



ISSN: 2617-6548

URL: www.ijirss.com



The test of time: A longitudinal study of parasocial relationships with social media influencers

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Abstract

This study examines the long-term sustainability of parasocial relationships with social media influencers and their influence on brand attitudes and purchase intentions. While prior research has explored the immediate effects of influencer marketing, little is known about how these relationships evolve over time. Grounded in social exchange theory, this longitudinal panel study tracks changes in parasocial relationships over a one-year period. Data were collected from 223 participants in Pakistan through an e-commerce platform. Multiple regression analyses and paired sample t-tests were conducted to assess shifts in source attractiveness—comprising physical attractiveness, likability, and perceived similarity—and their impact on consumer attitudes and behavior. The results reveal a significant decline in the strength of parasocial relationships over time, driven primarily by decreasing likability and perceived similarity, while physical attractiveness remained relatively stable. This decline corresponded with a reduced positive influence on brand attitudes and purchase intentions. The weakening of parasocial relationships suggests that influencer marketing effects may not be as enduring as previously assumed. These findings highlight the need for brands to adopt strategies that sustain audience engagement beyond initial attraction. Brands must recognize that an influencer's appeal is not static and that long-term brand advocacy requires active relationship maintenance. Additionally, brands should develop progressive endorsement strategies, where influencers are gradually integrated into different stages of the consumer journey, rather than being used for one-off promotions.

Keywords: Digital Marketing, Influencer Marketing, Influencers, Longitudinal Study, Parasocial Relationships, Social Exchange Theory.

DOI: 10.53894/ijirss.v8i2.5320

Funding: This study received no specific financial support.

History: Received: 27 January 2025 / **Revised:** 28 February 2025 / **Accepted:** 6 March 2025 / **Published:** 12 March 2025

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Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Publisher: Innovative Research Publishing

1. Introduction

In today's digital age, social media influencers have become powerful figures, cultivating large followings and creating what are known as parasocial relationships—one-sided bonds where followers feel a deep connection with the influencer. These relationships have significant implications in marketing, particularly in shaping consumer attitudes and behaviors. However, a critical question arises: Do these parasocial relationships sustain their impact over time, or do they fade as quickly as they form?

The concept of parasocial relationships, first introduced by Horton and Richard Wohl [1], has evolved drastically with the advent of digital media [2]. Social media platforms have amplified the reach and influence of individuals who can amass millions of followers [3, 4]. These influencers often share personal aspects of their lives, creating an illusion of intimacy and trust with their audience [5]. Marketers use this perceived closeness to promote products and brands, leveraging the influencers' ability to influence their followers' purchasing decisions [6, 7].

Many studies have explored the dynamics of parasocial relationships in the context of social media. For instance, Lee and Watkins [8] found that the perceived authenticity of influencers significantly affects followers' trust and loyalty, which in turn influences their purchasing decisions. Similarly, Sokolova and Kefi [9] demonstrated that influencer endorsements on Instagram positively impact purchase intentions. De Veirman, et al. [10] investigated how the number of followers an influencer has can affect perceived popularity and trustworthiness. Their research revealed that influencers with a high follower count are perceived as more trustworthy and credible, which strengthens parasocial relationships. These findings highlight the powerful role of influencers in shaping consumer behavior through parasocial interactions.

Although previous research has extensively examined the immediate effects of parasocial relationships on consumer behavior, there is a notable gap in understanding their long-term sustainability. Most studies have focused on immediate impact and do not address whether these effects endure over extended periods. Addressing this gap, the present study investigates whether the strength of parasocial relationships and their impact on consumer behavior are maintained.

The limitations of existing research are particularly significant given the dynamic nature of social media and the evolving relationship between influencers and their audiences. While it is generally assumed that the influence of social media personalities reduces over time as the novelty wears off Gomes, et al. [11], this assumption has not been rigorously tested. This study aims to fill this gap by investigating the longevity of parasocial relationships and their sustained impact on consumer behavior, specifically focusing on attitudes towards endorsed brands and purchase intentions one year later, assessing if the relationship with the same influencer remains strong. Additionally, the study examines how dimensions of source attractiveness (physical attractiveness, likability, and similarity) contribute to the maintenance of these relationships.

By addressing this gap, the present research contributes to a deeper understanding of the durability of parasocial relationships in the context of social media marketing. This study's findings will provide valuable insights for marketers and brands seeking to develop long-term strategies involving influencer partnerships. The implications of this research extend beyond the academic literature, offering practical guidance for leveraging influencer relationships to maintain consumer engagement and loyalty over time.

