

Algorithmic Trust Meets Parasocial Influence: An Ethical and Marketing Framework for Influencer-Promoted AI Skincare Diagnostics

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ABSTRACT

The convergence of artificial intelligence (AI) and social media influence has produced a new promotional format: influencers who market AI-enabled skincare diagnostic tools — smartphone applications and devices that scan the skin and generate personalised product recommendations. This conceptual paper examines how two normally distinct psychological mechanisms, parasocial relationships (one-sided emotional bonds between followers and influencers) and algorithmic trust (belief in the objectivity and competence of automated systems), combine and reinforce one another when an influencer personally vouches for an AI diagnostic result. Drawing on source credibility theory, parasocial interaction theory, and the algorithm aversion-appreciation literature, the paper develops the Algorithmic-Parasocial Trust Transfer (APTT) framework, which models how trust is transferred from influencer to algorithm and back, often bypassing the scrutiny either source would receive alone. The paper then translates this framework into an ethical framework built around five principles — algorithmic fairness, transparency and disclosure, accountability, consumer autonomy, and non-maleficence — and a marketing framework offering practical guidance for brands, influencers, platforms and regulators. The paper contributes a novel, testable conceptual model at the intersection of digital marketing ethics, human-computer interaction, and consumer psychology, and proposes an agenda for future empirical research in this rapidly growing but under-regulated segment of beauty technology.

Keywords: Algorithmic Trust; Parasocial Relationships; Influencer Marketing; AI Skincare Diagnostics; Beauty Technology; Digital Marketing Ethics; Source Credibility

How to cite this article: Bhumi Parekh¹ Dr. Diksha Sisodia² Dr. Rimple Gamadia³ Aashita Agrawal⁴. Algorithmic Trust Meets Parasocial Influence: An Ethical and Marketing Framework for Influencer-Promoted AI Skincare Diagnostics. *Int J Drug Deliv Technol.* 2026;16(84s):1513-1524. DOI: 10.25258/ijddt.16.84s.152

Source of support: Nil

Conflict of interest: None

INTRODUCTION

Skincare has become one of the most technologically mediated categories in consumer beauty. Smartphone-based skin scanners, AI-powered diagnostic wands, and app-based image analysis tools now promise to identify wrinkles, pigmentation, pore size, hydration levels and “skin age” within seconds, and to translate these readings into personalised product regimens (Forefront Dermatology, 2026; app.medmetrix.pl, 2026). These tools are rarely sold on their own merits alone. Increasingly, they are introduced to consumers through social media influencers who film themselves using the device, display its numeric or visual output, and endorse the resulting product recommendation as if it were independent, algorithm-verified proof of efficacy.

This promotional format fuses two distinct psychological levers. The first is the parasocial relationship: the one-sided, emotionally intimate bond that a follower develops with an influencer through repeated exposure, self-

disclosure and perceived accessibility (Yi, 2023; Enke & Borchers, 2019). Parasocial relationships are well established as a driver of consumer trust, brand evaluation and purchase intention in social media influencer marketing (Leite & Baptista, 2021; Chitraju, 2025). The second lever is algorithmic trust: the tendency of users to treat outputs generated by a machine, a scan, a score, a percentage as more objective, unbiased and scientifically credible than a purely subjective human opinion (Cabiddu et al., 2022; Logg et al., 2019). When an influencer whom a follower already trusts personally presents an AI-generated skin score, the two trust mechanisms do not simply add together; they appear to interact. The influencer lends the algorithm a human face and emotional warmth, while the algorithm lends the influencer’s claim an appearance of clinical, unbiased legitimacy that neither source would generate on its own. This interaction is consequential because AI skin diagnostic tools are, at present, far from infallible. Ethical

reviews of AI dermatological tools report wide variation in diagnostic accuracy, under-representation of darker Fitzpatrick skin types in design and validation, and inadequate incorporation of bioethical norms such as transparency and justice into commercially available apps (Shah et al., 2025; Gordon et al., 2024). When such tools are deployed not in a clinical setting but in a monetised social media post, existing regulatory scaffolding, built around disclosure of “material connections” between influencers and brands, was not designed to address the added credibility that flows from an algorithmic verdict (Federal Trade Commission, 2023; Global Cosmetic Industry, 2024).

