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OPEN Meaning in life improves response to others' self-promotion

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While social media serves as a beneficial means of interpersonal connection and communication, its widespread use for self-promotion has been associated with adverse psychological effects on users, including decreased emotional well-being and increased negative affect. This paper examines how individual differences in *meaning in life* presence (MIL presence) influence emotional responses to others' self-promotional content, advancing our understanding of how and why consumers experience social media positively or negatively. Across four studies (total $N=1599$), we demonstrate that both trait-level MIL presence and a brief intervention involving reflection on the presence of meaning in one's life significantly improve viewers' emotional responses to others' self-promotion. These findings contribute to our understanding of individual differences in psychological responses to social media content and offer practical implications for protecting user well-being in digital environments.

Keywords Social media consumption, Self-promotion, Bragging, Meaning in life, Consumer well-being

Social media platforms offer unprecedented opportunities for connection, yet paradoxically, they have become a significant source of psychological distress for many users. While these platforms enable self-expression and connections, consumers' attempts to convey a positive self-image by sharing their achievements and experiences are often perceived negatively by viewers, who may see these self-disclosures as bragging attempts^{1,2}. Past work has demonstrated that frequent exposure to this type of message may explain why social media consumption has been linked to declines in subjective well-being³⁻⁵. Despite the perceived pervasiveness of social media's negative effects, research suggests that perceptions of meaning and meaningfulness underlie several emotional reactions to social media activity. For example, individual differences in one's sense of purpose in life moderate how others' reactions to social media posts (e.g., the number of likes on their Facebook profile pictures) influence the author's self-esteem⁶. These findings suggest that meaning-related constructs can act as protective factors in social media engagement. By extension, this paper examines whether having a sense of meaning in life may also help improve the effects of exposure to others' social media posts on viewers' emotional reactions. This question is particularly relevant given that exposure to others' self-enhancing posts is one of the main pathways through which social media use may diminish subjective well-being⁴. Specifically, we examine the potential protective role of *meaning in life* presence (MIL presence), the extent to which individuals perceive their lives as significant and purposeful^{7,8}, on recipients' emotional responses to self-promotional content shared on social media.

This research makes several contributions. First, bridging consumer psychology, digital marketing, and the well-being literature, we identify MIL presence as a key moderator of consumer responses to self-promotional social media posts. We also extend previous social media consumption and well-being research by focusing on the overlooked role of this stable psychological resource in passive social media consumption experiences. Second, we provide evidence consistent with social comparison as a mechanism underlying the observed effects. Third, we demonstrate that these responses can be improved through a simple intervention involving a reflection on one's meaning in life, offering social media platforms and marketers a practical, non-intrusive tool for enhancing user experience. These findings advance our understanding of the psychological mechanisms underlying heterogeneous responses to social media content. By identifying meaning in life as a protective psychological resource, this research contributes to efforts to understand and promote psychological well-being in digital environments. The findings also have practical implications for social media platforms, which can help foster more positive consumer interactions in digital spaces, potentially addressing an important predictor of disengagement, platform abandonment, and user dissatisfaction.

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Conceptual framework

Social media platforms have fundamentally transformed consumer communication and self-presentation, creating unprecedented opportunities for users to share their experiences, achievements, and consumption choices with vast networks^{3,9–11}. These platforms enable users to carefully curate their digital identities, typically favoring the disclosure of positive or self-enhancing experiences over negative ones³. While such selective disclosure serves important identity and self-presentation functions, past research has shown that passive social media consumption can undermine well-being^{4,12}. Indeed, multiple psychological processes may explain this negative impact. However, a potential explanation we propose to be the key underlying mechanism is how passive exposure to others' curated positive self-presentations can trigger social comparison, particularly upward comparisons with seemingly superior others.

Social comparison theory posits that individuals evaluate themselves by comparing their abilities, achievements, and social status with others¹³. When consumers encounter others' achievements and positive experiences on social media, they inevitably evaluate their own lives in comparison. Recent meta-analytic evidence demonstrates the ubiquity and impact of this process¹², finding that social media users make approximately three social comparisons in just 20 min of browsing, dramatically exceeding the single daily comparison typical in offline settings^{14,15}. Further, exposure to upward comparison targets on social media significantly diminishes users' self-evaluations and deteriorates their emotional states^{12,16}. Other research on passive social media consumption has linked observing others' content to diminished emotional well-being through social comparison processes that trigger envy when confronted with others' carefully curated successes^{3–5,17}. In other words, when consumers encounter others' carefully curated successes, contrast effects dominate over assimilation, leading to negative self-evaluation and emotional distress.

However, research also suggests that the psychological impact of such exposure is not uniform across individuals. Recent studies have challenged the universality of the negative effects of social media exposure, finding that social media comparisons can also lead to positive outcomes such as inspiration¹⁶, and that negative effects are limited to a minority of users¹⁸. In other words, the magnitude of the negative social comparison effects, and thereby consumer responses to threatening social media content, may vary by individual differences¹⁶. This idea aligns with the broader social comparison literature, which suggests that personal characteristics and psychological resources moderate comparison processes and their consequences¹⁹. The recognition of individual differences opens important theoretical and practical questions: what psychological factors protect some consumers from negative social media effects? Can interventions activate these protective factors to improve digital well-being? The features of social media environments (e.g., high comparison frequency, positively biased content, and constant accessibility) may make stable psychological resources particularly important in such contexts. Unlike offline social comparisons that occur sporadically and often with close others who provide contextual understanding, social media comparisons are frequent, intense, and often involve weak ties or acquaintances.