2. Literature Review

2.1. Parasocial Relationships

Parasocial relationships are one-sided bonds that people develop with mediated personalities. These connections give the impression of real and close interpersonal relationships, with elements of friendship and understanding [12]. Recently, the concept of parasocial relationships has grown to include online environments, not just traditional media like TV and radio [13, 14]. Social media platforms make it easier for influencers and their fans to interact and form strong connections [15]. Influencers can instantly engage with their audience and share their everyday lives from a personal perspective. As a result, even though followers don't know influencers personally, they often feel a strong sense of intimacy and psychological connection with them [16].

The concept of parasocial relationships has been widely studied in academic research, with a recent shift in focus from traditional celebrities to social media influencers [17]. To date, many researchers have examined parasocial relationships using the source characteristics model. These studies have found that an influencer's attractiveness and credibility are key predictors of parasocial relationships, indicating that influencers who are perceived as attractive and trustworthy can create strong illusionary bonds with their fans [9, 18, 19]. Another significant area of research focuses on the impacts of parasocial relationships on influencer- and brand-related outcomes. Prior studies suggest that the relationship between consumers and endorsers is a strong indicator of the effectiveness of endorsements and the influencer's ability to persuade consumers [20-22].

Synthesizing the literature reviewed, it is clear that research on social media influencers has provided substantial evidence that influencer characteristics play a critical role in developing parasocial relationships, which benefit both the influencers and the brands they endorse. However, a notable gap in the literature exists regarding the long-term sustainability of these parasocial relationships and their impact on consumer behavior over extended periods. Most existing studies focus on immediate or short-term effects, leaving a significant question about whether these relationships and their influences endure or diminish over time.

2.2. Social Exchange Theory

Social Exchange Theory provides a useful framework for understanding influencer marketing. This theory suggests that human behavior can be explained by the "exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two people" [23]. When someone invests resources in a relationship, they expect the other person to

respond in a rewarding way [24]. This mutual exchange of resources is reinforced by each person's behavior [25]. In influencer marketing, this theory can be seen in action when influencers share content such as videos, images, and stories that their followers find useful, enjoyable, and appealing. Followers then show their appreciation and satisfaction by liking, sharing, commenting, and subscribing, which act as rewards for the influencer's efforts [26].

The dynamics of social exchange are guided by the principle of reciprocity [27]. According to the reciprocity norm, social exchanges are driven by rewards, and the desirability of the exchange is based on the value of these rewards [28]. This exchange of resources continues until a balance is achieved, where both parties feel equally rewarded [29]. In the context of influencer-follower interactions, influencers tend to share content that they believe will garner more views and likes Djafarova and Trofimenko [30] reflecting the value of the reward. The number of followers and their level of engagement are also influenced by the perceived value of the influencer's content. The ongoing mutual reinforcement between influencers and their followers helps maintain this balance of exchange.

Moreover, the exchange of resources fosters psychological connections and motivates individuals to sustain relationships [31]. Reciprocity also influences the stability of relationships [32]. If exchanges between partners remain unbalanced, the relationship becomes unstable. According to the reciprocity principle, this study suggests that trust and loyalty are outcomes of successful social exchanges between influencers and followers. Influencers can gain interpersonal trust and loyalty from their followers through consistent exchange activities. When influencers meet the expectations of their followers and are rewarded with views, likes, and comments, a stronger bond in the relationship is formed.

Over time, the strength and durability of these relationships depend on the stability of these exchanges. If influencers continue to meet or exceed followers' expectations by maintaining consistent interactions, followers are likely to feel valued and remain engaged. This mutual reinforcement can build a stronger emotional bond, contributing to the relationship's longevity. Conversely, if the perceived value of the interactions decreases, the relationship may weaken, highlighting the importance of ongoing, balanced exchanges. This study seeks to explore how these reciprocal exchanges influence the strength of parasocial relationships over a year, focusing on whether sustained interactions lead to long-term relationship stability.

3. Hypotheses Development

The source attractiveness model suggests that an endorser's attractiveness enhances the effectiveness of an endorsed advertisement because consumers form positive stereotypes about attractive individuals Frank and Mitsumoto [33] which they then associate with the advertised product and brand. The model identifies various dimensions of an endorser's attractiveness that may appeal to consumers [34]. These dimensions include physical attractiveness, likability (affection for the endorser), similarity (perceived resemblance between the endorser and the consumer), and familiarity (the consumer's knowledge of the endorser). Some studies have added other dimensions to the attractiveness model; however, for this study, we are considering the three basic and most commonly applied dimensions of source attractiveness: physical attractiveness, likeability, and similarity.

The physical attractiveness of a communicator, as seen by the receiver, significantly impacts the receiver's initial judgment and subsequent agreement with the communicator's opinions [35-38]. Attractive individuals are often perceived as kind, engaging, sociable, strong, humble, and responsive [39]. They are also viewed as motivated, decisive, knowledgeable, and logical [40]. These positive perceptions of physically attractive communicators increase the likelihood of strengthening parasocial relationships. This positive perception enhances the initial connection between followers and influencers, making physical attractiveness a crucial element in developing strong parasocial relationships [41]

H_{1A}: The physical attractiveness of a social media influencer affects the strength of parasocial relationships with their followers.

