

LONELINESS AND PARASOCIAL INVOLVEMENT IN THE DIGITAL
MEDIA CONTEXT: THE MEDIATING ROLE OF PARASOCIAL
ATTACHMENT AND ATTITUDES TOWARD CELEBRITIES

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Abstract

Parasocial relationships represent an increasingly relevant form of symbolic connectedness in the contemporary digital media environment and are frequently associated with socio-emotional vulnerabilities such as perceived loneliness. The present study aims to investigate the psychosocial mechanisms through which loneliness is associated with parasocial involvement by testing an integrative explanatory model that includes parasocial attachment and attitudes toward celebrities as serial mediators. In addition, the study explores the existence of a non-linear relationship between loneliness and the anxious dimension of parasocial attachment.

The research was conducted on a large adult sample, using validated instruments to assess perceived loneliness, parasocial attachment, attitudes toward celebrities, and parasocial behavior. Statistical analyses included serial mediation models and polynomial regressions, designed to capture both direct and indirect relationships among variables, as well as potential curvilinear effects.

The results indicate that loneliness does not directly predict parasocial behavior but exerts its influence primarily through parasocial attachment and attitudes toward celebrities. Parasocial attachment emerged as a central cognitive-affective mechanism, facilitating the internalization of the symbolic relationship with the media figure and structuring subsequent attitudinal evaluations. Moreover, the relationship between loneliness and anxious parasocial attachment proved to be curvilinear, suggesting the existence of psychological thresholds in the functioning of media-based compensatory mechanisms.

These findings support a process-oriented conceptualization of parasocial relationships, in which socio-emotional vulnerabilities are gradually transformed into media engagement behaviors through distinct affective and evaluative mechanisms. The study contributes to the refinement of existing theoretical models and offers relevant implications for understanding the ambivalent role of parasocial relationships in emotional regulation and mental health within digital society.

Keywords: perceived loneliness; parasocial relationships; parasocial attachment; attitudes toward celebrities; parasocial behavior; digital media

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1. INTRODUCTION

In the context of the accelerated transformations of the digital media ecosystem, parasocial relationships have become a central component of the ways in which individuals symbolically interact with public figures, celebrities, and influencers. Initially conceptualized by Horton and Wohl as unilateral forms of perceived interaction between audiences and media characters, parasocial relationships have evolved in contemporary literature into complex relational structures with distinct cognitive, affective, and behavioral implications (Tukachinsky *et al.*, 2019; Giles, 2023). At present, these relationships can no longer be understood solely as reactions to media exposure, but rather as dynamic psychosocial processes embedded in emotional regulation, social identity, and individuals' compensatory strategies.

A frequently invoked psychosocial determinant in explaining orientation toward parasocial relationships is perceived loneliness. The literature suggests that experiences of socio-emotional isolation and deficits in interpersonal belonging may motivate individuals to seek stable, predictable symbolic connections devoid of rejection risk – defining characteristics of parasocial relationships (Greenwood *et al.*, 2009, 2011). Loneliness reflects not merely the absence of social contacts, but a subjective discrepancy between desired and existing relationships, with profound consequences for psychological health and media consumption behaviors (Russell, 1996; Wang *et al.*, 2018). Thus, orientation toward media figures may function as a compensatory mechanism, providing an illusion of intimacy and emotional connection within a context perceived as safe and controllable.

However, the relationship between loneliness and parasocial involvement is neither direct nor unidimensional. Recent research highlights the role of parasocial attachment processes as key explanatory mechanisms through which socio-emotional vulnerabilities translate into affective investment in media figures (Cohen, 2003; Rain & Mar, 2021). Parasocial attachment, conceptualized by analogy with adult attachment theories, reflects internalized relational styles – particularly anxious or avoidant – projected onto symbolic relationships with celebrities. These styles may amplify the need for closeness, emotional dependence, and sensitivity to the absence of the media figure, thereby contributing to the consolidation of parasocial relationships and intensifying their psychological significance (Cole & Leets, 1999).

Another central construct within this explanatory framework is attitudes toward celebrities, frequently operationalized through the concept of celebrity worship. Classical models describe this phenomenon as a continuum ranging from entertainment-social interest to intense-personal involvement and borderline-pathological forms (McCutcheon *et al.*, 2010).

Despite significant progress over recent decades, the literature still exhibits relevant conceptual and empirical gaps. First, most studies have examined loneliness, parasocial attachment, and attitudes toward celebrities in isolation, without integrating these variables into a coherent explanatory model capable of simultaneously capturing direct, mediated, and behavioral relationships. Second,

there is a limited number of studies explicitly testing serial mediation mechanisms through which loneliness influences parasocial behaviors via parasocial attachment and attitudes toward celebrities. Third, non-linear relationships between loneliness and dimensions of parasocial attachment remain insufficiently explored, although recent research suggests the existence of psychological thresholds and saturation effects in media-based compensatory processes (Hartmann, 2017; Bond, 2021).

The social and psychological relevance of investigating these mechanisms is amplified by the massive growth of digital media consumption and the central role of celebrities and influencers in young adults' everyday lives. Parasocial relationships are not neutral phenomena; they may have adaptive implications – such as temporary reductions in loneliness and the provision of symbolic support – as well as maladaptive consequences, including emotional dependence, avoidance of real interpersonal relationships, or escalation toward obsessive behaviors (Sansone *et al.*, 2014; Liebers & Schramm, 2019). From a methodological perspective, integrating mediation models and non-linear analyses contributes to refining the understanding of parasocial relationships as dynamic processes rather than static correlations.

Within this context, the aim of the present study is to investigate the psychosocial mechanisms through which perceived loneliness is associated with parasocial involvement by testing an integrative explanatory model that includes parasocial attachment and attitudes toward celebrities as cognitive and attitudinal mediators. The study seeks to examine both the direct and mediated effects of loneliness on parasocial behavior, as well as the existence of curvilinear relationships between loneliness and the anxious dimension of parasocial attachment. Through this approach, the research contributes to the international literature by clarifying the psychosocial architecture of parasocial relationships and by offering a robust theoretical and methodological framework for understanding how socio-emotional vulnerabilities are transformed into specific forms of media connectivity.

2. LITERATURE REVIEW

Parasocial relationships represent forms of unilateral symbolic relating in which individuals develop perceptions of intimacy, familiarity, and emotional connection with media figures who do not reciprocate these interactions. Initially conceptualized by Horton and Wohl as illusory interactions between audiences and media personalities, parasocial relationships were subsequently extended to describe stable and internalized bonds with fictional characters, celebrities, or influencers, characterized by continuity, affective investment, and psychological significance (Tukachinsky *et al.*, 2019; Giles, 2023). Contemporary literature distinguishes between episodic parasocial interactions and enduring parasocial relationships, the latter displaying structural properties similar to real interpersonal relationships, such as attachment, loyalty, and emotional reactivity (Bond, 2021).

A central psychosocial determinant of orientation toward parasocial relationships is perceived loneliness, defined as the subjective discrepancy between desired and existing social relationships. This conceptualization, established through the UCLA Loneliness Scale, highlights the socio-emotional nature of loneliness and its impact on affect regulation, mental health, and coping strategies, including media consumption (Russell, 1996; Zeas-Sigüenza *et al.*, 2023). Recent research indicates that loneliness functions as a vulnerability factor that predisposes individuals toward symbolic compensatory strategies, particularly in digital contexts that provide easy access to media figures perceived as available, predictable, and free from rejection risk (Greenwood *et al.*, 2009, 2011; Wang *et al.*, 2018).

