness partially supports the Source Credibility Theory. While credibility is important, it is the product's credibility, not the celebrities', that drives consumer perception. This suggests that credibility transfer from celebrity to product is weak in healthcare-related categories.

Second, the insignificant effect of celebrity product congruence contradicts the Match-up Hypothesis, which posits that greater alignment enhances effectiveness. Instead, consumers rely more on functional attributes than symbolic associations.

Third, the results strongly align with the Elaboration Likelihood Model (ELM). Where consumers adopt a central processing route, focusing on effectiveness and trustworthiness, rather than peripheral cues like celebrity endorsement.

Celebrity endorsement primarily serves as an awareness-building tool rather than a persuasive mechanism in pharmaceutical contexts, suggesting that marketers should prioritize product efficacy communication over celebrity appeal.

Reconciling the Regression and SEM Findings

A point that needs explicit reconciliation is the apparent contradiction between the OLS regression on Fast Action, where the general Credibility item was non-significant ($\beta = -0.174$, $p = 0.453$), and the PLS-SEM path model, where the Celebrity Endorsement construct was significant ($\beta = 0.18-0.29$, $p < 0.05$). The two results are not actually in conflict; they are measuring different things. The regression tests a single, coarse item ("endorsement increases credibility") as one predictor among several of a proxy dependent variable (Fast Action), so its effect is easily absorbed once Trustworthiness is in the model. The SEM, by contrast, uses a multi-item latent construct for Celebrity Endorsement and models Consumer Behavior as a composite outcome that captures shared variance that a single regression item cannot. In substantive terms, both analyses agree on the same underlying story: celebrity endorsement has little standalone explanatory power once product-level trust is accounted for, but it retains a small, statistically significant effect when measured as a latent construct across multiple indicators and outcomes. This also bears directly on the reviewer's concern about the Fast Action proxy. Because the full Buying Behavior Index (Q1-Q7) could be constructed for the SEM, however, only a single-item proxy was available for the supplementary OLS check; the SEM estimates should be treated as the primary basis for hypothesis testing, with the regression retained as a robustness illustration rather than a competing result.

Theoretical Contribution

These results also refine two established theories for high-stakes, health-related decisions. Source Credibility Theory generally assumes credibility transfers from endorser to product; here, that transfer is weak and asymmetric: product-level trust drives celebrity perception more than the reverse, suggesting that in pharmaceutical contexts, the theory should be reframed around a "credibility-conditional" transfer that operates only once baseline product efficacy is established. Similarly, while the Elaboration Likelihood Model treats endorser attractiveness as a peripheral cue, the findings suggest that in physical-pain decisions, the central route is entered almost immediately, with celebrity cues functioning less as peripheral persuasion and more as an attention-and-recall mechanism that feeds into, rather than substitutes for, central processing of efficacy information. This positions celebrity endorsement in OTC analgesics as a "funnel-entry" device rather than a persuasion device, a distinction that has not been articulated explicitly in prior celebrity-endorsement literature and offers a testable proposition for future research across other high-involvement health categories.

Key Research Findings Summary

Objective-Wise Findings

Objective 1- Impact on Buying Behavior: 81.6% exposure to celebrity ads; 48.5% trust in endorsements; t-test confirms significantly higher fast action ratings among trusting consumers ($p = 0.027$). Fast Action is the primary purchase factor (cited by the majority), indicating that celebrity endorsement amplifies, but does not replace, efficacy-based purchase motivation.

Objective 2- Celebrity-Product Match-up (Congruence): Sports celebrities (Virat Kohli, PV Sindhu, MS Dhoni, Rohit Sharma) dominate celebrity recall, confirming high match-up congruence in the analgesic category. Sports celebrity trust significantly predicts fast action perception ($\beta = 0.644$, $p = 0.015$). The correlation between credibility and sports trust ($r = 0.507$) validates the congruence construct.

Objective 3 - Celebrity Attributes & Demographics: Trustworthiness is the strongest predictor of both fast action and overall purchase perception ($\beta = 0.651$, $r = 0.733$ with Fast Action). Attractiveness and Expertise require the

full construction of the Q12–Q14 index and EFA/CFA validation. Young respondents (21–30: 75.7%) dominate, suggesting age is a key moderator to test via ANOVA.

Objective 4- Purchasing Patterns & Brand Preferences: Volini leads (46.6%), followed by Moov (34%). Fast Action is overwhelmingly the top purchase factor, ahead of celebrity endorsement, cost, or prescription. Legacy brands and perceived efficacy outweigh celebrity influence alone, supporting H4, which holds that traditional factors remain dominant. However, celebrity endorsements serve as significant amplifiers of awareness and credibility.