We propose that MIL presence represents a critical individual difference that influences users' emotional responses to self-promotional social media content. MIL refers to "the extent to which people comprehend, make sense of, or see significance in their lives" and "perceive themselves to have a purpose, mission, or overarching aim in life (p. 682)²⁰". Past research consistently demonstrates that individuals with high MIL presence have established a clear sense of their life's purpose and significance⁷, typically accompanied by a sense of psychological stability, healthy self-acceptance, strong social relationships, higher satisfaction with oneself and others, enhanced emotional resilience when encountering negative stimuli, and more effective coping with stressful life events^{7,21–23}. Through this, they place self-worth internally and position meaning as a valuable resource for navigating comparison-rich digital environments. By extension, individuals with high MIL presence should experience reduced vulnerability to the social comparison processes that drive the negative effects of exposure to self-promotion. Consequently, they may encounter others' achievements without feeling threatened. This psychological stability can foster more benign comparisons, wherein others' successes serve as inspiration rather than a source of threat. Furthermore, the stronger social connections associated with MIL may also encourage non-competitive comparisons, viewing self-promotion as an opportunity for shared joy rather than a status-asserting display. Given this theoretical foundation, we predict that MIL presence will improve emotional responses to others' self-promotional content.

The theoretical mechanism outlined above suggests that the protective effects of MIL presence are associated with individual differences in social comparison tendencies. However, research demonstrates that brief psychological interventions can create meaningful changes in how people process social information and their sense of meaning in life^{7,24,25}. If our theoretical model is correct, temporarily increasing one's sense of meaning should provide consumers with similar protective benefits against the negative effects of exposure to self-promotional content. This prediction extends our dispositional hypotheses to suggest that MIL presence can be activated situationally. Demonstrating such causal effects would have important practical implications for improving consumer experiences on social media platforms, as it would suggest that brief, scalable interventions could help users navigate comparison-rich digital environments more positively. Specifically, we predict that a brief intervention designed to increase presence of MIL will improve emotional responses to self-promotional content.

The psychological benefits of MIL presence should extend beyond controlled experimental settings to everyday social media experiences. The reduced social comparison tendencies associated with high MIL presence should manifest in more positive naturalistic social media experiences, even after accounting for other relevant individual differences such as personality traits and social media usage patterns. This prediction aligns with research showing that stable psychological resources can buffer against negative social media experiences^{6,26} and would extend our findings to ecologically valid contexts.

We tested this theoretical framework in four pre-registered studies. Study 1 establishes the basic relationship between MIL presence and emotional responses to self-promotional posts, while Study 2 tests the underlying mechanism: social comparison tendencies. Study 3 demonstrates causality through a longitudinal intervention consisting of briefly reflecting on one's meaning in life. Finally, Study 4 reveals that MIL presence is associated with greater enjoyment of others' Instagram posts in a real-world social media setting, even after controlling for personality traits, self-esteem, and social media usage patterns. Although in Studies 1–3 we also measured MIL search as specified in our preregistrations, we focus our analyses on MIL presence given its consistent associations with emotional responses across studies. Results related to MIL search are provided in the Supplementary Materials.

Results

Study 1: MIL and responses to others' self-promotion

Study 1 ($n = 301$) was a correlational study examining how trait-level MIL presence is associated with recipients' emotional responses to others' self-promotion. Participants imagined that a former classmate shared a self-promotional post about enjoying a holiday at a luxurious spa (see Supplementary Material A). Participants then indicated the extent to which the post made them experience positive emotions and negative emotions on 7-point scales (1 = not at all, 7 = very much), and completed five items measuring their MIL presence ($\alpha = 0.93$) and five for MIL search ($\alpha = 0.97$) via 7-point scales (1 = absolutely untrue, 7 = absolutely true)²⁷. Finally, participants reported whether they were able to see the Instagram photo in the survey (1 = yes, 2 = no) and reported their demographic information.

A Pearson correlation analysis revealed that MIL presence and search were negatively correlated with each other: $r = -0.260$, $p < 0.001$, 95% CI = $[-0.363, -0.152]$. Although we initially expected these dimensions to be independent based on their conceptual distinction in the literature, this negative correlation is consistent with the original scale development work²⁷ and makes intuitive sense: individuals with lower presence of meaning may be more actively searching for it. MIL presence was correlated negatively with negative emotions ($r = -0.189$, $p < 0.001$, 95% CI = $[-0.296, -0.078]$), indicating that individuals with a stronger sense of meaning in life experienced less negative emotional responses to others' self-promotional posts. MIL presence was also positively correlated with positive emotions ($r = 0.295$, $p < 0.001$, 95% CI = $[0.188, 0.395]$). However, contrary to preregistered predictions, MIL search showed nonsignificant correlations with both negative ($r = 0.019$, $p = 0.746$, 95% CI = $[-0.094, 0.132]$) and positive emotions ($r = 0.044$, $p = 0.448$, 95% CI = $[-0.070, 0.156]$). Because only MIL presence was significantly associated with emotional responses to self-promotional content, our subsequent studies primarily focus on MIL presence.