Over time, the perception of an influencer's physical attractiveness may change due to various factors such as changes in appearance, evolving standards of beauty, or increased familiarity leading to habituation. Habituation Theory suggests that repeated exposure to the same stimulus can reduce its impact, indicating that followers may become accustomed to the influencer's appearance, and the initial appeal may diminish [42].

H_{1B}: The physical attractiveness of a social media influencer changes after one year from the initial measurement.

According to Social Exchange, relationships are maintained through continuous, mutually beneficial exchanges [23]. Over time, followers may place greater value on the influencer's ability to provide meaningful interactions and valuable content, reducing the relative importance of physical attractiveness in sustaining the relationship. As parasocial relationships evolve, the initial influence of physical attractiveness may decrease while other factors, such as content quality, authenticity, and engagement, become more important.

H_{1C}: The impact of physical attractiveness on the strength of parasocial relationships with their followers changes after one year from the initial measurement.

Likability, defined as the positive affection or attraction towards someone due to their friendliness, warmth, and approachability, is critical in forming strong parasocial relationships. Theories such as the Interpersonal Attraction Theory suggest that likable individuals are more effective in fostering connections because they evoke positive emotional responses and a sense of comfort in their audience [43]. In the context of social media influencers, likability enhances engagement, as followers are naturally drawn to influencers they perceive as friendly and relatable [44]. This engagement is key to developing strong parasocial relationships, as it encourages repeated interactions and deeper emotional bonds.

H_{2A}: The likability of a social media influencer affects the strength of parasocial relationships with their followers.

Perceptions of an influencer's likability can evolve over time due to changes in the influencer's behavior, content, or public image. As influencers continue to explore their online presence, shifts in their communication style, the relevance of their content, and their interactions with followers can significantly impact how likable they are perceived [45]. The Social Comparison Theory suggests that followers continuously evaluate influencers against evolving personal and social standards, which can alter their likability ratings [46]. Additionally, changes in societal trends and cultural contexts can also influence these perceptions, making it likely that likability will change over an extended period.

H_{2B}: The likability of a social media influencer changes after one year from the initial measurement.

While likability is a strong driver of initial parasocial relationships, its influence may fluctuate over time as other factors become more significant in sustaining these relationships. According to the Elaboration Likelihood Model, the initial attraction to an influencer might be based on peripheral cues such as likability [47]. However, as followers engage more deeply with the influencer, central cues such as the quality of content and perceived authenticity may become more critical. Over time, the relative impact of likability may decrease as followers seek more substantive and meaningful interactions, shifting the dynamics of how parasocial relationships are maintained.

H_{2C}: The impact of likability on the strength of parasocial relationships with their followers changes after one year from the initial measurement.

Perceived similarity, or the commonalities that followers feel they share with an influencer, plays a significant role in the strength of parasocial relationships. The Similarity-Attraction Theory suggests that people are more inclined to form relationships with others who they perceive to be similar to themselves [48]. In the context of social media influencers, followers who see themselves reflected in the influencer's lifestyle, values, and interests are more likely to feel a strong connection [49]. This sense of identification and relatability enhances emotional bonds and engagement, making followers feel more connected and understood, which strengthens parasocial relationships [50].

H_{3A}: Similarity between a social media influencer and their followers affects the strength of parasocial relationships.

Perceptions of similarity are not static and can change over time due to various factors [51]. As both influencers and followers undergo personal growth and changes in interests, these dynamics can alter the perceived commonalities between them. The Dynamic Social Impact Theory posits that social influence is a continuous process influenced by ongoing interactions and changing circumstances [52]. Over the course of a year, followers might perceive changes in their similarity to an influencer as new content is shared, new interests are developed, or personal circumstances evolve, leading to shifts in how similar they feel to the influencer.

H_{3B}: The similarity between a social media influencer and their followers changes after one year from the initial measurement.

According to the Social Penetration Theory, relationships develop from superficial to more intimate levels through gradual self-disclosure and deeper interactions [53]. After one year, followers may begin to place greater emphasis on other factors such as the influencer's authenticity, engagement, and content quality. As the relationship matures, these deeper aspects may become more crucial in maintaining the strength of the parasocial relationship, potentially reducing the relative importance of similarity.

H_{3C}: The impact of perceived similarity on the strength of parasocial relationships with their followers changes after one year from the initial measurement.

Parasocial relationships often lead followers to perceive influencers as trusted friends or advisors, significantly impacting their attitudes toward the products and brands endorsed by these influencers [54]. Research indicates that strong parasocial relationships enhance the perceived credibility and attractiveness of endorsed brands because followers transfer their trust and admiration for the influencer to the brand [9]. When an influencer endorses a brand, followers who have a strong parasocial relationship with the influencer are more likely to adopt positive attitudes towards that brand due to the emotional connection they feel with the influencer.