This paper addresses three questions. First, how do parasocial trust and algorithmic trust interact, rather than merely coexist, when an influencer promotes an AI

skincare diagnostic? Second, what ethical risks does this interaction create for consumers, particularly around informed consent, bias and deception? Third, what marketing and governance practices could allow brands, platforms and influencers to use these tools responsibly? To answer these questions, the paper synthesises literature from influencer marketing, human-AI trust research, and dermatological AI ethics into a single conceptual model, the Algorithmic-Parasocial Trust Transfer (APTT) framework, and translates that model into an ethical framework and a set of marketing recommendations. As a conceptual, literature-based contribution, the paper does not report new empirical data; rather, it proposes testable propositions intended to seed a future empirical research agenda in this fast-moving segment of beauty technology and influencer marketing.

Scale of the phenomenon this paper addresses:

- Global influencer marketing spend is projected to reach approximately US\$480 billion by 2027 (Digital Marketing Institute, 2024, cited in University of Portsmouth, 2025).
- Roughly 60% of consumers report trusting influencer recommendations, and nearly half of purchasing decisions are reported to be shaped by such endorsements (Digital Marketing Institute, 2024, cited in University of Portsmouth, 2025).
- Reported diagnostic accuracy of consumer-facing AI skin/lesion tools varies widely depending on how performance is measured, from 39% (Top-1, real-world primary-care comparison) to 89% (Top-5 tier, same study) (Escalé-Besa et al., 2023) — a gap rarely disclosed in promotional content.

LITERATURE REVIEW

A note on method is worth including before turning to the literature itself. This review followed a purposive rather than a systematic search strategy, consistent with the paper’s aim of theoretical integration rather than exhaustive mapping of any one field. Sources were located through targeted searches of Google Scholar and Scopus using combinations of the terms parasocial relationship, algorithmic trust, influencer marketing, AI skin diagnostics, dermatology ethics, and endorsement disclosure, supplemented by tracing citations forward and backward from foundational sources such as Horton and Wohl (1956), DietVorst et al. (2015), and Gordon et al. (2024). Peer-reviewed articles in marketing, information systems, and dermatological or medical ethics journals published from 2015 onward were prioritised, while earlier theoretical sources were retained where they

remain the standard reference point in their field. Industry commentary, trade press, and regulatory materials were drawn on only where peer-reviewed coverage was unavailable, principally for describing market scale, current enforcement practice, or recent product claims, and are identified as such wherever cited.

2.1 Parasocial Relationships and Source Credibility in Influencer Marketing

The parasocial relationship construct originates in Horton and Wohl’s (1956) observation that television audiences form an illusion of face-to-face intimacy with media performers despite the entirely one-sided nature of the interaction. In the social media era, this illusion is amplified by the interactivity of platforms: influencers reply to comments, share unscripted daily content and disclose personal details, all of which followers interpret as genuine access to the influencer’s authentic self (Enke

& Borchers, 2019). A systematic review by Yi (2023) synthesising studies on influencer marketing found that parasocial relationships consistently and positively predict consumer trust, purchase intention and brand evaluation, mediated by perceived interpersonal attraction, self-disclosure and empathy.

Complementing this affective account, source credibility theory (Hovland & Weiss, 1951; Ohanian, 1990) explains influencer persuasiveness through three cognitive dimensions: expertise, trustworthiness and attractiveness. Leite and Baptista (2021) show that an influencer's intimate self-disclosure heightens perceived source credibility, which in turn strengthens the parasocial bond and increases consumer trust in the endorsed brand. Chitraju (2025) extends this reasoning to Instagram specifically, arguing that influencers function as trusted intermediaries who blend personal narrative with product endorsement, a blending that is precisely what occurs when an influencer narrates their own AI skin scan as a personal discovery rather than a paid placement.

A growing “dark side” literature cautions that these same mechanisms can be exploited. Ekinici and colleagues (2025) organise emergent concerns into six themes, harmful products, misinformation, unrealistic beauty standards, comparison culture, deceptive consumption and privacy, arguing that the erosion of authenticity as influencers formalise brand partnerships creates conditions for deceptive endorsement that regulators have struggled to address. Within beauty specifically, “skinfluencers” are noted to thrive on perceived authenticity and transparency even as commercial pressures and market saturation push some toward exaggerated or unsubstantiated claims (Famesters, 2025).