Study 2: mediating role of social comparison

Study 2 ($n = 399$) tested whether the relationship between MIL presence and emotional responses to self-promotion is mediated by social comparison tendencies. The study procedure was similar to that of Study 1 (see Supplementary Material B), except that participants additionally completed a 5-item social comparison tendencies (SC) measure ($\alpha = 0.97$)¹⁹.

The complete correlation matrix is provided in Table 1. Replicating Study 1, MIL presence was correlated negatively with negative emotions ($r = -0.210$, $p < 0.001$, 95% CI = $[-0.302, -0.114]$). MIL presence was also significantly negatively correlated with SC ($r = -0.140$, $p = 0.005$, 95% CI = $[-0.235, -0.042]$).

A mediation analysis (PROCESS model 4; 10,000 sample bootstrap)²⁸ showed that SC significantly mediated the effect of MIL presence on negative emotions toward self-promotion (*indirect effect* = -0.022 , SE = 0.013, 95% CI = $[-0.052, -0.002]$; see Fig. 1). We also tested whether SC mediated the relationship between MIL presence and positive emotions. However, this mediation was not significant (*indirect effect* = -0.002 , 95% CI = $[-0.021, 0.018]$), as social comparison tendencies did not significantly predict positive emotions ($\beta = 0.016$, $p = 0.791$, 95% CI = $[-0.104, 0.136]$). This suggests that the mechanisms underlying positive versus negative emotional responses differ.

As discussed in Study 1, MIL search was not significantly associated with emotional responses to self-promotional content (see Supplementary Material D).

Study 3: intervention to reduce negative responses to others' self-promotion

Studies 1 and 2 showed that MIL presence is negatively associated with negative responses toward others' self-promotion via reducing social comparison tendencies. Next, Study 3 tested for causality of our focal effect by examining whether an intervention fostering people's perceptions of MIL presence reduces negative responses to self-promotion via a longitudinal study. We first recruited 808 participants at Time 1 (T1) to complete the MIL scale. After a week, all participants were invited to take part in the second survey (Time 2; T2), with enrollment

	1	2	3	4	5
1. MIL Presence	1				
2. MIL Search	-0.224**	1			
3. SC	-0.140**	0.310**	1		
4. Negative emotions	-0.210**	0.039	0.154**	1	
5. Positive emotions	0.218**	0.085	-0.018	-0.728**	1

Table 1. Correlations between MIL and key variables in Study 2. * $p < 0.05$, ** $p < 0.01$.

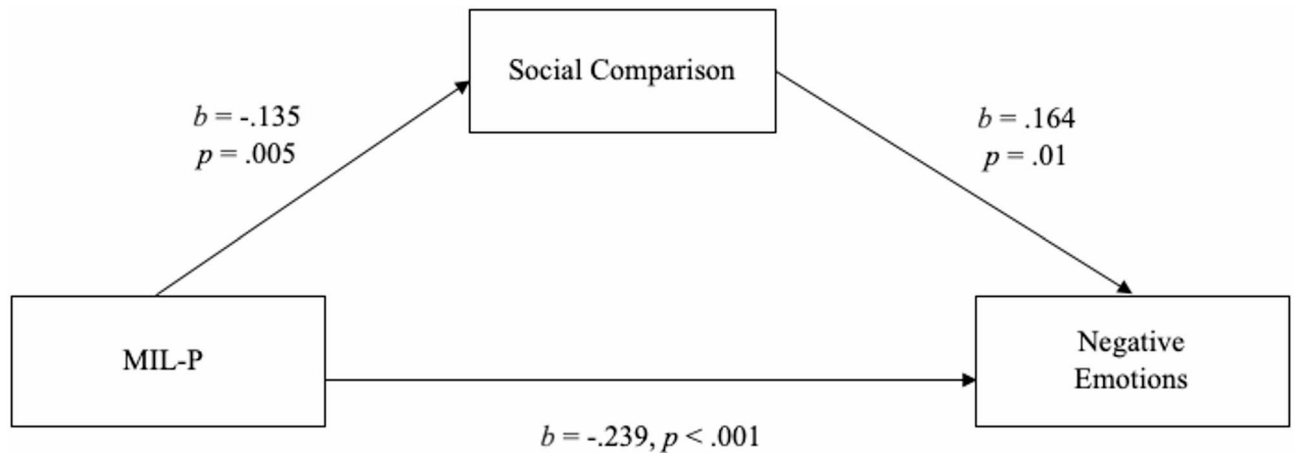


Fig. 1. Mediation model showing the relationship between MIL presence and negative emotions, as mediated by SC.

capped at 400 participants on a first-come, first-served basis to maintain data quality and minimize confounds from varying completion times. To assess potential selection bias, we compared age, gender, and presence of MIL scores measured at T1 between those who participated at T2 ($M_{\text{age}} = 38.30$, $SD = 11.04$; 55% women; $M_{\text{MIL-P}} = 4.97$, $SD = 1.53$) and those who did not ($M_{\text{age}} = 38.30$, $SD = 11.04$; 51% women; $M_{\text{MIL-P}} = 4.83$, $SD = 1.46$). The differences were nonsignificant ($ps > 0.17$).