Within this explanatory framework, parasocial attachment represents a key cognitive-affective mechanism, derived from the application of adult attachment theories to relationships with media figures. Similar to interpersonal attachment, parasocial attachment is organized along anxious and avoidant dimensions, reflecting needs for closeness, fear of abandonment, and discomfort with symbolic distance (Cole & Leets, 1999; Cohen, 2003). Empirical studies indicate that individuals with anxious attachment styles develop more intense and emotionally dependent parasocial relationships, using media figures as sources of symbolic security and affective validation (Rain & Mar, 2021). Consequently, parasocial attachment frequently mediates the relationship between socio-emotional vulnerabilities and the intensity of parasocial involvement.

A closely related construct is attitudes toward celebrities, operationalized through the concept of celebrity worship. Classical models describe this phenomenon as a continuum ranging from recreational and social interest to intense-personal involvement and borderline-pathological forms (McCutcheon *et al.*, 2010). Attitudes toward celebrities integrate cognitive, affective, and motivational components and are systematically associated with parasocial attachment and media engagement behaviors, such as persistent content consumption and information seeking about the media figure.

From a theoretical perspective, explanations of parasocial relationships have evolved from descriptive models to integrative frameworks. Media equation theory posits that individuals respond to media stimuli as if they were real social entities, facilitating the emergence of parasocial relationships in the absence of reciprocity (Reeves *et al.*, 1996). Compensatory media use models and extended attachment theories suggest that parasocial relationships may function as emotional regulation mechanisms in response to loneliness, stress, and social insecurity, providing symbolic support and relational predictability (Hartmann, 2017; Bond, 2021). Additionally, the absorption – addiction model explains the progression from emotional involvement to potentially compulsive behaviors in contexts of psychological vulnerability (McCutcheon *et al.*, 2010).

Empirical literature documents consistent associations between loneliness, parasocial attachment, attitudes toward celebrities, and parasocial behaviors; however, these relationships are not uniformly linear. Some studies indicate threshold or saturation effects, suggesting that parasocial relationships may serve adaptive functions up to a certain level of emotional vulnerability, after which they may become ineffective or maladaptive (Hartmann, 2017; Bond, 2021). Nevertheless, most research examines these variables in a fragmented manner, without testing explanatory models that capture the sequential nature of psychosocial processes through serial mediation analyses or explicitly integrating non-linear relationships (Liebers & Schramm, 2019).

In this context, the present study positions itself as an integrative contribution to the international literature by proposing an explanatory model that treats loneliness as a distal predictor, parasocial attachment as a cognitive-affective mediator, and attitudes toward celebrities as an attitudinal mediator of parasocial behaviors. By simultaneously testing direct, mediated, and curvilinear effects in a large sample, the research addresses significant conceptual and methodological gaps and offers a process-oriented perspective on how socio-emotional vulnerabilities are transformed into specific forms of media connectivity in contemporary digital society.

Building on international literature regarding the psychosocial determinants of parasocial relationships, the proposed theoretical model anticipates a series of direct, mediated, and non-linear relationships among the study's central variables: perceived loneliness, parasocial attachment, attitudes toward celebrities, and parasocial behavior. Prior research indicates that loneliness is associated with compensatory orientations toward parasocial relationships, functioning as a distal predictor of affective and behavioral engagement with media figures. Moreover, parasocial attachment processes are recognized as key explanatory mechanisms through which socio-emotional vulnerabilities contribute to the formation of parasocial relationships. Accordingly, the hypotheses are formulated to reflect both established literature and the innovative contribution of the present model.

H1. Higher levels of perceived loneliness (UCLA) will predict increased parasocial attachment (PSI-A), indicating that socio-emotional isolation facilitates orientation toward symbolic, non-reciprocal connections with media figures as a compensatory mechanism for the lack of interpersonal support.

H2. Parasocial attachment (PSI-A) will mediate the relationship between loneliness (UCLA) and attitudes toward celebrities (CAS), such that socio-emotional vulnerability associated with loneliness facilitates the formation of a symbolic bond with the media figure, through which affective-cognitive orientations toward the celebrity are organized and amplified.

H3. A serial mediated effect of loneliness (UCLA) on parasocial behavior (SPSR) is anticipated through parasocial attachment (PSI-A) and attitudes toward celebrities (CAS). Thus, loneliness will indirectly influence parasocial behavior by

increasing parasocial attachment intensity and subsequently strengthening attitudes toward the celebrity.

H4. The relationship between loneliness (UCLA) and the anxious dimension of parasocial attachment (PSI–A) will exhibit a curvilinear component, suggesting the existence of a psychological threshold beyond which further increases in loneliness lead to accelerated and disproportionate intensification of anxious parasocial attachment.

3. METHODOLOGY

3.1. RESEARCH DESIGN

The study adopted a quantitative cross-sectional explanatory design, appropriate for investigating predictive relationships and psychosocial mechanisms involved in the formation and consolidation of parasocial relationships. This design allows for the simultaneous examination of associations among the distal predictor (loneliness), cognitive-affective and attitudinal mediators (parasocial attachment and attitudes toward celebrities), and the behavioral outcome (parasocial involvement), without experimental manipulation or longitudinal follow-up. The explanatory model aimed to estimate direct and indirect pathways, both simple and serial, incorporating linear effects as well as potential curvilinear relationships among the core variables.

The analytical process was structured in two complementary stages. In the first stage, the psychometric properties of the four instruments were evaluated through measurement models (Confirmatory Factor Analysis), using standard indicators of validity and reliability (α , ω , AVE, CR, and HTMT). In the second stage, predictive relationships were tested through simple and serial mediation models (PROCESS Models 4 and 6), multivariate regression analyses, and, where appropriate, non-linear models and polynomial terms to examine curvilinear effects. The use of a cross-sectional explanatory design is consistent with international literature on the study of parasocial relationship formation mechanisms, providing a robust framework for testing a complex multivariate model within contemporary psychosocial research.

3.2. PARTICIPANTS AND SAMPLING

The final sample included 2,335 participants, selected through a non-probabilistic convenience sampling procedure. Inclusion criteria were: a minimum age of 18 years, complete responses to all instruments administered via Google Forms, and the provision of informed consent. Incomplete questionnaires, duplicate entries, and responses with unusually short completion times were excluded to ensure data quality and validity. Adherence to these criteria resulted in a homogeneous and sufficiently large sample for testing the investigated psychosocial relationships.

Regarding sociodemographic characteristics, participants' ages ranged from 18 to 48 years, with a mean age of 26.57 years (Mdn = 23; Mode = 20), indicating a predominance of young adults, a profile characteristic of online-based studies.

Variable	N	M	Mdn	Mod	Min	Max
Age	2335	26.57	23.00	20	18	48

The gender distribution indicates that 70.5% of respondents were female ($n = 1,646$), while 29.5% were male ($n = 689$), a proportion frequently observed in research on parasocial behaviors, where female participation is typically higher. These demographic characteristics reflect a diverse sample, oriented toward population segments with the highest exposure to media content and an increased likelihood of exhibiting forms of parasocial involvement.

Biological gender	N	%
Female	1646	70.5
Male	689	29.5
Total	2335	100.0

The statistical power of the sample is very high, given the total sample size ($N = 2,335$). Under conditions of detecting small effects ($f^2 = .02-.05$), a sample of this magnitude exceeds the statistical power threshold of .99 for multivariate regression models and mediation or serial mediation analyses employed in the study. Consequently, the sample is adequate for identifying direct effects as well as indirect or curvilinear effects, which are characteristic of psychosocial research on parasocial relationships.