2.2 Trust in Algorithms: Aversion, Appreciation, and the Trustworthy-AI Agenda

A parallel literature examines how people evaluate outputs produced by algorithms rather than humans. Dietvorst, Simmons and Massey (2015) coined “algorithm aversion” to describe the finding that people abandon confidence in an algorithm more quickly than in a human forecaster after witnessing an identical error, even when the algorithm's overall track record is superior. Subsequent work identified the opposite tendency, “algorithm appreciation”, particularly for quantitative, non-judgmental tasks where machines are seen as more objective than humans (Logg, Minson & Moore, 2019). Mahmud et al. (2022) synthesise this literature and note that the balance between aversion and appreciation depends on task type, perceived accountability, and the user's opportunity to interact with or adjust the algorithm's advice.

Cabiddu, Moi, Patriotta and Allen (2022) propose an integrative framework distinguishing initial trust in an algorithm, formed quickly on the basis of surface cues such as numeric precision or clean interface design, from trust developed over repeated use. This distinction is

directly relevant to AI skincare diagnostics: a single influencer video is typically a consumer's only exposure to the tool, meaning that whatever trust is formed is necessarily initial trust, built on cues (a percentage score, a color-coded skin map) rather than on longitudinal verification. Complementing this, the Trustworthy AI governance tradition (High-Level Expert Group on AI, 2019; Floridi et al., 2018) specifies that legitimate trust in an AI system should rest on demonstrated fairness, transparency, accountability and respect for human autonomy, criteria that a fifteen-second promotional clip is structurally unable to satisfy.

Trust-in-technology research more broadly (Mayer, Davis & Schoorman, 1995; McKnight, Choudhury & Kacmar, 2002) conceptualises trust as a function of perceived ability, benevolence and integrity of the trustee. Applied to an algorithm, ability corresponds to diagnostic accuracy, benevolence to the absence of a hidden commercial agenda in the scoring, and integrity to consistency and freedom from manipulation. As later sections argue, influencer-mediated presentation of AI skin diagnostics routinely obscures a consumer's ability to assess all three.

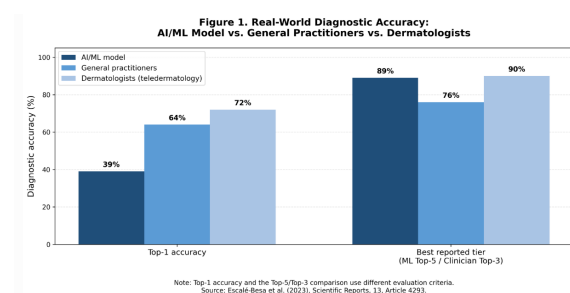
2.3 AI-Enabled Skincare and Dermatological Diagnostics: Capability and Fault Lines

Consumer-facing AI skin tools sit on a spectrum from wellness-oriented cosmetic scanners to medical-grade diagnostic aids. Validation studies of AI-based dermatological screening apps report meaningful but imperfect performance: Marri, Albadri, Hyder, Janagond and Inamadar (2024) tested the Aysa app, trained on more than 120,000 images across Fitzpatrick skin types, against clinical diagnosis in a tertiary-care dermatology setting in India and found useful but imperfect concordance, underscoring that even purpose-built, clinically-oriented symptom-checker apps are explicitly positioned as preliminary or non-diagnostic tools, a positioning that public and influencer framing often elides.

Ethical analyses of commercially available skin apps identify recurring shortfalls. Gordon et al. (2024), in a scoping review of ethics in dermatological AI, identify nine recurring ethical principles, including fairness, transparency, accountability, privacy and informed consent, and note persistent concerns around skin-of-colour representation and conflict of interest in commercially available tools. Shah, Arecco, Draper, Tiribelli, Harriss and Matin (2025) conducted an ethical use-case analysis of two popular UK skin cancer apps and found inadequate incorporation of bioethical norms, justice, responsibility and transparency, into their design and deployment, alongside limited efforts to address skin-tone bias and the exclusion of darker-skinned users as a target group by one app. These findings matter directly for influencer marketing because influencer audiences are demographically broad, and a device whose accuracy or design attention is unevenly distributed across skin tones,

if promoted as universally reliable, risks systematically misleading exactly the audience segments least represented in the underlying training data and design process.

