Causal Effects of Addressing and PSI on Compliance with a Social Media Influencer's Recommendations

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Our between-subjects experimental study on US citizens aged 18-35-years (n = 401) revealed that the young people are more likely to comply with recommendations by influencers who address the viewers of their YouTube videos. The viewers also experienced higher levels of parasocial interaction if an influencer addressed them verbally and physically in the video. The experience of parasocial interaction increased the likelihood to comply with the influencer's recommendations. Our findings emphasize the role of humane and social factors in content marketing.

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1 Introduction

The present study delves into the role of parasocial interaction (PSI) in social media influencer marketing. PSI is a viewer's illusionary experience of being engaged in social interaction with media performers (Horton & Wohl, 1956). Despite the relationship is unilateral, viewers may experience that the influencer is aware of their presence, pays attention to them, or reacts to their behavior (Dibble, Hartmann, & Rosaen, 2016; Horton & Wohl, 1956). Therefore, PSI evokes feelings of closeness and connection to the performers, such as social media influencers (Aw & Labreque, 2020). The experience of PSI is also utilized in influencer marketing as the consumers who experience PSI are likely to purchase the products the influencers promote (Lee & Lee, 2021) and make impulsive purchases on social media platforms (Xiang et al., 2016). It is shown that influencers' verbal and bodily addressing lead viewers to experience PSI (Cummins & Cui, 2014, Hartmann & Goldhoorn, 2011; Tukachinsky & Sangalang, 2016). Also, addressing effects viewer's attitudes and behavioral intentions (Wei et al., 2019). Bodily addressing refers to facial expressions and eye-contact. Prior research has shown that eye-contact ignites automatic mindreading i.e., inferring others' mental state (Malle & Hodges, 2005) which may lead to a parasocial experience (Hartmann & Goldhoorn, 2011). Also, for instance, a smile is seen as an invitation for cooperative behavior and (Horstmann, 2003). Verbal addressing occurs when a performer implicitly or explicitly verbally addresses the viewers (e.g., speaks to and engages the audience using personal pronouns) (Cummins & Cui, 2014).

Despite the importance of the topic for influencer marketing, there is scarce evidence on whether addressing causally affects behavioral outcomes through the experience of PSI. The present study addresses this research gap by conducting a between-subjects experiment in which randomization of addressing is used as instrument variable for PSI. The purpose of the experiment was to tease out the causal effects addressing to PSI and consumers' decisions to listen to a recently published song in YouTube when the influencer recommends listening to it. The paper examines the topic in the context of young consumers, because they are highly exposed to influencer marketing and are susceptible to peer influence and social norms within the realm of social media (Nyrhinen et al, 2024). Furthermore, it is topical to examine parasocial interaction in social media, because recent research has associated parasocial interaction with the experience of immersion in contexts such

as streaming commerce (Liao et al., 2023). Immersion is considered as important when using interactive digital technology (Paananen et al., 2024)

We also contribute to the methodologies on research on social media marketing by applying advanced causal modelling with experimental data. To the best of our knowledge, we are among the first in the field to appropriately conduct analysis with instrumental variable from non-parametric perspective without linear assumptions. However, we can get a precise estimate of a causal effect of a subgroup of population while linear modelling techniques like regression modelling assume effect homogeneity (i.e., they rely on assumption that all individuals in population have similar homogenic effect), which is not supported in social sciences.

2 Hypothesis

Figure 1: Illustration of the conceptual model

Research indicates that consumers who experience PSI with influencers are more inclined to follow the influencers' recommendations. This is because the experience PSI with influencer enhances consumer confidence, particularly when they are uncertain about their preferences (Penttinen et al., 2022). More precisely, when influencers employed both bodily and verbal addressinng, the videos resulted in significantly elevated experiences of PSI among viewers, in contrast to instances where such addressing was absent (Hartmann & Goldhoorn, 2011). On the other hand, there is evidence that addressing alone effects viewer's attitudes and behavioral intentions (Wei et al., 2019). For this reason, it is worth investigating whether there is causal relationship between an influencer's bodily and verbal addressing and

compliance with influencers recommendations through the experience of PSI (see Figure 1). Therefore, we postulate:

> **H1.** Addressing is causally related to compliance with a social media influencer's recommendation through the experience of PSI.