Participants at T2 ($n = 401$) were randomly assigned to an intervention or the control condition. In the former, participants reflected and wrote about the meaning that they had found in their lives, three of whom failed to complete this task properly (i.e., wrote irrelevant content such as “blah bah blah...”). As preregistered, their responses were not included in the analyses. The control condition did not complete any writing task. We chose a no-task control rather than an active writing control after considering the challenge of identifying a truly neutral writing topic that would not introduce its own psychological effects (e.g., boredom from mundane tasks).²⁹ Further, because we expected a higher dropout rate in the intervention condition with the writing task, we oversampled that condition (i.e., two-thirds of participants were assigned to the intervention condition and one-third to the control condition). However, the attrition rate in the intervention condition was not as high as we anticipated, resulting in 259 participants in the intervention condition and 142 in the control condition.

Afterwards, all participants were exposed to a bragging post by a friend (see Supplementary Material C) and rated the degree to which the friend’s post made them experience negative emotions as in the previous studies. For robustness, we also measured positive emotions, and some specific negative emotions (annoyance, envy, and irritation). Finally, participants completed the MIL scale a second time and reported their demographic information.

Participants’ reflections on meaning in life To examine the content elicited by the intervention, we analyzed participants’ open-ended reflections on meaning in life using large language model-based natural language processing (OpenAI GPT-4o; see Supplementary Material E for the prompt used). Responses were generally positive in tone (mean sentiment = 0.33; range = -0.56 to 1.00) and averaged 45 words across approximately three sentences. Thematic analysis indicated that participants most commonly cited family relationships as central to their sense of meaning. Other recurring themes included resilience in the face of adversity, supporting others, and personal or spiritual growth. These findings suggest that the writing task prompted meaningful self-reflection, supporting the intervention’s validity. The quantitative manipulation check section that follows establishes the intervention’s effectiveness.

Manipulation checks To test whether the intervention properly increased MIL presence at T2, we performed a 2 (MIL: presence vs. search) \times 2 (Time: T1 vs. T2) \times 2 (Intervention: intervention vs. control) mixed ANOVA with MIL and Time as within-participant factors and intervention as a between-participant factor. The results revealed a significant three-way interaction ($F(1, 396) = 8.96$, $p = 0.003$, $\eta^2 = 0.022$). Participants in the control group showed no significant differences in their MIL presence and MIL search between T1 and T2 (presence: $M_{T1} = 4.92$, $SD = 1.52$ vs. $M_{T2} = 4.97$, $SD = 1.56$; $F < 1$; search: $M_{T1} = 4.11$, $SD = 1.79$ vs. $M_{T2} = 3.97$, $SD = 1.85$; $F(1, 141) = 2.60$, $p = 0.11$). However, both MIL presence and MIL search in the intervention condition were significantly different between T1 and T2 ($F(1, 255) = 40.13$, $p < 0.001$, $\eta^2 = 0.136$). That is, the intervention increased MIL presence at T2 ($M_{T1} = 5.11$, $SD = 1.50$ vs. $M_{T2} = 5.47$, $SD = 1.38$; $F(1, 255) = 30.21$, $p < 0.001$) and also decreased MIL search at T2 ($M_{T1} = 4.26$, $SD = 1.70$ vs. $M_{T2} = 3.89$, $SD = 1.88$; $F(1, 255) = 19.73$, $p < 0.001$).

Correlational replication of previous studies Although not preregistered, we conducted correlation analyses to examine whether the relationship between MIL presence and negative emotional responses observed in Studies 1 and 2 would replicate in this sample. Using only control group participants at T2 ($n = 142$) to avoid contamination from the experimental manipulation, we found that MIL presence was negatively correlated with negative emotions ($r = -0.170$, $p = 0.043$), consistent with previous studies.

Effect of the intervention on emotional responses Our preregistered plan assumed independence between MIL presence and search and aimed to identify participants’ MIL clusters and test a two-way interaction effect of

Cluster \times Intervention on emotional responses. However, since the two dimensions were negatively correlated (T1: $r = -0.366$, $p < 0.001$, T2: $r = -0.375$, $p < 0.001$), our intervention influenced participants across both dimensions, and given that participants' positions on both dimensions changed from T1 to T2, participants would effectively be moving between clusters due to the intervention itself, making the original cluster-based analysis inappropriate for testing intervention effects. We therefore conducted a more direct test using a one-way MANOVA with experimental condition (intervention vs. control) as between-subject factor and emotions as the dependent variables to examine the effect of the intervention.