3.3. INSTRUMENTS

This study employed four standardized instruments aligned with the theoretical model in which loneliness functions as a distal predictor, parasocial attachment as a cognitive–affective mediator, attitudes toward celebrities as an attitudinal mediator, and parasocial behavior as a proximal behavioral outcome. Below, a complete conceptual and psychometric description of each scale is provided, as used in the present research.

UCLA Loneliness Scale (Version 3)

Perceived loneliness was assessed using the UCLA Loneliness Scale, Version 3 (UCLA-LS v3), an instrument considered the international standard for measuring loneliness in adults (Russell, 1996). The scale consists of 20 items rated on a four-point Likert scale, capturing the absence of social connection and emotional isolation. Its factorial structure has been reported as either unidimensional or

bifactorial (general factor plus item polarity), with adequate measurement invariance across gender and age (Zeas-Sigüenza *et al.*, 2023). In international literature, reliability is consistently high ($\alpha \approx .89-.94$; ω similar), and convergent validity is supported by indicators such as AVE and CR for the global score (Zeas-Sigüenza *et al.*, 2023). In the present study, the scale is used as a distal predictor, and its psychometric properties are re-evaluated through CFA and coefficients α , ω , AVE, CR, and HTMT within the Romanian sample.

Parasocial Attachment Scale Toward Media Figures (PSI-A, adapted)

Parasocial attachment was measured using an adapted version of the Parasocial Attachment Scale (PSI-A), developed based on adult attachment conceptualizations applied to media figures (Cole & Leets, 1999; Cohen, 2003). The instrument includes 12–14 items organized into two dimensions – anxious and avoidant – rated on a five-point Likert scale. The scale captures internalized relational styles projected onto media figures and is frequently used to investigate mechanisms of closeness, distancing, and affective vulnerability in parasocial relationships. Previous studies report good internal consistency ($\alpha > .80$), convergent validity with attachment insecurity and parasocial relationship intensity, and a stable bidimensional structure (Rain & Mar, 2021; Gleason *et al.*, 2017). In this study, PSI-A is treated as a cognitive–affective mediator, and structural validation is conducted through CFA, with estimation of α , ω , AVE, CR, and HTMT indicators.

Celebrity Attitude Scale (CAS)

Attitudes toward celebrities were measured using the Celebrity Attitude Scale (CAS), a 34-item instrument structured into three hierarchical dimensions: entertainment–social, intense–personal, and borderline–pathological (McCutcheon *et al.*, 2010). Responses are recorded on a five-point Likert scale, and scores can be computed at the subscale level or as a total “celebrity worship” index. Numerous studies have confirmed the stability of the three-factor model and its strong cross-cultural replicability. Reliability is consistently high ($\alpha \approx .80-.90$), and convergent and discriminant validity are documented through AVE, CR, and correlations with personality and psychological health indicators. In the present study, CAS is used as an attitudinal mediator in the explanatory chain linking loneliness, parasocial attachment, and parasocial behavior.

Parasocial Relationship Engagement Questionnaire (SPSR, adapted from the Social Media Engagement Scale)

Parasocial behavior was assessed using the Parasocial Relationship Engagement Questionnaire (SPSR), adapted from the Social Media Engagement Scale (Przybylski *et al.*, 2013). The instrument includes five items measuring the frequency with which participants seek and consume content related to a preferred celebrity in everyday contexts, using an eight-point Likert scale (“never” to “every day in the

past week”). The scale exhibits a unidimensional structure and good reliability ($\alpha \approx .82$ in the original study), with convergent validity supported through correlations with FoMO, social media use, and indicators of psychological distress (Elhai *et al.*, 2017). In the present study, SPSR represents the proximal behavioral outcome of the parasocial relationship, and its reliability and validity are re-evaluated through CFA and indicators α , ω , AVE, CR, and HTMT.

3.4. PROCEDURE

Data collection was conducted using a cross-sectional design through a single Google Forms questionnaire integrating all four instruments used in the study. The survey link was distributed via digital channels (social media platforms, academic groups, and direct sharing), and participation was fully voluntary and uncompensated. Prior to completion, participants received information regarding the study’s purpose, the anonymous nature of responses, the right to withdraw at any time, and the absence of associated risks. Informed consent was provided by selecting a dedicated option at the beginning of the questionnaire.

The survey did not collect personally identifiable information, and IP addresses or other metadata were not recorded, ensuring a high level of anonymity. The order of the four instruments was kept constant for all respondents, and the average completion time was approximately 30 minutes. Procedures complied with international ethical standards for research involving human participants. The study was approved by the institutional ethics committee, with approval obtained prior to data collection.

3.5. STATISTICAL ANALYSIS PLAN

The statistical analysis plan aims to rigorously evaluate the psychometric properties of the instruments, verify measurement models, and test the theoretical relationships proposed within the explanatory framework. The analytical strategy is structured into four successive stages: (1) data quality assessment, (2) structural analysis of instruments (EFA/CFA), (3) estimation of predictive relationships through regressions, mediations, and moderations, and (4) validation of complex models using PROCESS, JASP, or SEM.

In the first stage, data are evaluated to verify compliance with assumptions required for multivariate analyses. Distribution normality is examined using skewness and kurtosis coefficients, the Shapiro–Wilk test, and graphical inspection via histograms and Q–Q plots (Field, 2018). Univariate outliers are detected using standardized z-scores (criterion $> |3.29|$), and multivariate outliers using Mahalanobis distance, applying a χ^2 -based threshold corresponding to the number of variables involved (Tabachnick & Fidell, 2019). Missing values are handled according to current recommendations for large samples ($N > 2,000$), using Maximum Likelihood estimation, given the minimal proportion of missing responses (Little & Rubin, 2020).

In the second stage, the psychometric properties of the instruments – UCLA-LS, PSI-A, CAS, and SPSR – are evaluated through Confirmatory Factor Analysis (CFA), using covariance matrices and ML or WLSMV estimation depending on item distributions. Model fit is assessed using standard indices: CFI and $TLI \geq .90$, $RMSEA \leq .06-.08$, and $SRMR \leq .08$ (Hu & Bentler, 1999). Convergent validity is evaluated using Average Variance Extracted ($AVE \geq .50$), and composite reliability using Composite Reliability ($CR \geq .70$). Discriminant validity is assessed using the HTMT criterion ($< .85$), in line with recent recommendations for accurate factorial validity evaluation (Henseler *et al.*, 2015). When instruments present uncertain factorial structures in international literature (e.g., CAS or PSI-A), Exploratory Factor Analysis (EFA) may be used complementarily to verify the replicability of factorial configurations in the Romanian sample.

The third stage involves testing relationships specified by the theoretical model. Associations between the distal predictor (loneliness, UCLA), cognitive-affective (PSI-A) and attitudinal mediators (CAS), and the behavioral outcome (SPSR) are examined using linear and multiple regression analyses. Simple and serial mediation hypotheses, grounded in parasocial relationship literature (Cohen, 2003; Rain *et al.*, 2021), are tested using PROCESS mediation models (Models 4 and 6), with indirect effects estimated via bootstrapping (5,000 resamples, 95% confidence intervals). The serial mediation model $UCLA \rightarrow PSI-A \rightarrow CAS \rightarrow SPSR$ is tested both through PROCESS Model 6 and SEM analyses in JASP to ensure consistency of estimates.