3 Methodology

3.1 Participants and Procedure

Data were collected as a part of a research project (see Tuominen et al., 2025) from 401 US citizens aged 18–35 years recruited from a crowd sourcing platform. The participants were assigned to a treatment in a between-subjects experimental design with a short video in which a nano-influencer recommended listening to a song. We manipulated whether the influencer addressed the participants both verbally and bodily or not. Hence, addressing was used as a randomization as instrumental variable for a latent construct of PSI that cannot be randomized. This was done to estimate the effect of PSI to the behavioral outcome.

The study included two videos: first in which the influencer recommended a song titled "This Year Be" by the band Left Vessel with high addressing, a second in which the influencer recommended the same song with low addressing. After watching the video, participants decided whether they wanted to listen to "This Year Be" or a song titled "Eclipse" by the band Wages that the influencer did not mention in her video. "Eclipse" was described as having fewer views than "This Year Be" so that it would appear a tempting alternative to "This Year Be". After that, participants reported their level of parasocial interaction with a single item "While watching the video clip, I had the feeling that the speaker knew I was there" (0 = Disagree, 1 = Agree). The item was drawn from the Experience of Parasocial Interaction Scale (Dibble et al., 2016; Hartmann & Goldhoorn, 2011).

The addressing was manipulated with a method that has been validated in previous studies (Dibble et al., 2016; Hartmann & Goldhoorn, 2011). In the high addressing treatment, influencer smiled and performed (bodily) directly to camera (see Figure 2). She also addressed viewers in the first persona, wished them welcome, greeted and thanked them.

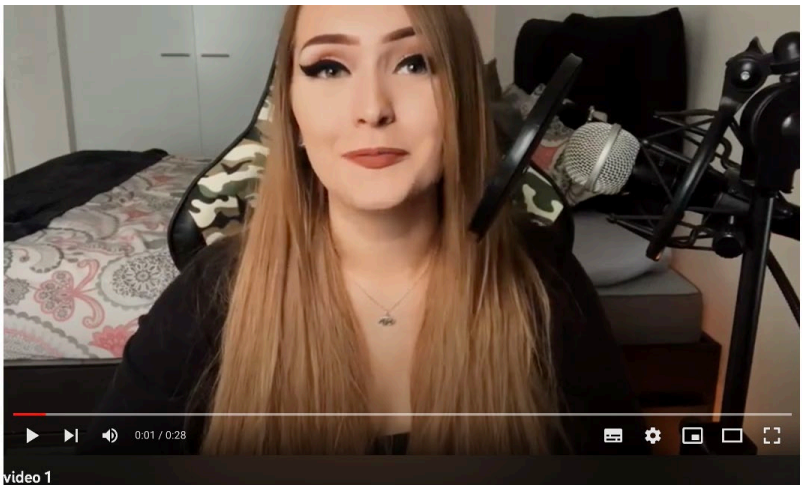

Figure 2: An illustration of high bodily addressing
Source: Own

In the low addressing treatment, the influencer did not smile and looked away from the camera (see Figure 3). Also, unlike in the high addressing treatment, the influencer did not address the viewers personally, thanked, or greeted them.

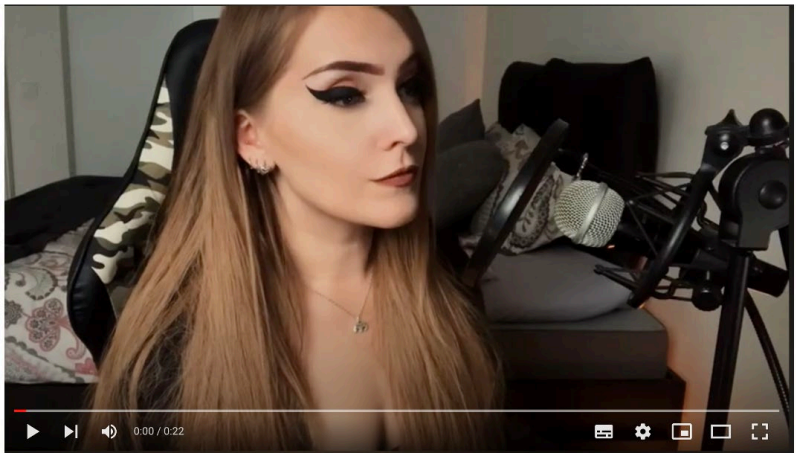

Figure 3: An illustration of low bodily addressing
Source: Own

3.3 Analysis Strategy

We estimated the causal effect of PSI to compliance with an influencer's recommendation with an experimental research design with nonparametric approach. This approach relies on two main assumptions: monotonicity and no direct effect of instrument to behavioral outcome (see more Imbens & Rubin, 2015). We chose this analysis strategy, because PSI is an observed latent variable that cannot be randomized.