The MANOVA revealed that after seeing the self-promotional post, participants in the intervention condition experienced significantly less negative emotions compared to the control condition ($M_{\text{intervention}} = 2.24$, $SD = 1.55$ vs. $M_{\text{control}} = 2.68$, $SD = 1.73$; $F(1, 396) = 6.93$, $p = 0.009$, $\eta^2 = 0.017$). This effect was consistent across specific negative emotions: participants in the intervention condition reported less annoyance ($M_{\text{intervention}} = 2.27$, $SD = 1.67$ vs. $M_{\text{control}} = 2.68$, $SD = 1.82$; $F(1, 396) = 5.08$, $p = 0.025$, $\eta^2 = 0.013$), envy ($M_{\text{intervention}} = 2.53$, $SD = 1.63$ vs. $M_{\text{control}} = 3.17$, $SD = 1.91$; $F(1, 396) = 12.37$, $p < 0.001$, $\eta^2 = 0.030$), and irritation ($M_{\text{intervention}} = 2.06$, $SD = 1.52$ vs. $M_{\text{control}} = 2.44$, $SD = 1.74$; $F(1, 396) = 5.18$, $p = 0.023$, $\eta^2 = 0.013$). Participants in the intervention condition also reported more positive emotions ($M_{\text{intervention}} = 5.47$, $SD = 1.49$ vs. $M_{\text{control}} = 5.09$, $SD = 1.60$; $F(1, 396) = 5.66$, $p = 0.018$, $\eta^2 = 0.014$).

Next, mediation analyses (PROCESS model 4; 5000 resample bootstrap)²⁸ demonstrated that the effects of the intervention on all emotions were explained by enhanced MIL presence (negative emotions: *indirect effect* = -0.140 , bootstrapped $SE = 0.050$, bias-corrected bootstrapped CI [-0.247 ; -0.052]; annoyance: *indirect effect* = -0.103 , bootstrapped $SE = 0.043$, bias-corrected bootstrapped CI [-0.201 ; -0.029]; envy: *indirect effect* = -0.108 , bootstrapped $SE = 0.047$, bias-corrected bootstrapped CI [-0.213 ; -0.031]; irritation: *indirect effect* = -0.094 , bootstrapped $SE = 0.040$, bias-corrected bootstrapped CI [-0.180 ; -0.026]; positive emotions: *indirect effect* = 0.138 , bootstrapped $SE = 0.053$, bias-corrected bootstrapped CI [0.048 ; 0.251]).

Altogether, the results demonstrate that a simple intervention involving a brief reflection on one's meaning in life can temporarily increase MIL presence and, in turn, reduce negative emotional responses to others' self-promotion. Specifically, the intervention decreased general negative emotions as well as specific feelings of annoyance, envy, and irritation. These effects were mediated by increased MIL presence, supporting the causal role of meaning in life in protecting against negative responses to self-promotional content.

Study 4: replication in a naturalistic setting

Study 4 ($n = 498$) examined how MIL presence influences consumers' enjoyment of others' self-promotional social media posts in a naturalistic setting, while controlling for personality traits, self-esteem, and social media behavior for robustness. Per our preregistration, we excluded 51 participants who indicated that they had participated in a similar survey before. The final participants ($n = 447$) first spent one minute scrolling through their Instagram feed to view other people's posts and rated (1) how much they enjoyed looking at those posts on a 7-point scale (1 = not at all, 7 = very much so) and (2) the estimated percentage of the posts that were about people sharing positive aspects of their lives on a 0 to 100% scale. Next, participants completed the presence of MIL measures and accessed their Instagram activity data to report their average daily usage in minutes over the past week. Additionally, they provided estimates of the percentage of time spent on active use (e.g., uploading new stories or posts, leaving comments on others' posts) and passive use (e.g., scrolling through news feed, looking at others' status updates) for Instagram, ensuring that their total added up to 100%. Participants also reported the number of followers and of people they follow, and as control variables, completed the Big 5 personality scale³⁰ and self-esteem scale³¹ using 7-point scales. Finally, participants provided demographic information and indicated whether they had participated in a similar survey before (1 = yes, 2 = no).

As predicted, regression analysis demonstrated that higher MIL presence corresponded to higher enjoyment of others' posts ($\beta = 0.222$, $t = 4.80$, $p < 0.001$). The results replicated even after controlling for variables capturing participants' overall Instagram use behavior, the Big 5 personality traits measure, and the self-esteem measure (see Table 2).

Discussion

Social media has become an integral part of people's lives. 79% of the U.S. population actively uses social media, a number still growing³². Although a beneficial means of instant communication and connection, these platforms are also commonly used for self-promotional purposes, which may be received adversely³², decreasing people's sense of well-being³⁻⁵. One important aspect to acknowledge, however, is that often the information contained in self-promotional messages itself carries no valence: its valence depends entirely on recipients' interpretation. Our results align with emerging research recognizing heterogeneous, person-specific effects of social media use rather than universal negative impacts¹⁸. We extend this literature by demonstrating that stable psychological resources like MIL presence also moderate these relationships.

Our research offers important insights for understanding consumer-to-consumer interactions on social media, and it is one of the first to suggest a simple way to reduce negative interpretations of other users' acts of self-promotion. Across studies, we deliberately varied the content of self-promotional posts to test the generalizability of our findings. Studies 1–2 used hedonic self-promotion (luxury leisure experiences), while Study 3 used achievement-based self-promotion. This variation strengthens our conclusions by demonstrating that MIL presence protects against negative responses to different forms of self-promotion.