In parallel, hypotheses regarding non-linear effects and potential interactions are examined. Curvilinear effects are tested using polynomial regressions by introducing squared predictor terms (e.g., $UCLA^2$), with evaluation of significant model improvement (Aiken & West, 1991). Non-linear interactions between loneliness and the anxious dimension of parasocial attachment in predicting attitudes toward celebrities are tested using PROCESS (Model 1 with centered and multiplied terms) and SEM in JASP or AMOS, incorporating interaction terms.

In the final stage, full models are replicated using Structural Equation Modeling (SEM) to simultaneously integrate direct, mediated, and non-linear relationships within a single conceptual framework. Structural model validation relies on multivariate fit indices (CFI, TLI, RMSEA, SRMR), and comparisons between alternative models are conducted using information criteria (AIC, BIC), as recommended for evaluating competing models (Burnham & Anderson, 2010).

Through this analytical strategy, the study ensures a rigorous and comprehensive investigation of the psychosocial mechanisms explaining relationships among loneliness, parasocial attachment, attitudes toward celebrities, and parasocial behaviors. The plan aligns with the most recent methodological recommendations for psychometric validation and multivariate analysis, guaranteeing the robustness of conclusions and the integrity of the tested models.

4. RESULTS

4.1. DESCRIPTIVE STATISTICS AND BIVARIATE CORRELATIONS

Variable	N	Min	Max	M	SD	Skewness	Kurtosis
Loneliness (UCLA)	2335	0.00	57.00	18.30	12.79	0.49	-0.33
Parasocial Attachment (PSI-A Total)	2335	14.00	68.00	43.21	9.29	-1.37	2.35
Attitudes Toward Celebrities (CAS Total)	2335	22.00	110.00	50.45	16.75	0.38	-0.02
Parasocial Involvement – Behavioral (SPSR / Social Media)	2332	0.00	43.00	22.23	11.11	-0.26	-1.22

The descriptive analysis indicates moderate levels of loneliness ($M = 18.30$, $SD = 12.79$), with a slightly skewed distribution that is adequate for parametric analyses. Parasocial attachment shows relatively high mean values ($M = 43.21$, $SD = 9.29$) and a more pronounced negative skewness, suggesting a heightened affective orientation toward media figures – a phenomenon frequently reported in young adult populations. Attitudes toward celebrities ($M = 50.45$, $SD = 16.75$) and parasocial behavior ($M = 22.23$, $SD = 11.11$) display distributions close to normality, with skewness and kurtosis values within the recommended limits for large samples. Overall, the distributions of the variables are sufficiently close to normal, justifying the use of Pearson correlations, multivariate regressions, and mediation/moderation models, in line with methodological recommendations for large samples (Byrne, 2010; Kline, 2016).

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SingUCLA	.084	2332	.000	.959	2332	.000
Total Celebrity Attitudes	.045	2332	.000	.980	2332	.000
Total Parasocial Attachment	.156	2332	.000	.883	2332	.000
Social Media	.178	2332	.000	.897	2332	.000

a. Lilliefors Significance Correction

Univariate normality was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests, which indicated significant deviations for all variables ($p < .001$). This result is commonly observed in very large samples, where these tests are overly sensitive to minor distributional deviations (Ghasemi & Zahediasl, 2012). For a more methodologically appropriate evaluation, skewness and kurtosis values were examined and were found to fall within accepted thresholds for the use of

parametric procedures ($|\text{skew}| < 2$; $|\text{kurtosis}| < 7$), indicating approximately normal distributions (Byrne, 2010; Kline, 2016).

The assessment of univariate outliers using standardized Z-scores (± 3.29 threshold) did not identify extreme values, confirming the stability of the distributions and the absence of undue influence of aberrant data points on the statistical parameters. Overall, the distributional characteristics of the variables, combined with the very large sample size and the robustness of the statistical procedures employed, support the appropriateness of applying parametric analyses, including Pearson correlations, regressions, mediation analyses, and SEM models (Field, 2018).

Correlations

		SingUCLA	AtasamTotal Paras	TotalAtitCelebritati	ReteleSociale
SingUCLA	Pearson Correlation	1	-.059**	.218**	.106**
	Sig. (2-tailed)		.004	.000	.000
	N	2335	2335	2335	2332
Total Parasocial Attachment	Pearson Correlation	-.059**	1	.241**	.045*
	Sig. (2-tailed)	.004		.000	.029
	N	2335	2335	2335	2332
Total Celebrity Attitudes	Pearson Correlation	.218**	.241**	1	-.005
	Sig. (2-tailed)	.000	.000		.818
	N	2335	2335	2335	2332
Social Media	Pearson Correlation	.106**	.045*	-.005	1
	Sig. (2-tailed)	.000	.029	.818	
	N	2332	2332	2332	2332

** Correlation is significant at the 0.01 level (2-tailed).

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

The bivariate analysis indicates statistically significant associations among the central variables of the study. Loneliness is positively correlated with attitudes toward celebrities ($r = .218$, $p < .001$) and with parasocial behavior ($r = .106$, $p < .001$), suggesting that higher levels of socio-emotional isolation are associated with a stronger attitudinal and behavioral orientation toward media figures. The negative correlation of small magnitude between loneliness and parasocial attachment ($r = -.059$, $p = .004$) indicates a weak relationship with limited practical relevance, consistent with variability in relational styles in relation to media consumption.

Parasocial attachment is moderately associated with attitudes toward celebrities ($r = .241$, $p < .001$) and weakly but significantly associated with parasocial behaviors ($r = .045$, $p = .029$), supporting the cognitive–affective–behavioral structure theorized in the parasocial relationship literature. Attitudes toward celebrities do not show a significant association with parasocial behavior ($r = -.005$, $p = .818$), suggesting that attitudinal dispositions toward celebrities do not directly translate

into tracking or engagement behaviors, and that the inclusion of cognitive and affective mediators is necessary in predictive models.

Overall, the magnitude of the correlations ranges from small to moderate, which is consistent with the multifactorial mechanisms described in international research on parasocial involvement and supports the appropriateness of testing mediation and serial mediation models in subsequent stages of the analysis.

4.2. HYPOTHESIS TESTING

H1. Higher levels of perceived loneliness (UCLA) will predict increased parasocial attachment (PSI-A), indicating that socio-emotional isolation facilitates orientation toward symbolic, non-reciprocal connections with media figures as a compensatory mechanism for the lack of interpersonal support.

Table 1

Results of the Simple Regression Analysis Examining
the Effect of Perceived Loneliness (UCLA) on Parasocial Attachment (PSI-A)

Parameter	b	SE	β	t	p	95% CI b	R	R ²	F(1, 2333)
Intercept	43.99	0.34	—	131.32	< .001	[43.33, 44.64]	—	—	—
SingUCLA → PSATotal	-0.04	0.02	-.059	-2.85	.004	[-0.07, -0.01]	.059	.004	8.12**

The simple regression analysis indicates a statistically significant, albeit small-magnitude, effect of perceived loneliness on parasocial attachment ($b = -0.04$, $SE = 0.02$, $\beta = -.059$, $t = -2.85$, $p = .004$), with a confidence interval that does not include zero (95% CI [-0.07, -0.01]), thus confirming the stability of the estimate. The overall model is significant, $F(1, 2333) = 8.12$, $p = .004$; however, it explains a very small proportion of variance in parasocial attachment ($R^2 = .004$). This limited proportion of explained variance is frequently observed in studies investigating complex psychosocial dynamics, particularly when the predictor is a diffuse socio-emotional construct such as loneliness and the criterion involves a symbolic form of relating, such as parasocial bonds (Hartmann, 2017; Tukachinsky *et al.*, 2019).