H_{4A}: Parasocial relationships with social media influencers affect followers' attitudes towards the brands endorsed by the influencer.

The strength of parasocial relationships can change over time due to various factors such as changes in the influencer's behavior, content, or public image, as well as changes in the follower's personal circumstances and interests. The Dynamic Social Impact Theory suggests that social influence is a continuous process influenced by ongoing interactions and changing circumstances [52]. Over the course of a year, followers may experience shifts in how they relate to and perceive the influencer, leading to changes in the strength of their parasocial relationships.

H_{4B}: The strength of parasocial relationships with social media influencers changes after one year from the initial measurement.

While parasocial relationships play a significant role in shaping followers' attitudes toward endorsed brands, the strength of this influence may change over time. As followers' relationships with influencers evolve, the initial emotional connection may be supplemented by their direct experiences with the brands. The Elaboration Likelihood Model suggests that initial attitudes might be formed based on peripheral cues such as the influencer's endorsement [47]. However, as followers engage more deeply with the brand and gather more information, their attitudes may become more influenced by central cues such as product quality and personal relevance. This shift indicates that the impact of parasocial relationships on brand attitudes is likely to evolve over time, reflecting the changing dynamics of the follower-influencer relationship.

H_{4C}: The impact of parasocial relationships on followers' attitudes towards the brands endorsed by the influencer changes after one year from the initial measurement.

Attitudes toward brands play a critical role in shaping consumers' purchase intentions. According to the Theory of Reasoned Action, attitudes toward a behavior (in this case, purchasing a brand) are significant predictors of the intention to

engage in that behavior [55]. When followers develop positive attitudes towards a brand endorsed by an influencer, these attitudes are likely to translate into higher purchase intentions. Thus, a favorable attitude towards an endorsed brand significantly impacts the likelihood of followers' intention to purchase that brand.

H_{5A}: Attitudes towards endorsed brands affect followers' purchase intentions towards those brands.

Attitudes toward brands are dynamic and can evolve over time based on new information, personal experiences, and changes in the marketing environment [56]. The Theory of Planned Behavior suggests that attitudes are influenced by ongoing experiences and external factors [57]. Over a year, followers may interact with the endorsed brands in various contexts, receive additional information, or be influenced by competing messages and products. These ongoing experiences can lead to changes in their attitudes towards the brands, either reinforcing or diminishing their initial perceptions.

H_{5B}: Followers' attitudes towards endorsed brands change after one year from the initial measurement.

The influence of attitudes towards brands on purchase intentions can also change over time. Initially, positive attitudes driven by influencer endorsements may strongly predict purchase intentions. However, as followers gain more direct experience with the brands and are exposed to other marketing influences, the relative impact of these attitudes on purchase intentions may shift. The Elaboration Likelihood Model posits that attitudes formed through peripheral routes (e.g., influencer endorsements) can be less stable and more susceptible to change compared to attitudes formed through central routes (e.g., personal experiences with the product) [47]. As followers' interactions with the brand deepen, their purchase intentions may increasingly reflect their direct experiences and the intrinsic qualities of the product, potentially altering the initial impact of their attitudes towards the endorsed brand.

H_{5C}: The impact of attitudes towards endorsed brands on followers' purchase intentions towards those brands changes after one year from the initial measurement.

H₆: Followers' purchase intentions towards brands endorsed by social media influencers change after one year from the initial measurement.

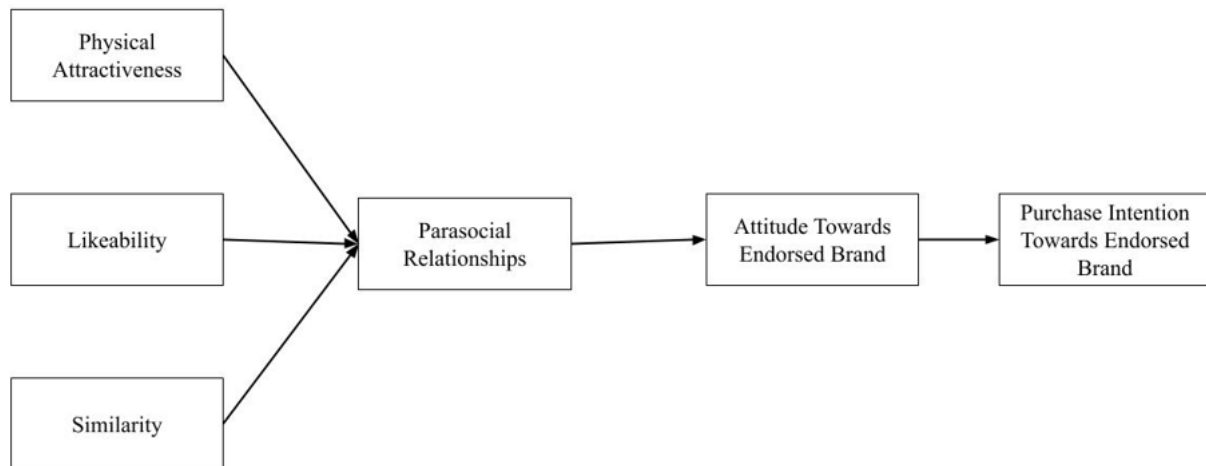


Figure 1.
Conceptual Model.