We demonstrate that the impact of self-promotional posts depends in part on recipients' psychological state rather than the content itself. This finding has important implications for promoting psychological well-being in digital environments, and could inform the design of digital well-being features. Our intervention, prompting users to briefly contemplate the significance and meaning in their lives before engaging with social media content, can be easily implemented by social media platforms. Unlike interventions requiring users to limit

Predictor	Model 1				Model 2				Model 3			
	β	t	p	f^2	β	t	p	f^2	β	t	p	f^2
<i>Meaning in life</i>												
Presence	0.222	4.80	<0.001	0.052	0.220	4.711	<0.001	0.050	0.222	3.50	<0.001	0.028
<i>Social media usage variables</i>												
Daily average time spent on Instagram					0.082	1.742	0.082	0.006	0.067	1.43	0.153	0.004
Proportion of time spent on passive use of Instagram					0.020	0.414	0.679	<0.001	0.024	0.502	0.616	<0.001
Number of following users					0.099	2.123	0.034	0.010	0.103	2.15	0.032	0.01
Number of followers					-0.006	-0.121	0.904	<0.001	-0.026	-0.553	0.581	<0.001
<i>Personality variables</i>												
Big 5 Extraversion									-0.033	-0.631	0.528	0.001
Big 5 Agreeableness									0.135	2.72	0.007	0.017
Big 5 Neuroticism									-0.079	-1.28	0.200	0.003
Big 5 Openness									0.081	1.66	0.098	0.007
Big 5 Conscientiousness									0.061	1.17	0.244	0.003
Self-esteem									-0.128	-1.67	0.096	0.007

Table 2. Regression results predicting enjoyment when looking at others' Instagram posts.

social media use or platforms to heavily restrict content, this approach activates existing psychological resources to foster more positive experiences. Platforms could periodically prompt users to reflect briefly on sources of meaning in their lives. However, we emphasize that any such implementations should prioritize genuine user well-being rather than business metrics. The ethical application of this research requires that interventions be designed to help users have healthier relationships with social media, regardless of whether this increases or decreases platform use. Reducing distress from exposure to self-promotional content may enable users to make more conscious decisions about their social media usage rather than being driven by negative emotional cycles.

This simple approach could help mitigate negative responses to self-promotional content from other consumers, potentially increasing positive engagement and reducing platform abandonment. Importantly, this intervention does not require users to discover some grand purpose; simply pausing to recognize small sources of meaning in their lives can significantly improve their emotional responses. By extension, social media platforms could periodically prompt users to reflect on sources of meaning in their lives before browsing, similar to digital wellness reminders but focused on psychological resources rather than time limits. Further, algorithms could be designed to recognize when users might benefit from meaning-oriented content, potentially reducing exposure to comparison-heavy posts during vulnerable periods. Finally, content creators might consider how their communications can contribute to users' sense of meaning and connection rather than primarily triggering social comparison opportunities.

While we have focused on consumer-to-consumer social media interactions, future research could examine whether similar effects emerge in other marketing-relevant contexts. For instance, do consumers high in presence of meaning respond more favorably to self-promotional content from brands or influencers? The psychological mechanism we identified suggests that our findings might extend to these commercial contexts.

At the same time, several limitations should be acknowledged. First, our studies primarily used hypothetical social media scenarios rather than real-time exposure to users' actual social networks. Indeed, Study 4 incorporated naturalistic Instagram browsing, but the emotional responses may differ when encountering content from close friends versus strangers. Second, our intervention effects, while significant, were relatively modest in size. Future research should explore whether longer-term or more intensive meaning interventions produce stronger effects, and whether effects persist over extended periods. Third, our samples were predominantly from individualistic cultures. MIL may function differently in collectivistic contexts where self-worth is more intertwined with social relationships and group harmony. Fourth, while our primary theoretical focus was on how MIL presence reduces negative emotional responses to self-promotional content, we also observed associations with positive emotions across studies. However, exploratory mediation analyses in Study 2 revealed that these effects were not consistently mediated by social comparison tendencies, suggesting that the mechanism may differ. Negative emotions in response to self-promotion appear to arise through upward social comparison processes, whereas positive emotions (such as feeling happy for others or inspired) may depend on additional factors, for example, relationship closeness, which we did not measure. Future research should investigate the distinct pathways through which MIL presence shapes positive versus negative emotional responses to others' achievements.

Fifth, while we provide evidence that social comparison mediates the relationship between MIL presence and negative emotions, alternative mechanisms may also contribute. For instance, individuals with strong MIL presence may view social media content as less significant relative to their own sources of meaning and purpose, reducing the psychological impact of others' self-promotion regardless of comparison frequency. Future research could examine whether MIL presence affects not only the tendency to compare but also the perceived importance of such comparisons.