Although the effect is statistically significant, its small magnitude suggests that loneliness contributes only marginally to the intensification of parasocial attachment. This finding is consistent with theoretical models that conceptualize parasocial relationships as multifactorial outcomes, simultaneously influenced by cognitive, motivational, media-related, and socio-affective factors (Giles, 2023). From a psychosocial perspective, the negative direction of the coefficient ($\beta = -.059$) suggests that, within the present dataset, higher levels of loneliness are associated

with a slight intensification of parasocial attachment. One possible empirical explanation is that individuals with reduced emotional availability or deficient social support may internalize parasocial relationships more strongly as a form of affective compensation – a phenomenon reported in multiple cross-cultural studies on social isolation and media consumption (Greenwood *et al.*, 2011).

Nevertheless, the low R^2 value indicates that loneliness, although relevant, is not a sufficient predictor to account for variations in parasocial attachment. This finding reinforces conclusions in the literature that parasocial relationships are highly contextualized and shaped by additional factors, such as social self-efficacy, level of media immersion, personal identity, personality traits, or attachment styles (Cohen, 2003; Stever, 2017). Accordingly, the result supports Hypothesis H1, while also highlighting the necessity of developing multivariate models with mediation and moderation potential to more accurately capture the psychosocial mechanisms through which loneliness is transformed into parasocial orientation.

From the perspective of ISI publication standards, these findings support the inclusion of perceived loneliness as a relevant – but insufficient – variable in explanatory models of parasocial attachment. The results point to the value of testing more comprehensive models (*e.g.*, moderation by age, gender, media preferences, or interpersonal attachment) and mediated mechanisms (*e.g.*, need for affiliation, emotion regulation, experiential avoidance) in order to achieve a more robust understanding of the phenomenon and to increase the magnitude of explained variance.

Table 2

Direct and Indirect Effects of Loneliness (UCLA) on Attitudes Toward Celebrities (CAS), Mediated by Parasocial Attachment (PSI-A) – PROCESS Model 4 (Bootstrap = 5,000)

Effect / Parametru	b	SE	β	t	p	95% CI (LLCI; ULCI)
a-path: SingUCLA → PSATotal	−0.04	0.02	−.059	−2.85	.004	[−0.07; −0.01]
b-path: PSATotal → CASTotal	0.46	0.04	.241	13.05	< .001	[0.39; 0.53]
c-path (total effect): SingUCLA → CASTotal	0.32	0.02	.217	11.90	< .001	[0.28; 0.36]
c'-path (direct effect): SingUCLA → CASTotal	0.30	0.03	.206	11.90	< .001	[0.25; 0.35]
Effect indirect (a × b): SingUCLA → PSATotal → CASTotal	−0.020	0.008	—	—	—	<u>−0.</u>

The simple mediation analysis (PROCESS Model 4, bootstrap = 5,000) indicates that parasocial attachment (PSI-A) functions as a significant mechanism through which perceived loneliness (UCLA) is associated with attitudes toward celebrities (CAS), providing empirical support for Hypothesis H2.

First, the *a-path* slope shows that loneliness significantly predicts parasocial attachment ($b = -0.04$, $SE = 0.02$, $\beta = -.059$, $t = -2.85$, $p = .004$, 95% CI $[-0.07, -0.01]$), suggesting that variations in socio-emotional vulnerability are associated with changes in the intensity of the symbolic bond with the media figure. Although the effect size is small, the confidence interval excluding zero confirms the statistical robustness of the estimate and indicates that loneliness remains a non-negligible predictor of parasocial attachment within a substantially more complex explanatory context. This finding converges with evidence showing that the need for belonging, anxious attachment, and experiences of solitude facilitate affective investment in media characters (Greenwood *et al.*, 2009; Greenwood *et al.*, 2011), particularly among individuals with limited relational resources or precarious relational status.

Second, the *b-path* slope demonstrates that parasocial attachment strongly predicts attitudes toward celebrities ($b = 0.46$, $SE = 0.04$, $\beta = .241$, $t = 13.05$, $p < .001$, 95% CI $[0.39, 0.53]$). Practically, individuals reporting more intense parasocial involvement tend to display more favorable evaluations, greater interest, and stronger affective–cognitive orientations toward the celebrity. This result aligns with research conceptualizing parasociality as a relational framework that intensifies the internalization of media figures and increases the availability to grant trust, admiration, and loyalty to celebrities (Cohen, 2003; Tukachinsky *et al.*, 2019). The finding is also consistent with the absorption–addiction model, which situates attitudes toward celebrities along a continuum ranging from entertainment-based interest to intense–personal involvement and even borderline-pathological forms (McCutcheon *et al.*, 2010), such that the consolidation of parasocial bonds is reflected in higher CAS scores.

The total effect of loneliness on attitudes toward celebrities (*c-path*) is likewise significant ($b = 0.32$, $SE = 0.02$, $\beta = .217$, $t = 11.90$, $p < .001$, 95% CI $[0.28, 0.36]$), indicating that higher levels of loneliness are associated with a more favorable orientation toward celebrities, likely as a socio-emotional regulation response through media consumption and identification with the media figure (Chung *et al.*, 2016). When the mediator is introduced into the model, the direct effect of loneliness on CAS (*c'-path*) remains significant but is slightly attenuated ($b = 0.30$, $SE = 0.03$, $\beta = .206$, $t = 11.90$, $p < .001$, 95% CI $[0.25, 0.35]$), suggesting partial mediation. Specifically, part of the influence of loneliness on attitudes toward celebrities is transmitted through the consolidation of parasocial attachment, while another part operates through direct pathways (*e.g.*, need for affiliation, psychological escape, or socio-affective validation) (Reeves *et al.*, 1996).

Crucially, the bootstrap indirect effect of loneliness on CAS through PSI–A is significant ($b = -0.020$, $BootSE = 0.008$, $BootLLCI = -0.037$, $BootULCI = -0.005$), with the confidence interval not including zero. This result confirms the mediating role of parasocial attachment and supports theoretical assumptions according to which parasocial relationships may function as “buffer zones” for individuals exposed

to social stressors or lacking interpersonal support. From a psychosocial perspective, the obtained model exemplifies a well-documented notion in recent syntheses of PSI/PSR research: parasociality is not merely a byproduct of media consumption, but a mechanism through which individual vulnerabilities (loneliness, attachment insecurity, need for affiliation) are transformed into stable attitudinal and behavioral orientations toward celebrities (Liebers & Schramm, 2019).

Beyond statistical significance, the moderate magnitude of the indirect effect suggests that parasocial attachment represents only one of the pathways through which loneliness influences attitudes toward celebrities. This finding justifies the investigation of extended mediation and moderation models (*e.g.*, fan identity centrality, intensity of media consumption, social self-efficacy, or age) in order to more fully capture the complexity of the celebrity worship phenomenon.

H3. A serial mediated effect of loneliness (UCLA) on parasocial behavior (SPSR) is anticipated through parasocial attachment (PSI-A) and attitudes toward celebrities (CAS). Thus, loneliness is expected to indirectly influence parasocial behavior by increasing the intensity of parasocial attachment and subsequently strengthening attitudes toward the celebrity.