4. Data Collection

A longitudinal study design was employed to examine the sustainability of parasocial relationships with social media influencers and their impact on consumer behavior over one year. A panel study, a type of longitudinal design, was chosen because it allows for the repeated measurement of the same individuals over time, providing insights into how these relationships and behaviors evolve[58].

Participants were recruited through an e-commerce platform in Pakistan, which has an extensive consumer base. The platform incentivized its customers with a discount code voucher to encourage participation. Invitations were sent via email, and consent was obtained from all participants, ensuring they understood the study's purpose and their right to withdraw at any time.

The first wave of the survey was conducted from September to December 2022. This survey aimed to gather baseline data on all constructs of the study. Participants were asked to name their favorite social media influencer, and this name was recorded for future reference. This initial wave resulted in 417 valid responses. The second wave of the survey was conducted from September to December 2023, one year after the initial survey. The same participants were contacted and invited to complete the follow-up survey, which contained the same questions as the initial survey to allow for direct comparisons. In this follow-up survey, the name of the favorite influencer that participants had provided in the first wave was pre-filled in their forms to ensure they responded about the same influencer, regardless of whether that influencer remained their favorite.

However, only 249 respondents (223 valid responses) completed the follow-up survey, resulting in a dropout rate of approximately 46.5%. Since the study aimed to analyze the longitudinal effects on the same respondents over one year, the 223 participants who completed both surveys were finalized for the study. This approach ensured consistency in the data and allowed for an accurate assessment of how parasocial relationships and related behaviors evolved over the one-year period.

4.1. Measures and Scales

All the constructs were adapted from established scales to fit the context of social media influencers. These constructs include physical attractiveness, perceived homophily, likability, parasocial relationships, attitudes towards endorsed brands, and purchase intentions. The use of established scales ensures the reliability and validity of the measurements, while the adaptations ensure relevance to the specific context of social media influencers.

Physical attractiveness was measured using eight items adapted from McCroskey and McCain [59]. This construct includes items such as "I think my favorite influencer is quite handsome (pretty)" and "My favorite influencer wears neat clothes." Similarity and likability were evaluated using scales adapted from McCroskey, et al. [60] and Reysen [61] respectively. Similarity included nine items like "My favorite influencer thinks like me" and "My favorite influencer and I have similar interests," while likability included six items such as "My favorite influencer is friendly" and "My favorite influencer is approachable."

Parasocial relationships were measured using the PSI scale proposed by Rubin and McHugh [62] with fourteen items including "I miss seeing my favorite influencer when they are not active" and "My favorite influencer makes me feel comfortable, as if I am with friends." These items were also assessed on a 5-point Likert scale from "Strongly disagree" to "Strongly agree."

Attitudes toward endorsed brands and purchase intentions were measured using semantic differential scales adapted from Spears and Singh [63]. The attitudes towards endorsed brands included five items rated on a scale such as "Unappealing/Appealing" and "Bad/Good," whereas purchase intentions were measured with five items like "Never/Definitely" and "Definitely do not intend to buy/Definitely intend to buy."

5. Results

5.1. Methodological Rigor and Data Validity

We tested the properties of the established scales in our dataset through a two-step approach. First, we conducted an exploratory factor analysis (EFA) on the initial item set. Principal component analysis was employed using a non-orthogonal rotation method, given the assumption of correlated constructs. The EFA results supported the proposed factor structure, with eigenvalues greater than 1. No items were deleted as all items were loaded on their intended latent variables with factor loadings of 0.6 or above.

Second, we conducted a confirmatory factor analysis (CFA) to assess the scale properties of the measurement model. The CFA results indicated that the intended factor structure was validated, as evidenced by satisfactory global fit indices that exceeded the suggested thresholds (CFI > 0.90, TLI > 0.90, RMSEA < 0.08). All factor loadings were above 0.5, demonstrating a high level of convergent validity in the measurement model.

The composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha (CA) scores all suggested a high level of internal consistency. Specifically, CR values for all constructs exceeded 0.7, AVE values were above 0.5, and CA values were above 0.7, indicating good reliability and validity. Discriminant validity was confirmed by comparing the square root of the AVE with the correlations for each pair of factors, following the Fornell-Larcker criterion. Additionally, chi-square difference tests, conducted by fixing the covariate to 1, revealed no issues with discriminant validity.