A further complication is the so-called “black box” problem: consumers, and often influencers themselves, cannot inspect how a diagnostic score is generated, whether the underlying model has been clinically validated, or whether the output has been tuned to favour the sponsoring brand's product catalogue (Marri et al., 2024; Gordon et al., 2024). Industry commentary on AI-generated beauty personas notes that even purely visual, non-verbal suggestions of efficacy, smoother skin, brighter tone, can create deceptive impressions that fall



A brief clarification of terms is useful for readers less familiar with diagnostic-accuracy reporting. Top-1 accuracy records whether a model's single highest-ranked suggestion matched the confirmed diagnosis — a demanding standard, equivalent to asking the system for one guess. Top-5 accuracy (or Top-3, the standard typically reported for clinicians) instead asks whether the correct diagnosis appeared anywhere within the model's five, or three, highest-ranked suggestions, a considerably more forgiving standard. The two figures in Figure 1 are therefore not directly comparable, and promotional content that quotes only the more favourable Top-5 figure without this context effectively overstates the tool's practical accuracy relative to how it is actually used — as a single, decisive verdict — in a fifteen-second video.

2.4 Regulatory and Self-Regulatory Landscape of Influencer Advertising

Disclosure of material connections between influencers and brands has been treated as a settled regulatory question since long before social media: as early as 1937 the US Federal Trade Commission (FTC) established that concealed advertising constitutes a deceptive practice. Current FTC guidance requires that any material connection be disclosed clearly and conspicuously, ideally within the visual or verbal content itself rather than buried in a caption or an easily missed hashtag (Global Cosmetic Industry, 2024). This standard is set out directly in the Commission's own guidance rather than resting solely on secondary commentary: the FTC's 2023 revision of the Endorsement Guides (16 CFR Part 255)

outside traditional textual-claim-based advertising review Pharm Exec. (2025, July 29).

Figure 1 illustrates this variability with real-world data from a prospective diagnostic-accuracy comparison. In a real-life primary-care setting, an image-analysis machine-learning model's Top-1 diagnostic accuracy (39%) fell well below that of general practitioners (64%) and teledermatology dermatologists (72%); the gap narrowed, but did not close, once the model's Top-5 suggestion list was compared against clinicians' Top-3 accuracy (Escalé-Besa et al., 2023). Numbers of this kind are rarely visible in a fifteen-second promotional clip, yet they are precisely the information a consumer would need to calibrate how much weight to place on an AI-generated skin verdict.

Figure 1. Real-world diagnostic accuracy of an AI/ML skin-lesion model versus general practitioners and teledermatology dermatologists.
Source: Escalé-Besa et al. (2023).

states that a disclosure is not clear and conspicuous if it can be missed by a reasonable consumer scrolling through content, and clarifies that liability for an inadequate disclosure can extend to the advertiser, the endorser, and, in some circumstances, an intermediary such as an agency (Federal Trade Commission, 2023). Enforcement in the beauty category has intensified around “before-and-after” content, with regulators treating any edit that changes apparent skin texture or clarity beyond what a product can substantiate as a deceptive, if implicit, claim (Wolin & Desai, 2026). In one recent case, the National Advertising Division found a skincare advertiser's before-and-after imagery inadequately substantiated even where the imagery was paired with a favourable third-party “health score,” rejecting self-reported consumer feedback as insufficient performance evidence (Wolin & Desai, 2026) — a decision that illustrates, in miniature, exactly the kind of unsubstantiated algorithm-plus-image pairing this paper addresses.

Legal scholarship nonetheless observes that liability in practice falls overwhelmingly on brands and marketers rather than on the influencers who deliver the endorsement, since courts have been reluctant to treat a spokesperson's on-camera statements as independently actionable absent evidence that the influencer had direct knowledge of a product's shortcomings (FDLI, 2020). Existing disclosure frameworks were built around the influencer-brand relationship; they say little about a third variable now routinely present in beauty content, an

algorithmic verdict, whose apparent objectivity is not a paid opinion in the conventional sense and therefore sits awkwardly within “material connection” disclosure rules that were designed for human endorsers.

2.5 Research Gap and Positioning of the Study

Three literatures, parasocial influencer trust, algorithmic trust, and AI dermatological ethics, have developed largely in parallel. Influencer marketing research treats the influencer as the primary trust object and rarely models an embedded, ostensibly neutral third-party technology. Algorithmic trust research typically examines direct human-algorithm interaction (a user consulting a robo-advisor or symptom checker) without an intervening human endorser who reframes the algorithm's output emotionally. AI dermatology ethics research focuses on clinical and regulatory contexts and has not yet engaged with the promotional environment in which many consumers first encounter these tools. No existing framework models the specific, compounding interaction that occurs when a trusted parasocial figure personally vouches for an algorithmic diagnostic result. It is worth being explicit about what APTT adds beyond simply combining these three literatures under one label. Source credibility theory and parasocial interaction theory both stop at the influencer; neither has anything to say about a second, non-human source of legitimacy entering the same message. Algorithmic trust research runs in the opposite direction, treating the user and the machine as if no third party stood between them. What neither tradition predicts is the specific interaction proposed in Section 3 and formalised as Proposition 4: that a strong parasocial bond and a salient algorithmic output do not simply add their persuasive weight but multiply it, because each

supplies the exact form of scrutiny the other lacks. That interaction effect, rather than any single construct in Table 1, is the paper's claimed contribution, and it is what distinguishes APTT from a relabelling of existing constructs for a new product category. This paper addresses that gap by proposing the Algorithmic-Parasocial Trust Transfer (APTT) framework in Section 3, and by extending it into ethical and marketing guidance in Sections 4 and 5.