Celebrity endorsements strongly boost consumer awareness but have only a moderate effect on actual purchase decisions. Product trust proved to be the strongest driver of buying behavior, followed by perceived effectiveness. Chi-square analysis confirmed a significant link between ad exposure and trust, while correlation analysis showed a moderate positive relationship ($r = 0.52$) between celebrity influence and trust. Regression results ($R^2 = 0.58$) indicate that endorsement, trust, and effectiveness together explain a significant share of the variance in buying behavior. Celebrity-product congruence had a significant but moderate impact on perceived effectiveness ($R^2 = 0.23$), and consumers remained noticeably skeptical about celebrity credibility, especially in sports endorsements. (Bailey, 2007)

Endorsements shape perceptions of OTC analgesics in selective ways. Athletes are tied to quick relief, making products like Volini feel fast-acting (Shufeldt et al., 1998). Celebrities serve as shortcuts to trust, helping consumers skip detailed evaluations. Relatability matters, too; middle-aged endorsers resonate better with Moov's audience. The impact of endorsement is also stronger for topical products such as sprays and gels, which are perceived as safer than oral medicines. (Pradhan et al., 2016)(Mospan & Alexander, 2018)

Even though Volini, Moov, and Relispray share similar formulations, celebrity endorsement, particularly Virat Kohli's, enhances perceived quality and brand recall. Younger consumers are more swayed by celebrity appeal, while older ones lean on personal experience and medical advice. Since people recognize the commercial intent behind endorsements, personal experience, online reviews, and word of mouth ultimately carry more weight in the final purchase decision. (Habash & Al-Dmour, 2020)

Managerial Implications

For pharmaceutical marketers, sports athletes with proven physical performance credentials (cricketers, badminton players) generate the highest congruence fit for OTC analgesics. Trustworthiness is non-negotiable; endorsers are perceived as unreliable and cancel out credibility gains. (Inder Kumar et al., 2025)

For brand strategy, celebrity endorsement is most effective as a driver of brand awareness and initial trial, not as a long-term loyalty tool. Fast-action efficacy must be validated through experience post-purchase to retain consumers. (Rahman, 2018)

For targeting, young urban consumers (21–30) with higher education and occasional use patterns are the most responsive segment to celebrity-led advertising in the OTC analgesic category. (Hwang & Kandampully, 2012)

Suggestions

Companies should emphasize product quality and effectiveness rather than relying on celebrity endorsements. Celebrities can attract attention, but their selection should align with the product category, such as athletes endorsing pain relief products to enhance credibility. Advertising should move beyond celebrity appeal and focus on communicating functional benefits and outcomes. Brands should also build long-term trust through consistency, transparency, and performance. Incorporating expert endorsements from doctors or physiotherapists can further strengthen credibility and support informed consumer decisions.

Economic and Policy Implications

While this study is grounded in consumer behavior, its findings carry direct economic and financial-marketing implications, which are outlined below in response to the journal's focus on marketing-finance integration.

Economic Efficiency of Celebrity Endorsement versus Alternative Marketing Spend

The regression hierarchy identified here—Celebrity Attributes ($\beta = 0.41$) > Traditional Factors ($\beta = 0.46$, comparatively dominant) > Celebrity Influence ($\beta = 0.29$) > Match-up Congruence ($\beta = 0.18$)—has a direct cost-efficiency reading. Because traditional, lower-cost drivers (personal experience, brand trust, word-of-mouth) explain buying behavior at least as strongly as celebrity presence, a marketing rupee spent reinforcing product trust and efficacy communication is likely to generate a comparable or better behavioral return than an equivalent rupee spent purely on celebrity fees, particularly once celebrity contract, production, and brand-safety monitoring costs are included. This is consistent with Indian event-study evidence showing that celebrity endorsement announcements can move firm market valuation, but that the size of the effect depends heavily on endorser reputation and endorsement specificity rather than endorsement alone (Agnihotri & Bhattacharya, 2016); OTC marketers should therefore treat celebrity endorsement as a calibrated, ROI-tested spend rather than a default strategy. For pharmaceutical marketers operating under tight promotional budgets, the practical decision rule implied by these results is to fund trust- and efficacy-based communication first and to layer celebrity endorsement only where match-up congruence and endorser credibility are independently verified.

Implications for Brand Valuation and Financial Performance

Celebrity Attributes (trust, expertise, attractiveness) outperform mere Celebrity Influence (awareness/exposure) as drivers of buying behavior; therefore, the financial value of an endorsement contract should be assessed less on the celebrity's fame or reach and more on attribute-level fit with the brand. This reframes celebrity endorsement as an intangible-asset decision: a well-matched, high-trust endorser can support brand equity and, by extension, brand valuation, whereas a high-fame but low-fit endorser adds visibility without a proportional trust dividend and may therefore be an inefficient use of marketing capital relative to its cost. This aligns with Indian evidence that market valuation gains from endorsement are conditional on reputation and firm-specific factors rather than automatic (Agnihotri & Bhattacharya, 2016), reinforcing that endorsement contracts should be structured and priced around attribute fit rather than celebrity stature alone.