5.2. Multiple Regression Analysis

To demonstrate the relationships between the variables, we performed multiple regression analyses at both time points (T1 and T2). The results are presented in Tables 1 and 5.2. Table 1 shows the results of the regression analyses at Time Point 1 (T1). Likability was the most significant predictor of parasocial relationships with a β value of 0.45, followed by similarity ($\beta = 0.25$) and physical attractiveness ($\beta = 0.15$). Parasocial relationships significantly predicted attitudes towards endorsed brands ($\beta = 0.52$), and attitudes towards endorsed brands significantly predicted purchase intentions ($\beta = 0.58$).

Table 1 shows the results of the regression analyses at Time Point 2 (T2). Similarity became the most significant predictor of Parasocial relationships ($\beta = 0.34$), followed by Likability ($\beta = 0.12$) and Physical Attractiveness ($\beta = 0.14$). Parasocial relationships continued to significantly predict Attitudes Towards Endorsed Brands ($\beta = 0.40$) and Attitudes Towards Endorsed Brands significantly predicted Purchase Intentions ($\beta = 0.45$).

These results demonstrate that while likability was the strongest predictor of PSR initially, its influence declined significantly over time, making similarity the most influential predictor in T2. Additionally, the overall decline in parasocial relationships and related variables suggests that the impact of these relationships reduces over time.

Table 1.
Multiple Regression Analysis at T1.

Dependent Variable	Predictor	β	Standard Error	t-value	p-value	R ²
Parasocial Relationships	Physical Attractiveness	0.15	0.05	3.00	0.003	0.65
	Likability	0.45	0.06	7.50	< 0.001	
	Similarity	0.25	0.05	5.00	< 0.001	
Attitudes Towards Endorsed Brands	Parasocial Relationships	0.52	0.05	10.40	< 0.001	0.33
Purchase Intentions	Attitudes Towards Endorsed Brands	0.58	0.05	11.60	< 0.001	0.34

Table 2.
Multiple Regression Analysis at T2.

Dependent Variable	Predictor	β	Standard Error	t-value	p-value	R ²
Parasocial Relationships	Physical Attractiveness	0.14	0.05	2.80	0.006	0.58
	Likability	0.12	0.06	2.00	0.048	
	Similarity	0.34	0.06	5.67	< 0.001	
Attitudes towards endorsed brands	Parasocial Relationships	0.40	0.06	6.67	< 0.001	0.25
Purchase Intentions	Attitudes Towards Endorsed Brands	0.45	0.07	6.43	< 0.001	0.28

5.3. Paired Sample T-Tests

To assess the changes in variables over time, paired sample t-tests were conducted. The results are presented in Table 3, showing the mean differences and statistical significance for each variable between Time Point 1 (T1) and Time Point 2 (T2). The paired sample t-tests indicate the following changes between T1 and T2:

- Physical Attractiveness: The mean difference of -0.02 is not statistically significant ($p = 0.073$), suggesting that physical attractiveness remained relatively stable over time.
- Likability: The mean difference of -0.55 is statistically significant ($p < 0.001$), indicating a substantial decline in likability over time.
- Similarity: The mean difference of -0.20 is statistically significant ($p < 0.001$), indicating a moderate decline in perceived similarity.
- Parasocial Relationships: The mean difference of -0.45 is statistically significant ($p < 0.001$), indicating a considerable decline in parasocial relationships.
- Attitudes Towards Endorsed Brands: The mean difference of -0.10 is statistically significant ($p < 0.001$), suggesting a slight decline in attitudes toward endorsed brands.
- Purchase Intentions Towards Endorsed Brands: The mean difference of -0.10 is statistically significant ($p < 0.001$), indicating a slight decline in purchase intentions towards endorsed brands.

Table 3.
Paired Sample T-Tests.

Variable	Mean (T1)	Mean (T2)	Mean Difference	Standard Deviation	t-value	p-value
Physical Attractiveness	4.20	4.18	-0.02	0.12	-1.80	0.073
Likability	4.35	3.80	-0.55	0.51	-11.00	< 0.001
Similarity	4.10	3.90	-0.20	0.32	-6.67	< 0.001
Parasocial Relationships	3.85	3.40	-0.45	0.41	-10.00	< 0.001
Attitudes Towards Endorsed Brands	4.00	3.90	-0.10	0.23	-5.00	< 0.001

6. Discussion and Conclusion

This study aimed to examine the sustainability of parasocial relationships with social media influencers and their impact on consumer behavior over a one-year period. By employing a longitudinal study design, we measured key variables, including physical attractiveness, likability, similarity, parasocial relationships, attitudes towards endorsed brands, and purchase intentions at two distinct time points. A combination of multiple regression analyses and paired sample t-tests was used to assess the changes over time. The results provided significant insights into how these relationships and perceptions evolve. We observed shifts in the predictors of parasocial relationships and changes in followers' attitudes and purchase intentions towards endorsed brands.