CONCEPTUAL DEVELOPMENT: THE ALGORITHMIC-PARASOCIAL TRUST TRANSFER (APTT) FRAMEWORK

This section proposes the Algorithmic-Parasocial Trust Transfer (APTT) framework. The framework's central claim is that when an influencer presents an AI skincare diagnostic result, trust does not flow along two separate, additive paths (influencer → trust; algorithm → trust). Instead, each source lends the other a credibility attribute it does not itself possess, a process termed here trust transfer. The influencer, who is warm, familiar and self-disclosing but not scientifically authoritative, borrows the algorithm's apparent objectivity; the algorithm, which is precise but impersonal and unfamiliar, borrows the influencer's warmth and perceived sincerity. The result is a compounded trust state that can exceed what either source would generate alone, and that is harder for a consumer to critically evaluate because the two potential sources of scepticism, “this is just a paid opinion” and “this is just an unvalidated app”, are each partially neutralised by the other's presence. Figure 2 depicts the framework's six constructs and the six propositions (P1–P6) linking them, detailed in Section 3.2.

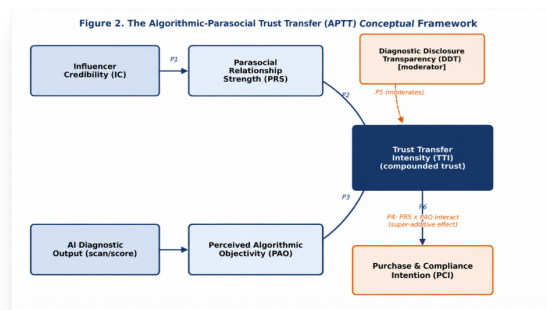


Figure 2. The Algorithmic-Parasocial Trust Transfer (APTT) conceptual framework, showing hypothesised paths P1–P6.

3.1 Core Constructs

Table 1 defines the six constructs of the APTT framework, drawn from the literatures reviewed in Section 2.

Construct	Definition	Role in Model
Influencer Credibility	Perceived expertise,	Independent

(IC)	trustworthiness and attractiveness of the endorsing influencer (Ohanian, 1990).	variable
Parasocial Relationship Strength (PRS)	Strength of the one-sided emotional bond a follower has formed with the influencer through self-disclosure and perceived	Mediator 1

	accessibility (Horton & Wohl, 1956; Yi, 2023).				
Perceived Algorithmic Objectivity (PAO)	The degree to which the follower perceives the AI diagnostic output as neutral, scientific and free of commercial motive (Cabiddu et al., 2022; Logg et al., 2019).	Mediator 2			
Trust Transfer Intensity (TTI)	The extent to which trust generated by one source (influencer or algorithm) is imputed to the other, rather than evaluated independently.	Core mediating mechanism			
Diagnostic Disclosure Transparency	The extent to which the post/video	Moderator			
			ncy (DDT)	disclose the tool's validation status, accuracy limits, sponsorship and data practices.	
			Purchase and Compliance Intention (PCI)	Consumer's intention to purchase the recommended product and/or to adopt the diagnostic tool's regimen.	Outcome variable

Two constructs in Table 1, Perceived Algorithmic Objectivity and Trust Transfer Intensity, are related closely enough that the distinction is worth making explicit. PAO is a judgement about the algorithm considered on its own — how neutral, scientific, or free of commercial motive the follower judges the AI output to be in isolation. TTI describes what happens next: whether that judgement, or the separate judgement of the influencer's credibility, is imputed to the other source rather than assessed on its own terms. A follower could in principle rate an app's output as highly objective while still evaluating the influencer's endorsement independently; TTI only rises once the two evaluations stop being independent and begin to reinforce each other. Operationally, PAO is best measured through items about the algorithm alone, such as agreement that “this scan

seems neutral and unbiased,” while TTI requires items that capture the transfer itself, such as agreement that the influencer's endorsement makes the app's result feel more trustworthy, or the reverse.