4 Results

Complier average causal effect (late) is defined as follows (see Imbens & Rubin, 2015). Intention to treat effects (ITT) are the effect of treatment for each variable. In case of our study y variable is the behavioral outcome and w variable is the experience of PSI. We get expected value ($\mathbb{E}$) for effect of PSI to behavioral to outcome in the subpopulation of compliers (G_i=co) by dividing the ITT_y by ITT_w. This causal effect can be estimated following the equation below with the observed sample analogs of ITT effects (i.e., the mean differences = $[Y_i(1)-Y_i(0)]$).

$$\tau_{\text{late}} = \frac{\text{ITT}_y}{\text{ITT}_w} = \mathbb{E}[Y_i(1) - Y_i(0) | G_i = \text{co}] \quad \text{.....(1)}$$

Our results support H1 by revealing that if a participant experiences PSI, it increases probability for compliers to follow influencers recommendation 2.5726 percentage points (see Table 1). Here the members of population who react to treatment as intended are referred as compliers. See about compliance status and generality of estimates from Imbens & Rubin (2015).

Table 1: Estimated average causal effect

Variable	Treatments	Means	Quotient	Result
Behavioral Outcome (Y)	Low Addressing	.3604		
	High Addressing	.5392	.1788	
PSI (W)	Low Addressing	.7148		
	High Addressing	.7843	.0695	
			.1788/.0695	2.5726

Note: Experience of PSI (0 = low, 1 = High); Behavioral outcome = complying with the influencer's recommendation (0 = did not comply, 1 = complied)

5 Conclusion

Our findings supported the hypothesis by revealing that the besides directly increasing probability to comply with influencer's recommendations, addressing has also causal effect to the behavioral outcome through the experience of PSI. In line with previous studies (Malle & Hodges, 2005; Hartmann & Goldhoorn, 2011; Horstmann, 2003, Cummins & Cui, 2014), our findings supported the notion that direct addressing (e.g., eye contact, smile, use of personal pronouns) in creased the viewers' illusion that the influencer was aware of their presence and especially probability to comply with the influencer's recommendations. However, in contrast to prior studies, the participants of the present study experience high levels of PSI regardless the treatment of addressing. Even though the high level of addressing slightly elevated the experience of PSI in comparison with the treatment with low addressing, our findings indicate that just a presence of a human on a video can crease an experience of PSI.

5.1 Managerial Implications

Our results emphasize the role of social and humane factors in social media influencer marketing. Especially, we highlight the importance of the experience of PSI as a metric when assessing the content of influencer marketing. Also, regarding the measurement, our pioneering research elucidates how randomization of treatment can be used accurately as an instrument variable for latent observed variables such as viewers' experiences.

5.2 Limitation and Avenues for Future Research

The present study had certain limitations that open avenues for future research. First, the study focused on addressing in general, but the effects of bodily and verbal addressing could be also studied separately. Future studies could also examine the effect on valence of the video to PSI and likelihood to comply with the influencer's suggestions.

Second, only one of six items in the EPSI scale (Dibble et al., 2016; Hartmann & Goldhoorn, 2011) was found to measure the experience of PSI in the present study. The item measured whether the respondents had an illusion that the influencer was

aware of their presence. There were no significant differences in the other EPSI items between the treatments. It is worth investigating whether the present study was focused solely on a certain aspect of PSI or whether more research related to metrics of PSI is needed.

Third, the focus of the present study was a video mediated human-to-human communication in an online video streaming platform, namely YouTube. The future studies could also examine addressing and PSI in the context of augmented and virtual reality. In such context it would be beneficial to delve into the causal effects of these variable on experience of immersion.

Fourth, the present study supported the earlier studies by showing that the positive causal relationships between addressing, PSI, and behavioral response. However, due to the emerge of AI based virtual assistants, it worth investigating if addressing by a virtual assistant can evoke an experience of PSI or is it considered intrusive or uncanny instead.

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