The results of the study show a significant decline in the strength of parasocial relationships with social media influencers over the one-year period. Initially, parasocial relationships were strongly influenced by factors such as likability ($\beta = 0.45$) and similarity ($\beta = 0.25$). However, the mean strength of these relationships dropped from 3.85 at Time Point 1 (T1) to 3.40 at Time Point 2 (T2), with a significant mean difference of -0.45 ($p < 0.001$). This decrease indicates that the emotional bonds followers form with influencers tend to weaken over time.

Several factors may contribute to this decline in the strength of parasocial relationships. Habituation Theory suggests that repeated exposure to the same stimulus can lead to a decreased response [42]. As followers consistently view the influencer's content, the initial excitement and novelty that helped create strong parasocial relationships may fade. This reduced novelty can make the influencer's content feel less engaging over time.

Moreover, as followers become more familiar with the influencer's behavior and content, their perceptions change. The initial positive feelings associated with likability reduced as followers develop a more detailed understanding of the influencer's personality and actions. This change is reflected in the decline in likability scores from 4.35 to 3.80. Similarly, perceived similarity between followers and influencers decreased as both parties evolved in their personal and professional lives, reducing the commonalities that initially strengthened the parasocial relationship.

This decline in the strength of parasocial relationships also affects their ability to influence followers' attitudes towards endorsed brands. Initially, strong parasocial relationships significantly boosted positive attitudes towards endorsed brands

($\beta = 0.52$ at T1). However, as the strength of these relationships weakens, so does their impact on brand attitudes, as evidenced by the lower β value of 0.40 at T2. This trend suggests that the weakening of parasocial relationships over time reduces the influencer's ability to shape followers' perceptions of endorsed brands.

Physical attractiveness remained relatively stable over the year with a mean difference of -0.02 ($p = 0.073$). This stability indicates that while physical attractiveness is important for forming parasocial relationships, its influence does not change much over time. This finding is consistent with the Halo Effect (Forgas and Laham [64]) where initial impressions of physical attractiveness continue to influence perceptions even as other factors change.

As parasocial relationships weaken and attitudes towards endorsed brands decline, followers' intentions to purchase those brands decreased. This finding aligns with the Theory of Planned Behavior, which posits that attitudes significantly influence intentions. The decline in the strength of parasocial relationships and the subsequent weakening of positive brand attitudes suggest that the initial strong impact on purchase intentions of endorsed brands by social media influencers reduces over time.

Moreover, as followers' direct experiences with the brands and exposure to competing marketing messages increase, the initial influence of influencer endorsements reduces. The Elaboration Likelihood Model supports this, indicating that while peripheral cues like influencer endorsements can initially drive purchase intentions, central cues such as product quality and personal relevance become more influential over time. Consequently, as followers gather more information and engage more deeply with the brands, their purchase intentions are likely to be shaped by these direct experiences rather than the initial parasocial relationship.

6.1. Contributions of the Study

This study offers several important insights for social media marketing and influencer strategies. By looking at these relationships over a year, we gain a better understanding of how they change and impact consumer behavior. We found that parasocial relationships tend to weaken over time. This challenges the idea that these connections stay strong once they are formed. Furthermore, the study reinforces that physical attractiveness, likability, and similarity are important in forming these relationships. However, while physical attractiveness remains fairly constant, likability and similarity can change. Social media influencers need to keep working on being likable and relatable to sustain these relationships. Brands should focus on these traits when choosing influencers to work with, as they are key to long-term engagement.

By using a longitudinal study design, this research fills a gap in the literature, providing insights into the long-term effects of influencer marketing. This approach offers a more complete picture of how influencer-follower relationships and their impacts change over time. Future research should consider using similar methods to capture the evolving nature of social media interactions and their effects on consumer behavior. This study provides valuable contributions to understanding how parasocial relationships with social media influencers evolve and their impact on consumer behavior, offering practical guidance for optimizing social media marketing strategies.

Additionally, by examining how the dimensions of source attractiveness (physical attractiveness, likability, and similarity) and parasocial relationships change over time, this research extends the application of Social Exchange Theory to digital interactions between influencers and their followers. The findings demonstrate that as the perceived rewards (such as likability and similarity) decrease over time, the strength of parasocial relationships also declines, thereby supporting the principles of Social Exchange Theory in a modern, digital context.