3.2 Propositions

Building on the constructs above, the framework advances six propositions intended for future empirical testing:

- P1: Influencer credibility (IC) is positively associated with parasocial relationship strength (PRS), consistent with prior influencer marketing research (Leite & Baptista, 2021).
- P2: Parasocial relationship strength (PRS) is positively associated with Trust Transfer Intensity (TTI), such that followers with stronger parasocial bonds are less likely to independently

scrutinise an algorithm's validity when it is presented by that influencer.

- P3: Perceived Algorithmic Objectivity (PAO) is positively associated with Trust Transfer Intensity (TTI), such that the presence of numeric or visual “scan” output increases the perceived legitimacy of the influencer's endorsement, independent of the influencer's own credibility.
- P4: PRS and PAO interact positively, such that the combined presence of a strong parasocial bond and a salient algorithmic output produces a super-additive (greater than the sum of the parts) increase in Trust Transfer Intensity, relative to either mechanism alone. This super-additive prediction follows directly from the two source literatures reviewed in Section 2: a strong parasocial bond reduces a follower's inclination to question the influencer's framing (Leite & Baptista, 2021), while high perceived algorithmic objectivity independently reduces the perceived need to verify a claim that already looks self-evidently scientific (Logg et al., 2019). When both conditions hold together, neither of the two habitual grounds for scepticism — that an endorsement is “just a paid opinion” or that a score is “just an unverified app” — remains available on its own, which is a qualitatively different position than reaching the same trust level through either mechanism alone.
- P5: Diagnostic Disclosure Transparency (DDT), operationalised as explicit statements of the tool's accuracy limitations, validation status, sponsorship and data use, moderates the PRS/PAO → TTI relationship, such that high transparency weakens the compounding effect described in P4.

- P6: Trust Transfer Intensity (TTI) is positively associated with Purchase and Compliance Intention (PCI), and this relationship is strongest among followers with limited algorithmic or health literacy. This moderating role for literacy is consistent with dual-process persuasion accounts, in which a simple, confident cue — an on-screen percentage or colour-coded map — substitutes for effortful evaluation precisely when the audience lacks the domain knowledge to interrogate it directly (Mahmud et al., 2022). Followers with stronger algorithmic or health literacy are expected to treat a high TTI as one input to weigh rather than as a proxy for verified diagnostic accuracy, which is why P6 predicts the TTI–PCI relationship weakens, rather than disappears, as literacy increases.

Collectively, these propositions reframe the ethical problem: the risk is not simply that an influencer might exaggerate a product's benefits, nor simply that an AI tool might be inaccurate, but that the pairing of the two sources produces a distinct, compounded persuasive effect that existing single-source disclosure rules (Section 2.4) were not designed to interrupt.

ETHICAL FRAMEWORK FOR INFLUENCER-PROMOTED AI SKINCARE DIAGNOSTICS

Translating the APTT framework into practice requires an ethical framework that addresses the specific vulnerabilities created by trust transfer, rather than treating influencer marketing ethics and AI ethics as separate compliance checklists. Building on the Trustworthy AI principles articulated by the High-Level Expert Group on AI (2019) and Floridi et al.'s (2018) AI4People framework, and on the dermatological AI ethics literature reviewed in Section 2.3, this paper proposes five principles specific to the influencer-promoted AI skincare diagnostic context, summarised in Table 2.

Principle	Risk in this Context	Recommended Practice
Algorithmic Fairness	AI skin diagnostics have been shown to receive uneven design and validation attention across	Brands and influencers should disclose whether a tool has been validated across diverse skin tones before promoting it to a demographically broad following.