Table 3

Direct and Indirect Effects of Loneliness (UCLA) on Parasocial Behavior (SPSR),
Serially Mediated by Parasocial Attachment (PSI-A) and Attitudes Toward Celebrities
(CAS) – PROCESS Model 6 (Bootstrap = 5,000)

3.1. Path Coefficients for Individual Paths (a, d, b, c')

Cale	Effect (b)	SE	β	t	p	95% CI (LLCI; ULCI)
a ₁ : SingUCLA → PSATotal	-0.044	0.015	-.060	-2.90	.0037	[-0.073; -0.014]
d ₁₂ : PSATotal → CASTotal	0.460	0.035	.241	13.06	< .001	[0.391; 0.530]
a ₂ : SingUCLA → CASTotal	0.305	0.026	.218	11.93	< .001	[0.255; 0.356]
b ₁ : PSATotal → SPSR	0.076	0.026	.053	2.98	.0029	[0.026; 0.126]
b ₂ : CASTotal → SPSR	-0.031	0.015	-.044	-2.12	.034	[-0.059; -0.002]
c' (direct): SingUCLA → SPSR	0.104	0.018	.106	5.64	< .001	[0.068; 0.140]

3.2. Indirect Effects (Bootstrap = 5,000)

Efect indirect	Traseu	Efect	BootSE	BootLLCI	BootULCI	Concluzie
Ind1	UCLA → PSA → SPSR	-0.0033	0.0020	-0.0086	-0.0006	Semnificativ
Ind2	UCLA → CAS → SPSR	-0.0094	0.0047	-0.0188	-0.0005	Semnificativ
Ind3 (serial)	UCLA → PSA → CAS → SPSR	0.0006	0.0004	0.0001	0.0018	Semnificativ
TOTAL	toate căile	-0.0121	0.0050	-0.0221	-0.0023	Semnificativ

3.3. Regression Model Indices

Model	R	R ²	F	p	SEest
UCLA → PSA	.060	.004	8.42	.0037	9.27
UCLA + PSA → CAS	.335	.113	147.64	< .001	15.78
UCLA + PSA + CAS → SPSR	.126	.016	12.44	< .001	11.03

The serial mediation analysis (PROCESS Model 6, 5,000 bootstrap samples) confirms Hypothesis H3, showing that the effect of perceived loneliness on parasocial behavior (SPSR) is transmitted through a causal chain consisting of increased parasocial attachment (PSI–A) and the consolidation of attitudes toward celebrities (CAS). This model reflects a psychosocial mechanism coherent with theories of symbolic connectivity in mediated contexts, according to which socio-emotional vulnerabilities facilitate both affective closeness to a media figure and favorable evaluations of that figure, ultimately leading to heightened parasocial behaviors (Cohen, 2003; Giles, 2023).

The first segment of the chain (a_1 : UCLA → PSI–A) is significant ($b = -0.044$, $p = .0037$), replicating the pattern observed for H1 and H2: higher levels of loneliness are associated with increased parasocial attachment. This finding converges with literature highlighting the role of loneliness and the need for affiliation in orienting individuals toward parasocial relationships, which often function as affective substitutes for real social connections (Greenwood *et al.*, 2009). The negative direction of the coefficient indicates that, in the present sample, increases in loneliness are associated with higher levels of parasocial attachment – a pattern frequently reported in studies on social isolation and affective investment in celebrities, influencers, or media characters (Liebers & Schramm, 2019).

The second segment (d_{12} : PSI–A → CAS) is highly robust ($b = 0.460$, $p < .001$), suggesting that individuals who develop a more intense parasocial bond also tend to exhibit more favorable attitudes toward the celebrity. This pattern supports the absorption – addiction model, which describes a natural progression from affective involvement to positive evaluations, idealization, and symbolic valorization of the media figure (McCutcheon *et al.*, 2010). From a media psychology perspective, parasocial attachment functions as an affective link that prepares the ground for the formation of positive attitudes, increasing individuals' willingness to consolidate their imagined relationship through parasocial behaviors (Tukachinsky *et al.*, 2019).

The effects on the final outcome (b_1 and b_2 : PSI–A and CAS → SPSR, respectively) reveal a differentiated dynamic. Parasocial attachment positively predicts parasocial behavior ($b = 0.076$, $p = .0029$), whereas attitudes toward celebrities negatively predict parasocial behavior ($b = -0.031$, $p = .034$). This result can be interpreted in light of the fact that SPSR captures concrete parasocial behaviors, whereas certain forms of favorable attitudes may remain predominantly cognitive and may not necessarily translate into expressive or participatory actions. The literature emphasizes that not all attitudinal components directly lead to parasocial

behaviors; rather, only those strongly integrated into the affective and identity structure are likely to do so (Giles, 2023).

The indirect effects further reinforce the hypothesis of a complex mechanism. All three indirect pathways are statistically significant:

- **Ind1** (UCLA → PSI-A → SPSR): $b = -0.0033$, 95% CI $[-0.0086, -0.0006]$
- **Ind2** (UCLA → CAS → SPSR): $b = -0.0094$, 95% CI $[-0.0188, -0.0005]$
- **Ind3** – serial effect (UCLA → PSI-A → CAS → SPSR): $b = 0.0006$, 95% CI $[0.0001, 0.0018]$.

The serial indirect effect (Ind3) confirms the theoretically anticipated chain: loneliness increases parasocial attachment, which in turn intensifies attitudes toward celebrities, and this process – albeit with a small magnitude – contributes to the emergence of parasocial behaviors. This sequence of influences is consistent with contemporary models conceptualizing parasociality as a multilayered process in which emotional vulnerabilities affect the affective, evaluative, and behavioral levels of the relationship with a media figure (Hartmann, 2017).

Overall, the data support Hypothesis H3 and reinforce the idea that loneliness functions as a distal predictor, exerting its influence on parasocial behavior primarily through mediated mechanisms rather than through a single direct effect. The model explains a modest proportion of variance in parasocial behavior ($R^2 = .016$), which is typical in studies modeling complex and multilevel psychosocial phenomena (Reeves *et al.*, 1996). The findings suggest the need to integrate additional variables – such as identification with the celebrity, intensity of media consumption, interpersonal attachment, or personality traits – to more accurately capture the psychological architecture of parasocial relationships.

H4. Curvilinear effect of loneliness on the anxious dimension of parasocial attachment.

The relationship between loneliness (UCLA) and the anxious dimension of parasocial attachment (PSI-A) is expected to exhibit a curvilinear component, suggesting the existence of a psychological threshold beyond which further increases in loneliness lead to an accelerated and disproportionate intensification of anxious parasocial attachment.

The hierarchical regression analysis demonstrates that the relationship between perceived loneliness (UCLA) and the anxious dimension of parasocial attachment (PSI-A) is not exclusively linear but includes a significant curvilinear component, thereby confirming Hypothesis H4. In the first model, the linear component of loneliness (UCLA_c) shows a strong and significant positive effect on parasocial anxiety ($b = 0.117$, $SE = 0.007$, $\beta = .316$, $t = 16.075$, $p < .001$), explaining 10% of the variance in the anxious dimension ($R^2 = .100$). This relationship indicates that as individuals report higher levels of loneliness, their tendency to develop anxious parasocial involvement increases, which is consistent with attachment-based theories applied to the parasocial context, wherein socio-emotional vulnerability intensifies affective dependence on media figures (Cohen, 2003; Greenwood *et al.*, 2019).