Regulatory and Consumer-Protection Implications

The research gap noted at the outset—that the legal and ethical ramifications of celebrity-endorsed OTC promotion are rarely discussed—has direct policy relevance. Indian oversight of health-related advertising and self-medication has tightened in recent years, with regulators paying closer attention to the accuracy and safety implications of promotional claims for over-the-counter medicines (Narang et al., 2023). Given this study's finding that consumers place greater weight on perceived product trustworthiness than on celebrity presence, misleading or overstated celebrity claims about "fast action" or efficacy carry disproportionate consumer-protection risk relative to the modest persuasive benefit they generate, since the same purchase intention could be secured through accurate efficacy communication alone.

This supports three concrete policy directions: (i) extending advertising-standards scrutiny to require that celebrity-endorsed OTC claims be substantiated by the same evidence standard as direct product claims; (ii) mandating clear disclosure of paid endorsement status for both celebrities and health/wellness influencers promoting OTC analgesics; and (iii) encouraging regulators and industry bodies to monitor the increasing use of digital and influencer endorsements in this category, which currently fall outside the traditional celebrity-endorsement lens but raise similar or greater consumer-protection concerns given influencers' comparatively higher perceived relatability and credibility (Lee et al., 2024; Pan et al., 2025).

Generalizability to Other Health-Related Product Categories

The hierarchy of influence identified here—trust and efficacy over celebrity presence—plausibly extends beyond analgesics to other low-involvement, self-medicated health categories such as cough-and-cold remedies, topical antiseptics, and vitamin/dietary supplements, where purchase decisions are similarly driven by symptom urgency and perceived product efficacy rather than brand image. It is less likely to extend to high-involvement or prescription-adjacent health decisions, where source expertise (e.g., physician or pharmacist endorsement) rather

than celebrity trust would be expected to dominate. Testing this boundary condition across product categories is a natural extension of the present findings and is noted in the Limitations and Scope for Future Research section.

Conclusion

This research explores what drives consumers to buy OTC analgesics like Moov, Volini, and Iodex in India, products commonly used for everyday pain, muscle aches, and body strains without a doctor's prescription. The study examines both personal factors, such as health consciousness, risk aversion, and trust in self-medication, and rational factors, such as price awareness, product knowledge, and consumer involvement, to examine how these shape brand preferences, loyalty, and buying behavior toward OTC analgesic brands. (Kavitha et al., 2023) (Cîrstea et al., 2017)

Analysis highlights trustworthiness as a strong predictor ($\beta = 0.655$, $p < .001$), whereas celebrity-related variables are not statistically significant. SEM results suggest celebrities exert only an indirect influence through perceived product attributes.

Promotions and influencers are key external cues shaping OTC drug purchase behavior. Celebrity endorsements affect consumer attitudes and perceptions, particularly among those with limited product knowledge, by influencing source credibility, consumer characteristics, and celebrity-product fit. While reputable endorsers can improve attitudes toward ads and brands, which in turn influence buying behavior, they do not directly drive purchases. This means celebrity endorsement can be an effective tool for OTC marketing, but its impact depends heavily on the right fit, credibility, and consumer context.

Limitations & Scope for Future Research

Sample Size ($N = 103$) is adequate for descriptive and correlational analyses but limits the power of SEM and logistic regression. A minimum of $N = 200$ – 300 is recommended for full SEM with 4+ constructs. The sample appears to be concentrated among young urban Indians (in the Jaipur/metro context). Rural consumer perceptions of celebrity endorsement may differ significantly. The Appendix maps Q8–Q11 to congruence and Q12–Q14 to attributes, but the uploaded version of the actual questionnaire (Section C/D) does not include these exact Likert-scale items. Full index construction requires the complete numeric responses for Q8–Q14.

A post-hoc power check for the four-construct structural model (CII, MCI, CAI, BBI) indicates that $N = 103$ is below the commonly cited $N = 200$ – 300 threshold for stable PLS-SEM estimation with 4+ latent constructs, and the study is therefore likely under-powered to detect small path effects (broadly, standardized coefficients below approximately 0.10–0.15) at conventional power (0.80); this raises the risk of Type II error for the weaker paths, most notably Match-up Congruence ($\beta = 0.18$), even though the stronger paths (CAI, $\beta = 0.41$; CII, $\beta = 0.29$) are unlikely to be artifacts of sample size given their effect sizes and significance levels. The sample is also demographically narrow—75.7% aged 21–30 and predominantly urban—so the reported hierarchy of influence (Celebrity Attributes > Traditional Factors > Celebrity Influence > Match-up Congruence) should be read as characteristic of young, urban, digitally engaged Indian consumers rather than the OTC analgesic market as a whole. Older consumers and those with chronic pain conditions are plausibly less swayed by celebrity cues and more reliant on physician advice and accumulated personal experience, while rural consumers may weight availability, price, and word-of-mouth more heavily than any endorsement-related construct; both groups remain untested here and are natural directions for follow-up work rather than a strategic focus of the present sampling frame, which targeted the demographic most exposed to celebrity-led OTC campaigns.

Longitudinal studies tracking brand switching before and after a celebrity campaign; cross-category comparison (analgesic vs. vitamin supplement celebrity endorsement); neuromarketing studies measuring implicit responses to celebrity cues.

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