	skin tones, with commercially available apps giving limited consideration to darker-skinned users (Shah et al., 2025; Gordon	
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	et al., 2024).			m itself is the source of a misleading claim (FDLI, 2020).	
Transparency and Disclosure	Existing FTC-style disclosure rules address the brand-influencer financial relationship but not the validation status of an embedded algorithm (Global Cosmetic Industry, 2024; FTC, 2023).	Content should disclose, in the video or post itself, whether the diagnostic output is clinically validated, illustrative/entertainment-only, or commercially tuned to the sponsoring product line.	Consumer Autonomy and Informed Consent	Trust formed through a single short-form video is necessarily “initial trust” based on surface cues rather than verified understanding (Cabiddu et al., 2022).	Diagnostic results shared for promotional purposes should be accompanied by an unambiguous statement that the tool is not a substitute for professional dermatological consultation, especially where any health-adjacent claim (acne, rosacea, lesions) is implied.
Accountability	Liability in influencer advertising has historically fallen on brands rather than influencers, leaving a governance gap when the algorithm	Brands deploying AI diagnostics through influencer channels should accept documented responsibility for algorithm validation, analogous to product-safety liability, rather than treating the AI output as a neutral third party.	Non-maleficence	AI-assisted skin apps risk false reassurance or delayed medical attention when consumers substitute app results for clinical evaluation, a concern	Any content that could plausibly be interpreted as a health or medical claim (rather than a purely cosmetic one) should be excluded from promotional use of consumer-grade AI skin tools, and escalation pathways to professional care should be clearly signposted.

	documented across ethical reviews of dermatological AI (Gordon et al., 2024; Shah et al., 2025).	
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These five principles are deliberately sequenced to track the consumer journey depicted in the APTT framework: fairness and transparency intervene before or during the trust-transfer moment (Section 3, P3–P5), while accountability, autonomy and non-maleficence govern what happens after a consumer acts on the compounded trust the content has generated. None of the five principles requires banning influencer-AI skincare content outright; each instead asks that the compounding effect identified in Proposition 4 be made visible to the consumer rather than left to operate silently.

MARKETING FRAMEWORK: MANAGERIAL AND POLICY IMPLICATIONS

Stakeholder	Recommended Marketing / Governance Action
Brands / Manufacturers	Publish accuracy and validation data (including performance across Fitzpatrick skin types) in a consumer-accessible format before authorising influencer promotion; contractually require influencers to include standardised disclosure language for AI-generated results, not only for paid partnership status.
Influencers / Creators	Distinguish explicitly, on-screen, between “my personal experience” and “what the algorithm/device reported”; avoid implying diagnostic certainty (e.g., presenting a wellness score as a

Beyond ethical obligation, the APTT framework has direct implications for brand strategy. As algorithm aversion and appreciation research shows, initial trust in an algorithm is fragile and can collapse sharply after a single visible error (Dietvorst et al., 2015). A brand that allows an influencer to overstate an AI tool's certainty risks a disproportionate loss of both algorithmic and parasocial trust simultaneously if the tool is later shown to be inaccurate or biased, a risk not faced by conventional, non-algorithmic influencer endorsements. Table 3 translates the ethical framework into stakeholder-specific marketing and governance action.

	medical verdict); disclose free product/device provision even when a purchase-based affiliate link is absent.
Platforms	Extend existing branded-content and ad-disclosure tools to flag AI-generated or AI-mediated claims specifically, in the same way “paid partnership” labels currently flag financial relationships; consider category-specific policies for health-adjacent beauty content, mirroring existing restrictions on medical and pharmaceutical advertising.
Regulators / Self-Regulatory Bodies	Clarify, through updated guidance, that an algorithmic output presented by a paid endorser is itself part of

	the endorsement and therefore subject to substantiation requirements, closing the gap identified in Section 2.4 between endorser-focused disclosure rules and algorithm-generated claims.		a trusted influencer still requires the same scrutiny as any other unverified claim.
Consumers / Advocacy Groups	Promote algorithmic and health literacy campaigns that specifically address the trust-transfer mechanism described in Section 3, helping consumers recognise that an AI score delivered by		

A recurring theme across Table 3 is that responsible practice does not require suppressing the emotional and technological appeal that makes this format effective. Parasocial warmth and algorithmic precision are each, independently, legitimate and long-studied drivers of consumer trust (Section 2.1, 2.2). The marketing framework instead asks that brands and influencers make the compounding of these two effects visible and substantiated rather than implicit and unverifiable, converting a currently opaque persuasion mechanism into a disclosed and, ideally, accurate one.

DISCUSSION

The APTT framework reframes a question that is often asked separately in the influencer marketing literature (“is this endorsement authentic?”) and the AI ethics literature (“is this algorithm accurate and fair?”) into a single, joint question: does the pairing of a trusted human source with an algorithmic output cause consumers to apply less scrutiny to each than they would if encountered alone? The dark-side influencer literature (Ekinçi et al., 2025) and the algorithm-aversion/appreciation literature (Logg et al., 2019; Dietvorst et al., 2015) each independently describe conditions under which persuasion outpaces verification; this paper's contribution is to argue that AI skincare diagnostics create a setting where both conditions are present at once, and interact.