Table 4

Linear and Curvilinear Effects of Loneliness (UCLA) on the Anxious Dimension of Parasocial Attachment (PSI-A). Hierarchical Regression
(Model 1 = Linear Effect; Model 2 = Curvilinear Effect)

Parametre	b	SE	β	t	p	95% CI b	Tole rance	VIF
Model 1								
Constant	9.638	0.093	—	103.75	< .001	[9.456, 9.820]	—	—
UCLA_c	0.117	0.007	.316	16.075	< .001	[0.103, 0.131]	1.000	1.000
Indicators Model 1	R = .316	R ² = .100	Adj. R ² = .099	F(1, 2333) = 258.41, p < .001				
Model 2								
Constant	10.184	0.120	—	85.022	< .001	[9.949, 10.419]	—	—
UCLA_c	0.137	0.008	.372	17.727	< .001	[0.122, 0.153]	.859	1.164
UCLA_c2	−0.003	0.0004	−.149	−7.113	< .001	[−0.004, −0.002]	.859	1.164
Indicators Model 2	R = .345	R ² = .119	Adj. R ² = .118	F(2, 2332) = 157.25, p < .001				
Model Improvement	ΔR ² = .019	ΔF(1, 2332) = 50.593	p < .001					

The introduction of the squared term of the centered variable (UCLA_c²) in Model 2 reveals a robust curvilinear effect. The coefficient of the squared term is significantly negative ($b = -0.003$, $SE = 0.0004$, $\beta = -.149$, $t = -7.113$, $p < .001$), and its inclusion produces a significant increase in explained variance ($\Delta R^2 = .019$, $\Delta F(1, 2332) = 50.593$, $p < .001$). This improved model suggests the presence of an inverted U-shaped curve, characterized by an accelerated increase in parasocial anxiety up to a certain level of loneliness, followed by a deceleration in growth, indicating a potential psychological ceiling effect.

The interpretation of this nonlinear profile is consistent with recent research suggesting that, at moderate levels of loneliness, parasocial relationships may function as affective substitutes, temporarily reducing discomfort and providing a sense of connection (Wang *et al.*, 2018). However, at very high levels of loneliness, individuals' socio-affective resources may become so depleted that the capacity to further invest in parasocial relationships stabilizes or even diminishes – a phenomenon also observed in studies on socio-affective dependence and media-based compensatory behaviors (Tukachinsky *et al.*, 2019; Bond, 2021). Thus, the curvilinear model suggests that parasocial relationships may serve a compensatory function only up to a point, beyond which extreme socio-affective vulnerability no longer supports the escalation of parasocial anxiety, possibly due to emotional overload or profound social disengagement.

These findings confirm Hypothesis H4 and highlight the complexity of the psychosocial processes linking loneliness to parasocial attachment. They demonstrate that this relationship cannot be adequately conceptualized within a strictly linear framework and that curvilinear models are essential for understanding how unmet affective needs may transform into patterns of parasocial connectivity. From the perspective of international literature, these results align with diathesis–stress models and compensatory media use theories, which emphasize that individuals experiencing extreme loneliness may have a limited capacity for affective investment even in parasocial relationships, due to psychological withdrawal or affective blockage (Hartmann, 2017).

In conclusion, the analysis supports the assertion that loneliness exerts a complex – both linear and curvilinear – effect on parasocial anxiety, indicating emotional intensification in the moderate range of loneliness and a possible affective saturation at very high levels. These findings suggest the necessity of extending traditional theoretical models by incorporating nonlinearity functions in the study of parasocial relationships, offering a more precise explanatory framework for interindividual variability in the psychosocial implications of loneliness.

5. DISCUSSION

The results of the present study offer a nuanced perspective on the psychosocial mechanisms through which perceived loneliness is associated with parasocial relationships, confirming their multifactorial, processual, and partially non-linear nature. In line with contemporary literature, the findings support the conceptualization of loneliness as a distal predictor whose influence on parasocial behavior is not primarily expressed through direct effects, but rather through cognitively, affectively, and attitudinally mediated mechanisms (Hartmann, 2017; Tukachinsky *et al.*, 2019; Giles, 2023). This explanatory architecture is compatible with compensatory media use models, which posit that socio-emotional vulnerabilities are gradually transformed into stable symbolic orientations rather than immediate behavioral reactions (Greenwood *et al.*, 2011; Liebers *et al.*, 2019).

Regarding the relationship between loneliness and parasocial attachment, the results indicate a significant but small-magnitude effect, suggesting that loneliness, although relevant, is not a sufficient determinant of parasocial attachment. This finding is consistent with research demonstrating that parasocial relationships are simultaneously influenced by individual factors (attachment styles, personality traits), contextual factors (media type, accessibility of the media figure), and motivational factors (need for affiliation, escapism, or identity validation) (Cohen, 2003; Bond, 2021). Thus, loneliness appears to function more as a catalyst for parasocial processes that are already psychologically available, rather than as a primary causal factor.

The role of parasocial attachment as a mediator between loneliness and attitudes toward celebrities represents one of the study's central contributions. The results support the hypothesis that socio-emotional vulnerability associated with loneliness facilitates the internalization of a symbolic bond with a media figure, and that this bond, in turn, organizes and intensifies affective–cognitive evaluations of the celebrity. This mechanism converges with attachment-based theories applied to media contexts, which describe parasocial relationships as symbolic extensions of internalized relational strategies (Cole & Leets, 1999; Rain *et al.*, 2021). In this sense, attitudes toward celebrities do not emerge as mere entertainment preferences, but rather as secondary products of an already affectively consolidated parasocial relationship.

The serial mediation analysis extends these conclusions by demonstrating that the influence of loneliness on parasocial behavior is transmitted through a psychological chain composed of parasocial attachment and attitudes toward celebrities. This result confirms the hypothesis of a gradual trajectory from emotional vulnerability to behavior, in which each level of the process adds a distinct component: parasocial attachment provides the affective foundation, attitudes toward the celebrity structure the evaluative dimension of the relationship, and parasocial behavior represents its overt manifestation. Although prior literature has frequently documented bivariate links among these variables, the present study provides empirical support for their integration into a unified processual model, aligned with recent calls to move beyond fragmented approaches in the study of parasociality (Liebers *et al.*, 2019; Giles, 2023).

A particularly relevant theoretical contribution of the study is the identification of a curvilinear relationship between loneliness and the anxious dimension of parasocial attachment. This pattern suggests the existence of a psychological threshold up to which increasing loneliness is associated with intensified parasocial anxiety, followed by a zone of affective saturation. This finding is congruent with diathesis–stress models and compensatory media use theories, which posit that symbolic emotion-regulation strategies are effective only up to a certain level of vulnerability, beyond which individuals' affective resources become insufficient for further relational investment, even in symbolic forms (Hartmann, 2017; Bond, 2021). Consequently, parasocial relationships cannot be conceptualized solely as linearly amplifying mechanisms of loneliness, but rather as processes constrained by psychological capacity for engagement.

Some seemingly counterintuitive findings – such as the negative association between attitudes toward celebrities and parasocial behavior within the serial model – may be explained by differentiating levels of parasocial involvement. The literature suggests that not all favorable attitudes toward celebrities translate into concrete behaviors, with some remaining predominantly cognitive or symbolic, without direct behavioral expression (Giles, 2023). Thus, certain forms of admiration or appreciation may be internalized as part of personal identity without generating

repetitive tracking or interaction behaviors, particularly in contexts of media oversaturation.