An important theoretical consideration is whether the protective role of MIL presence is specific to digital contexts or applies more broadly to social comparison situations. While we have argued that social media environments present unique challenges (high comparison frequency, curated content, constant accessibility)

	Study 1	Study 2	Study 3	Study 4
Study platform	CloudResearch Connect	CloudResearch Connect	Amazon Mechanical Turk	Prolific
N (Final)	301	399	398	447
Country	USA	USA	USA	USA
Age M (SD)	39.2 (11.13)	38.71 (11.86)	38.50 (11.24)	31.52 (10.24)
Gender	54.2% Male 45.2% Female 0.3% Non-binary 0.3% Prefer not to say	46.6% Male 52.6% Female 0.5% Non-binary 0.3% Prefer not to say	49% Male 51% Female 0% Other 0% Prefer not to say	36.7% Male 61.1% Female 1.8% Other 0.4% Prefer not to say

Table 3. Participants descriptives for all studies.

that may make psychological resources particularly valuable, the basic mechanism likely operates across both online and offline contexts, and future research could directly compare the magnitude and boundary conditions of MIL presence effects across online and offline contexts.

In conclusion, this research contributes to the broader understanding of consumer well-being in digital environments, suggesting that meaning in life could be a crucial moderator of how consumers experience and respond to various forms of social media content. Our results demonstrate that individual differences in MIL change how consumers experience social media, offering both theoretical insights and practical solutions to one of digital society's most pressing challenges. By identifying psychological resources that buffer against negative social comparison, we offer a way to achieve more positive digital experiences that does not require platforms to restrict content.

Methods

Participants

Participants were recruited from *CloudResearch Connect* for studies 1–2, from *Amazon Mechanical Turk* for study 3, and from *Prolific* for study 4. The studies recruited participants based on power analyses with power set to 80% ($\beta = 0.20$), Type I error rate of 5% ($\alpha = 0.05$), small to medium effect sizes, and preregistrations (study 1: <https://aspredicted.org/fyz5-t79f.pdf>; study 2: <https://aspredicted.org/828q-6pk4.pdf>; study 3: <https://aspredicted.org/d9cy-y23x.pdf>; study 4: <https://aspredicted.org/9rsh-f3jq.pdf>). Further, eligibility was restricted to active Instagram users who confirmed that they had an Instagram account and reported their usage frequency. Those who did not have an account or used Instagram less than once a month were unable to proceed with the survey. Ethical approval was granted by the Institutional Review Board (IRB) of the Korea Advanced Institute of Science and Technology prior to data collection, and all studies were performed in accordance with relevant guidelines and regulations. All participants provided informed consent and were free to withdraw at any time. Participants descriptives are provided in Table 3.

Design and procedure

Studies 1–2 and study 4 employed correlational designs that involved scale measurements of key variables. Study 3 employed a 2 (MIL: presence vs. search, within) \times 2 (Time: T1 vs. T2, within) \times 2 (Intervention: intervention vs. control, between) mixed design.

Measures

All measures, complete item wordings, and response scales are available at <https://researchbox.org/4776> (access code: FCNEXB).

Meaning in Life Participants completed the Meaning in Life Questionnaire (MLQ)²⁷, a validated 10-item measure consisting of two 5-item subscales. The Presence subscale assesses the extent to which individuals perceive their lives as significant and purposeful (e.g., “I understand my life's meaning”; α range across studies = 0.93–0.97). The Search subscale measures the degree to which individuals are actively seeking meaning in their lives (e.g., “I am searching for meaning in my life”; α range = 0.95–0.97). Items were rated on 7-point scales (1 = absolutely untrue, 7 = absolutely true).

Social Comparison Tendencies (Study 2) We assessed individual differences in social comparison orientation using a 5-item scale¹⁹. Items measured the frequency with which participants engage in social comparison across life domains (e.g., “I often compare how I am doing socially with other people”) on 7-point scales (1 = strongly disagree, 7 = strongly agree; $\alpha = 0.97$).

Emotional responses Participants rated their emotional responses to self-promotional content on 7-point scales (1 = not at all, 7 = very much). Studies 1–2 assessed general positive emotions (e.g., happy, pleased) and negative emotions (e.g., sad, upset). Study 3 additionally measured specific negative emotions including annoyance, envy, and irritation. Study 4 assessed enjoyment of viewing others' Instagram posts.

Control variables (Study 4) We measured Big Five personality traits using the 44-item Big Five Inventory³⁰ and self-esteem using the 10-item Rosenberg Self-Esteem Scale³¹ both using 7-point response scales ($\alpha > 0.75$ for all subscales).

Data availability

All studies' preregistration documents, anonymized data, and study materials are available at <https://researchbox.org/4776> (access code: FCNEXB). We report all stimuli, procedures, and measures in each of the studies.