This has an important implication for the regulatory gap identified in Section 2.4: current disclosure law (FTC, 2023) is built to answer “is this content paid?”, a question about the influencer-brand relationship, not “is this claim substantiated?”, a question about the algorithm's validity. Because an AI skin score can appear to the consumer as independent evidence rather than as part of the endorsement itself, it can function as an unregulated amplifier of an otherwise regulated claim. Extending disclosure obligations to explicitly cover algorithmically generated content, as proposed in Table 3, would close

this specific gap without requiring wholesale new AI legislation.

The framework also has implications for equity. Because publicly available dermatological AI tools have been repeatedly shown to under-perform for darker Fitzpatrick skin types (Shah et al., 2025; Gordon et al., 2024), and because influencer audiences are typically far more diverse than clinical trial populations, the trust-transfer mechanism described here risks disproportionately misleading exactly the audience segments for whom the underlying technology is least validated. This equity dimension distinguishes influencer-promoted AI skincare diagnostics from most prior algorithm aversion/appreciation research, which has generally treated algorithmic accuracy as uniform across users.

THEORETICAL AND PRACTICAL CONTRIBUTIONS

Theoretically, this paper contributes the APTT framework as, to the authors' knowledge, the first conceptual model to integrate parasocial relationship theory, source credibility theory and the algorithm aversion/appreciation literature into a single account of compounded trust formation. It also extends the Trustworthy AI governance tradition (Floridi et al., 2018; High-Level Expert Group on AI, 2019) from clinical and institutional contexts, where it has primarily been applied, into the influencer marketing context, where such principles have not previously been systematically operationalised.

Practically, the ethical framework (Section 4) and marketing framework (Section 5) offer brands, agencies and regulators a stakeholder-specific checklist that can be implemented without waiting for new legislation, since most recommended actions (validation disclosure, on-screen labelling, contractual disclosure clauses) extend existing FTC-style and platform-level mechanisms rather than replacing them. For influencer marketing researchers, the paper offers six testable propositions (Section 3.2) that can be operationalised through

experimental vignette studies, survey-based structural equation modelling, or content analysis of existing influencer posts featuring AI skincare tools.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

It should be stated plainly that the APTT framework and Propositions 1 through 6 are conceptual propositions derived from existing literature, not findings; none of the relationships depicted in Figure 2 has yet been tested empirically, and until they are, they should be read as plausible hypotheses rather than established effects. As a conceptual paper, this study synthesises existing literature rather than presenting new primary data, and the propositions in Section 3.2 accordingly require empirical validation before the APTT framework can be considered confirmed. Future research could test P1–P6 using experimental designs that manipulate influencer credibility and algorithmic disclosure independently (a 2x2 design crossing high/low parasocial cues with high/low disclosure transparency), survey-based structural equation modelling of existing influencer-AI skincare content consumers, or comparative content analysis of disclosure practices across markets with differing regulatory regimes (for example, FTC guidance in the United States compared with the Advertising Standards Council of India's influencer guidelines, or the UK Advertising Standards Authority).

A second limitation is scope: the paper focuses on cosmetic and wellness-oriented AI skin tools rather than clinically regulated diagnostic devices, and future work should examine whether the APTT mechanism operates differently when a tool carries formal medical-device certification. Finally, the framework was developed primarily from English-language, Western regulatory and academic literature; cultural variation in parasocial attachment style, algorithmic trust, and beauty standards (for example, differing skin-tone representation norms across markets) may moderate the proposed relationships in ways this paper's literature base cannot yet specify, and cross-cultural replication is recommended.

CONCLUSION

Influencer-promoted AI skincare diagnostics bring together two trust mechanisms — the parasocial bond a follower feels toward an influencer, and the algorithmic trust extended to a seemingly objective machine score — that have rarely been studied in combination. This paper's principal contribution is the Algorithmic-Parasocial Trust Transfer (APTT) framework, which argues that these mechanisms do not operate side by side in this setting but compound one another, producing a persuasive effect that neither source would generate alone. Because current disclosure regulation was built around the financial relationship between brand and endorser rather than the validity of an embedded algorithm, and because publicly available AI skin tools remain unevenly validated across skin tones, this compounding effect constitutes a distinct,

currently under-addressed consumer-protection risk. The ethical and marketing frameworks developed in Sections 4 and 5 translate that risk into stakeholder-specific practice, offering brands, influencers, platforms and regulators a way to retain the format's persuasive power while substantially reducing its capacity to mislead.

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