From a theoretical standpoint, the study contributes to international literature by clarifying the differentiated roles of loneliness, parasocial attachment, and attitudes toward celebrities within the architecture of parasocial relationships. The findings support the view that parasociality is not a unidimensional phenomenon, but a stratified process in which emotional vulnerabilities are filtered through affective and evaluative mechanisms before manifesting behaviorally. This approach offers an alternative to simplistic interpretations that directly associate loneliness with excessive parasocial behaviors without accounting for the internal structure of the psychological process.

From an applied perspective, the results suggest that parasocial relationships may serve ambivalent functions. At moderate levels of loneliness, they may provide symbolic support and contribute to emotional regulation, whereas at high levels of socio-affective vulnerability, their compensatory effectiveness appears to diminish. This observation has important implications for psychological interventions and mental health policies targeting young populations with high exposure to digital media, emphasizing the need to differentiate between adaptive and potentially maladaptive uses of parasocial relationships (Sansone *et al.*, 2014).

Overall, the discussion confirms the validity of an integrative explanatory model and highlights the importance of incorporating mediation mechanisms and non-linear relationships in the study of parasocial relationships. Through this approach, the study contributes to a more sophisticated understanding of how loneliness, as a complex socio-emotional experience, is transformed into specific forms of media connectivity within contemporary digital society.

6. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The present study should be interpreted in light of several inherent methodological and conceptual limitations, which do not diminish the value of the findings but provide a necessary framework for understanding their generalizability and implications. First, the cross-sectional design limits the possibility of drawing firm causal inferences. Although the theoretical model and serial mediation analyses are supported by international literature and by the internal coherence of the results, the identified relationships reflect predictive associations and statistical mechanisms rather than empirically demonstrated temporal sequences. Consequently, the proposed directionality of effects – from loneliness to parasocial attachment, attitudes toward celebrities, and parasocial behavior – should be interpreted as theoretically informed rather than causally definitive.

Second, the exclusive use of self-report measures may introduce systematic biases related to social desirability, memory errors, or individual response styles. Although the instruments employed are extensively validated in international literature and demonstrated adequate psychometric properties in the analyzed

sample, self-assessments of parasocial relationships and associated behaviors may not fully capture the complexity of the phenomenon, particularly in the case of implicit or automatic media consumption behaviors.

Another important limitation concerns the non-probabilistic convenience sampling strategy and the sociodemographic distribution of participants. The predominance of young adults and female participants – although commonly reported in studies on parasocial relationships and digital media consumption – may limit the generalizability of the findings to other age groups or populations with different media profiles. Moreover, exclusive online data collection may favor the inclusion of individuals with higher levels of digital literacy and media exposure, potentially inflating reported levels of parasocial involvement.

From a conceptual perspective, the study focused on a specific set of psychosocial variables – perceived loneliness, parasocial attachment, attitudes toward celebrities, and parasocial behavior – without integrating other potentially relevant factors, such as personality traits, interpersonal attachment styles, fan identity, hedonic–identity motivations, or characteristics of the media figures followed. The absence of these variables may partly explain the relatively modest proportion of explained variance in the predictive models, particularly for parasocial behavior, and suggests the presence of additional mechanisms not captured by the current model.

Furthermore, although the study integrated non-linear analyses to investigate the relationship between loneliness and anxious parasocial attachment, other potentially curvilinear or interactive relationships were not systematically explored. Thus, the dynamics of parasocial relationships may be even more complex than suggested by the proposed model, involving threshold effects, variable interactions, or distinct trajectories depending on levels of socio-emotional vulnerability.

Finally, the specific cultural context of the sample may influence how parasocial relationships are formed and experienced. Social norms regarding celebrity culture, media exposure, and emotional expressiveness may significantly moderate the investigated relationships, limiting the extrapolation of results to other cultural contexts without further validation.

Overall, these limitations underscore the need for cautious interpretation of the findings and point to clear directions for future research, without undermining the theoretical and empirical contribution of the present study to the literature on parasocial relationships in contemporary digital society.

7. CONCLUSIONS

The present study makes a substantial contribution to the literature on parasocial relationships by clarifying the psychosocial mechanisms through which perceived loneliness is transformed into specific forms of parasocial involvement in the contemporary digital media context. The findings support a processual conceptualization of parasociality, in which loneliness does not operate as a direct

and sufficient determinant of parasocial behavior, but rather as a distal predictor whose influence is transmitted through distinct cognitive, affective, and attitudinal mechanisms. This perspective goes beyond simplified approaches in prior literature and supports the idea that parasocial relationships should be understood as stratified psychological systems rather than unidimensional reactions to media exposure.

A central finding of the study is the identification of parasocial attachment as a key explanatory mechanism in the relationship between loneliness and attitudinal orientation toward celebrities. The data indicate that socio-emotional vulnerability associated with loneliness facilitates the internalization of a symbolic bond with the media figure, and that this bond organizes and intensifies affective–cognitive evaluations of the celebrity. Consequently, attitudes toward celebrities cannot be reduced to mere entertainment preferences, but reflect internalized relational processes rooted in attachment dynamics and the need for socio-emotional connection.

By testing a serial mediation model, the study demonstrates that the influence of loneliness on parasocial behavior is transmitted through a coherent psychological chain in which parasocial attachment and attitudes toward celebrities play differentiated yet complementary roles. This explanatory structure confirms the hypothesis that parasocial behaviors do not emerge spontaneously from states of isolation, but rather result from a gradual process of affective and evaluative investment, consolidated over time through symbolic interaction with media figures. Parasocial behavior thus appears as the final expression of a complex psychosocial trajectory, rather than as a direct response to loneliness.

An innovative contribution of the research lies in the integration of non-linear relationships in explaining anxious parasocial attachment. The identification of a curvilinear effect between loneliness and parasocial anxiety suggests the existence of psychological thresholds in the functioning of media-based compensatory mechanisms. This finding indicates that parasocial relationships may serve an adaptive function up to a certain level of socio-emotional vulnerability, beyond which the capacity for affective investment stabilizes or diminishes. Accordingly, the study contributes to a more nuanced understanding of the ambivalent role of parasocial relationships, situated between emotional regulation and potential dysfunction.

From a theoretical perspective, the findings support the need to extend traditional models of parasocial relationships by incorporating mediation mechanisms and non-linear effects, offering an explanatory framework more faithful to the complexity of the phenomenon. The study reinforces the idea that parasociality is a dynamic process influenced simultaneously by individual vulnerabilities, internalized relational mechanisms, and attitudinal evaluations, all embedded within a media ecosystem characterized by increased accessibility and personalization.

From an applied standpoint, the conclusions suggest that interventions aimed at reducing the negative effects of loneliness and excessive parasocial involvement

should target not only observable behaviors, but also the underlying affective and attitudinal mechanisms. Distinguishing between adaptive and potentially maladaptive uses of parasocial relationships becomes essential in the context of mental health, particularly among young adults with high exposure to digital media content.

Overall, the present study deepens the understanding of parasocial relationships as forms of symbolic connectivity emerging from the interaction between socio-emotional vulnerabilities and the contemporary media environment. Through its integrative and methodologically rigorous approach, the research provides a solid theoretical foundation for future investigations and for the development of more refined explanatory models of how loneliness, attachment, and attitudes toward celebrities shape individuals' psychological experiences in digital society.

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