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References

- Packard, G., Gershoff, A. D. & Wooten, D. B. When boastful word of mouth helps versus hurts social perceptions and persuasion. *J. Consum. Res.* **43**, 26–43 (2016).
- Scopelliti, I., Loewenstein, G. & Vosgerau, J. You call it self-exuberance; I call it bragging: miscalibrated predictions of emotional responses to self-promotion. *Psychol. Sci.* **26**, 903–914 (2015).
- Kross, E. et al. Facebook use predicts declines in subjective well-being in young adults. *PLoS One* **8**, e69841 (2013).
- Verduyn, P. et al. Passive Facebook usage undermines affective well-being: experimental and longitudinal evidence. *J. Exp. Psychol. Gen.* **144**, 480–488 (2015).
- Orben, A. & Przybylski, A. K. Screens, teens, and psychological well-being: evidence from three time-use-diary studies. *Psychol. Sci.* **30**, 682–696 (2019).
- Burrow, A. L. & Rainone, N. How many likes did I get? Purpose moderates links between positive social media feedback and self-esteem. *J. Exp. Soc. Psychol.* **69**, 232–236 (2017).
- Steger, M. F., Kashdan, T. B., Sullivan, B. A. & Lorentz, D. Understanding the search for meaning in life: personality, cognitive style, and the dynamic between seeking and experiencing meaning. *J. Pers.* **76**, 199–228 (2008).
- King, L. A. & Napa, C. K. What makes a life good? *J. Pers. Soc. Psychol.* **75**, 156–165 (1998).
- Barash, V., Ducheneaut, N., Isaacs, E. & Bellotti, V. Faceplant: impression (mis)management in Facebook status updates. *ICWSM 4*, 207–210 (2010).
- Newman, M. W., Lauterbach, D., Munson, S. A., Resnick, P. & Morris, M. E. It's not that I don't have problems, I'm just not putting them on facebook: Challenges and opportunities in using online social networks for health. In: *Proceedings of the ACM 2011 Conference on Computer supported cooperative work* 341–350 (2011).
- Mehdizadeh, S. Self-presentation 2.0: narcissism and self-esteem on Facebook. *Cyberpsychol. Behav. Soc. Netw.* **13**, 357–364 (2010).
- McComb, C. A., Vanman, E. J. & Tobin, S. J. A meta-analysis of the effects of social media exposure to upward comparison targets on self-evaluations and emotions. *Media Psychol.* **26**, 612–635 (2023).
- Festinger, L. A theory of social comparison processes. *Hum. Relat.* **7**, 117–140 (1954).
- Wheeler, L. & Miyake, K. Social comparison in everyday life. *J. Pers. Soc. Psychol.* **62**, 760–773 (1992).
- Midgley, C., Thai, S., Lockwood, P., Kovacheff, C. & Page-Gould, E. When every day is a high school reunion: social media comparisons and self-esteem. *J. Pers. Soc. Psychol.* **121**, 285–307 (2021).
- Meier, A. & Johnson, B. K. Social comparison and envy on social media: a critical review. *Curr. Opin. Psychol.* **45**, 101302 (2022).
- Verduyn, P., Gugushvili, N., Massar, K., Täht, K. & Kross, E. Social comparison on social networking sites. *Curr. Opin. Psychol.* **36**, 32–37 (2020).
- Valkenburg, P. M., Beyens, I., Meier, A. & Vanden Abeele, M. M. P. Advancing our understanding of the associations between social media use and well-being. *Curr. Opin. Psychol.* **47**, 101357 (2022).
- Gibbons, F. X. & Buunk, B. P. Individual differences in social comparison: development of a scale of social comparison orientation. *J. Pers. Soc. Psychol.* **76**, 129–142 (1999).
- Steger, M. F. Meaning in life. In *Oxford handbook of positive psychology* (eds Shane, J., Lopez & Snyder, C. R.) 679–687 (Oxford University Press, Oxford, (2009).
- Park, J. & Baumeister, R. F. Meaning in life and adjustment to daily stressors. *J. Posit. Psychol.* **12**, 333–341 (2016).
- Zika, S. & Chamberlain, K. On the relation between meaning in life and psychological well-being. *Br. J. Psychol.* **83**, 133–145 (1992).
- Schaefer, S. M. et al. Purpose in life predicts better emotional recovery from negative stimuli. *PLoS One* **8**, e80329 (2013).
- Burrow, A. L. & Hill, P. L. Derailed by diversity? Purpose buffers the relationship between ethnic composition on trains and passenger negative mood. *Pers. Soc. Psychol. Bull.* **39**, 1610–1619 (2013).
- Walton, G. M. & Cohen, G. L. A brief social-belonging intervention improves academic and health outcomes of minority students. *Science* **331**, 1447–1451 (2011).
- Sagioglou, C. & Greitemeyer, T. Facebook's emotional consequences: why Facebook causes a decrease in mood and why people still use it. *Comput. Hum. Behav.* **35**, 359–363 (2014).
- Steger, M. F., Frazier, P., Oishi, S. & Kaler, M. The meaning in life questionnaire: assessing the presence of and search for meaning in life. *J. Couns. Psychol.* **53**, 80–93 (2006).
- Hayes, A. F. *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach* (The Guilford Press, 2022).
- Boot, W. R., Simons, D. J., Stothart, C. & Stutts, C. The pervasive problem with placebos in psychology: why active control groups are not sufficient to rule out placebo effects. *Perspect. Psychol. Sci.* **8** (4), 445–454 (2013).
- John, O. P., Donahue, E. M. & Kentle, R. L. *The Big Five Inventory: Versions 4a and 5* (University of California, Institute of Personality and Social Research, 1991).
- Rosenberg, M. *Society and the adolescent self-image* (Princeton University Press, 1965).
- Singh, S. How many people use social media 2025 [usage statistics]. *DemandSage* (2025). <https://www.demandsage.com/social-media-users/>

Author contributions

Y.H., I.S., and S.M. designed the study. Y.H. and S.M. conducted the experiments, and Y.H. and I.S. supervised the work. Y.H., I.S., and S.M. performed the analysis. All authors reviewed the manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Additional information

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