Furthermore, this study contributes to the understanding of the temporal dynamics of parasocial relationships. While previous research has primarily focused on the immediate effects of influencer-follower interactions, this longitudinal approach highlights how these relationships evolve and decay over time. The research shows that initial factors like physical attractiveness, which remain stable, may not be as crucial in sustaining long-term relationships as previously thought. Instead, the changing perceptions of likability and similarity play a more significant role in the maintenance of these relationships.

6.2. Future Directions and Limitations

This study provides valuable insights into the sustainability of parasocial relationships with social media influencers and their impact on consumer behavior. However, several limitations must be acknowledged, and future research directions should be considered. The study's context was limited to Pakistan, a country with unique cultural, social, and economic dynamics. While the findings are relevant to this context, they may not be fully generalizable to other regions with different social media usage patterns and influencer-follower dynamics. Future research should replicate this study in different cultural settings to examine the universality of these findings and to understand how cultural differences influence the formation and sustainability of parasocial relationships.

The longitudinal nature of the study provided insights into changes over time, but it did not include an experimental component. An experimental study could provide more controlled insights into the causal relationships between influencer characteristics and parasocial relationship strength. For instance, future research could manipulate factors such as content type, frequency of posts, and interactive engagement to observe their direct impact on the strength of parasocial relationships and subsequent consumer behavior. Such an experimental approach would offer a better understanding of the mechanisms driving these relationships. Similarly, future research could incorporate more objective measures, such as actual purchase data, engagement metrics from social media platforms, and physiological responses to influencer content. These measures would provide a more accurate understanding of the influence of parasocial relationships.

While this study utilized panel data, which allowed for the measurement of changes over time, it faced challenges such as participant attrition. The dropout rate of approximately 46.5% could introduce bias and limit the generalizability of the

findings. Future studies should aim to improve retention rates through better participant incentives and engagement strategies. Additionally, employing a larger sample size would enhance the statistical power of the findings and provide a more comprehensive understanding of the observed trends.

Furthermore, the study focused on a specific set of influencer characteristics—physical attractiveness, likability, and similarity. Future research could explore additional characteristics such as expertise, authenticity, and content quality to determine their relative importance in forming and sustaining parasocial relationships.

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Appendix 1.

Questionnaire items

Construct	Adapted From	Adapted Items
Physical Attractiveness	McCroskey & McCain	<ol style="list-style-type: none"> 1. I think my favorite influencer is quite handsome (pretty). 2. My favorite influencer is very sexy looking. 3. I find my favorite influencer very attractive physically. 4. I don't like the way my favorite influencer looks. 5. My favorite influencer is somewhat unattractive. 6. My favorite influencer is not very good looking. 7. My favorite influencer wears neat clothes. 8. The clothes my favorite influencer wears are not becoming.
Similarity	McCroskey, Richmond, & Daly	<ol style="list-style-type: none"> 1. My favorite influencer thinks like me. 2. My favorite influencer behaves like me. 3. My favorite influencer shares my values. 4. My favorite influencer is similar to me. 5. My favorite influencer has a similar background to mine. 6. I can relate to my favorite influencer. 7. My favorite influencer and I have similar opinions. 8. My favorite influencer and I have similar interests. 9. My favorite influencer and I have similar ways of looking at things.
Likability	Stephen Reysen	<ol style="list-style-type: none"> 1. My favorite influencer is friendly. 2. My favorite influencer is likable. 3. My favorite influencer is warm. 4. My favorite influencer is approachable. 5. I would ask my favorite influencer for advice. 6. My favorite influencer is knowledgeable.
Parasocial Relationships	PSI Scale	<ol style="list-style-type: none"> 1. I miss seeing my favorite influencer when they are not active. 2. When my favorite influencer talks, I feel like I am part of the conversation. 3. My favorite influencer makes me feel comfortable, as if I am with friends. 4. I see my favorite influencer as a natural, down-to-earth person. 5. If my favorite influencer appeared on another platform, I would follow them there. 6. I would like to meet my favorite influencer in person. 7. I find my favorite influencer to be entertaining. 8. My favorite influencer seems to understand the kinds of things I want to know. 9. If there was a story about my favorite influencer in a newspaper or magazine or blog, I would read it. 10. I look forward to watching my favorite influencer's content.

Construct	Adapted From	Adapted Items
		11. My favorite influencer seems to understand the kinds of problems I face. 12. I enjoy watching my favorite influencer's content. 13. I like hearing my favorite influencer's voice. 14. I feel sorry for my favorite influencer when they make a mistake.
Attitude Towards Endorsed Brands	Spears & Singh	1. Unappealing/Appealing 2. Bad/Good 3. Unpleasant/Pleasant 4. Unfavorable/Favorable 5. Unlikable/Likable
Purchase Intentions	Spears & Singh	1. Never/Definitely 2. Definitely do not intend to buy/Definitely intend to buy 3. Very low/High purchase interest 4. Definitely not buy it/Definitely buy it 5. Probably not/Probably buy it